

A LETTER TO PEST CONTROL OPERATORS and LANDSCAPE MANAGERS

Bemisia tabaci (Gennadius), sometimes called the silverleaf whitefly, feeds upon more than 600 host plants, vectors more than 111 plant virus species, and is considered a major worldwide invasive species.

The taxonomic status of *B. tabaci* remains debated between 36 previously identified “biotypes” and the newly proposed 24 discrete species. Losses in agricultural production have increased owing to *B. tabaci* as new, more virulent and less pesticide-sensitive cryptic species have spread to all continents except Antarctica. Very few countries have escaped its cosmopolitan distribution and subsequent establishment of at least one of the *B. tabaci* cryptic species. The two most invasive members of the cryptic species complex posing the greatest threat to growers are Middle East/Asia Minor 1 (MEAM1) and Mediterranean (MED) commonly known as biotypes B and Q respectively.

After the introduction of B-biotype into the United States around 1985, unprecedented losses occurred on poinsettia in the late 1980s in Florida, followed by high infestations in field-grown tomato crops. B-biotype rapidly spread across the southern United States to Texas, Arizona and California, where severe field outbreaks occurred during the early 1990s on melons, cotton and vegetable crops.

Indistinguishable morphologically from B-biotype, Q-biotype is extremely problematic to agricultural production because populations are highly prone to develop resistance to insect growth regulators (IGRs) and neonicotinoid insecticides. Both classes of insecticides are widely used for controlling whiteflies in many cropping systems, including ornamentals and cotton.

The Ad Hoc Whitefly Task Force, made up of state and federal regulators, representatives of the ornamental, cotton and vegetable industries, and leading scientists, have worked together to develop effective whitefly management programs since 2005. The success of this effort prevented serious economic losses for agriculture. The future management success depends to a great degree on you, the landscaper and ornamental growers.

Recent reports indicate that we may be in for another challenging year for whitefly management. This time it is the Q-biotype and what appears to be a more pesticide tolerant strain of the B-biotype. Q-biotype whiteflies have been detected in some outdoor plantings of ornamentals in Palm Beach County landscapes. This is the very first time this biotype has been detected outside of a greenhouse. We have also visited yards in Florida infested with the B-biotype that appeared to be uncontrollable.

A good whitefly management program must have three goals. First is to help growers produce a high quality, salable crop for the consumer. Second, but of equal importance, is preserving the effectiveness of the chemical tools that agriculture and the horticultural industries use to manage whiteflies. Finally, a critical goal is to prevent the spread or distribution of difficult control, and possibly pesticide resistant populations. If we do not maintain the viability of

effective chemical tools, the wide host plant range of this pest will make it difficult for growers to produce, and landscapers to obtain many popular ornamental species. Consequently, the wise use of chemicals through a scientifically based Integrated Pest Management (IPM) program is essential in today's global setting. Europe is currently suffering from the results of over-spraying. Insecticide misuse in the United States may result in whitefly populations that cannot be controlled. It is important to remember that the Q-biotype whitefly is already resistant to a number of products commonly used. Insecticide overuse could also easily lead to increased B-biotype resistance.

The Task Force asks you to collaborate with us in this effort. The problem is broader than just the challenge posed by the Q-biotype. It is about avoiding resistance development in any whitefly population.

What should the PCO's and landscape managers do?

1. Scout – this is essential. Inspect your properties frequently to discover populations while they are still small. Don't let the whiteflies get ahead of you, or treatment options will be more limited. If you find whitefly populations that are not responding to insecticide or insect growth regulator treatments that normally work, have them "biotyped." To do this, collect leaf samples with plenty of whiteflies on them, put them in sealed doubled Ziploc type bags, and send overnight to:

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Research Entomologist
USDA, ARS, US Horticultural Research Laboratory
2001 South Rock Road
Fort Pierce, FL 34945
Phone: 772-462-5917
Email: cindy.mckenzie@ars.usda.gov

Be sure to include your contact information, the address where the whiteflies were collected, and the plant type(s) they were collected from.

2. Observe and communicate. Pay attention to what might be going on in the neighborhood near your properties. Are there indications or clues that others might be having problems? You ALL need to work together. If one property in a neighborhood is having major issues or doing something wrong, it could impact the control you get. Communicate with other companies, neighbors and the HOA Boards or management companies. We need to know where hot spots are, which biotype we are dealing with, and information on what is and what isn't working.

3. Practice good management and growing practices – this is essential. Keep weeds controlled, because they often serve as alternate hosts for the whiteflies. Maintain good growing and maintenance practices. For example, a thick layer of mulch can have a negative impact on the efficacy of soil drenches by impeding distribution of the product in the soil root zone. As much as possible, mulch should be removed completely or at least removed from around the base

and drip-zone around the plants you are treating. Water management is also critical especially when using soil treatments for uptake by plant roots. Plants must be moving water in order to get proper uptake of the pesticide. If the soil is water logged, the plant also will have reduced movement to the leaves. If the soil is overly dry, the material will adhere to the soil and organic material and less of the chemical will be available to the plant. Additionally, if you water too heavily within 24 to 48 hours after application, you may wash the material out of the plant root zone.

4. Inspect incoming plant shipments and isolate if necessary. You shouldn't be receiving undue numbers of whiteflies. Zero-tolerance is NOT the goal for anyone and you may see a whitefly or two when your shipments arrive. That is ok normal, and means that your grower is probably following good management practices. However, if you see many whiteflies on incoming shipments, keep those shipments isolated until they have been treated or returned. Contact your supplier and inform them about the situation. Ask whether they are biotyping their whiteflies, if they are monitoring resistance levels in their whitefly populations, and if they are following the Task Force recommended Management Program.

5. Review and implement the “Management Program for Whiteflies on Propagated Ornamentals” recommended by the Task Force. It's available at <http://mrec.ifas.ufl.edu/lso/bemisia/bemisia.htm>. There is a list of materials registered for whitefly control in the landscape on this site as well. This program is based on the best scientific data developed to date by the Whitefly Task Force scientists. Do not rely on just one or two effective products, but instead rotate products with different modes of action to decrease the potential for whiteflies developing resistance. **PLEASE NOTE THAT THIS PROGRAM WAS DEVELOPED FOR THE PRODUCTION OF PLANTS IN GREENHOUSES. SOME OF THE MATERIALS ARE NOT REGISTERED FOR USE OUTDOORS.** There is a list of materials registered for whitefly control in the landscape on this site as well.

7. If you have control problems: contact your supplier, your local extension agent or a USDA or University of Florida expert. Follow our “Whitefly Management Program”, and get your whiteflies biotyped. The biotyping process is fast, and information will be kept confidential. Knowing which biotype you are dealing with will help you choose the most effective control products. In the United States, the potentially impacted industries, federal and state governments, and scientists have cooperated to aggressively, help growers, landscapers and pest control firms manage this pest, produce a salable crop and minimize the likelihood of developing resistant whiteflies. You are an essential part of that effort.

REMEMBER: Q-BIOTYPE WHITEFLIES ARE A DOCUMENTED THREAT, BUT THERE IS ALSO EVIDENCE THAT B-BIOTYPE ARE DEVELOPING RESISTANCE AS WELL. Only by working cooperatively, wisely, and together can agriculture solve this problem. We need your help.

PLEASE BE PART OF THE SOLUTION, NOT PART OF THE PROBLEM!

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