From Forest Nursery Notes, Summer 2008

109. Proper planning can help to manage whitefly. Ludwig, S. and Osborne, L. Greenhouse Management and Production 27(8):53-54, 56. 2007.

Managing whiteflies effectively takes a clear plan. Find out the steps here.

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Proper planning can help to manage whitefly

If scouting indicates the number of immature whiteflies is increasing, a curative treatment may be needed. The waxy covering on larger immatures makes them more difficult to control.

OVER THE LAST THREE YEARS there has been a lot of discussion regarding Bemisia tabaci Q-biotype whitefly. The initial fear surrounding this whitefly focused on a concern that we did not have the tools to manage it. Research has shown that there are effective pesticides to manage Q-biotypes.

Bemisia tabaci B-biotype, or the silverleaf whitefly, is still the dominant whitefly in ornamental production. Over the last few years, silverleaf whiteflies have become more difficult to control. As a result, it is important to develop an integrated pest management program to manage whiteflies on ornamental crops and not simply take a wait-and-see approach.

Whiteflies feed on more than 500 plant species. Favorites include poinsettia, hibiscus, ivy, gerbera, lantana, verbena, chrysanthemum, salvia and mandevilla.

Whiteflies feed on plant phloem by injecting enzymes and removing the sap. This reduces plant vigor. Honeydew secretions from the whitefly promote the growth of sooty mold, which also significantly reduces plant quality. The most obvious whitefly feeding damage symptoms are stem blanching, chlorotic spots, leaf yellowing and shedding and, at high population levels, plant death.

Here are some ways to combat whiteflies.

What you can do

Successful IPM involves preventing whiteflies from becoming established, frequent crop monitoring, using pertinent information to decide when treatment is necessary and using effective pest management tools to properly manage the population.

Inspect cuttings for all whitefly stages and other pests. Start production free of whiteflies and other pests. Remove weeds from inside and around the outside of the greenhouse. Properly dispose of old plant material.

A few whiteflies are capable of producing thousands in a very short time. A single female may lay 150-300 eggs during her lifetime. When the average temperature is over 77°F,

For information on management suggestions for Q-biotype whitefly, visit the *Bemisia* Web site at http://mrec.ifas.ufl.edu/lso/bemisia/bemisia.htm.

27(8):53-54,56.

Whitefly testing is crucial (and free)

Consult your county extension agent for help identifying a particular species.

There are two diagnostic laboratories that will conduct free biotype identification tests for growers. Each lab has specific requirements concerning how to collect and preserve whitefly samples for evaluation. Contact each lab before submitting samples.

Contact:

Cindy McKenzie, USDA-Agricultural Research Service, U.S. Horticultural Research Laboratory, 2001 S. Rock Road, Fort Pierce, FL 34945; (772) 462-5917; cmckenzie@ushrl.ars.usda.gov.

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whiteflies may complete development in 16-18 days. Monitor plants frequently. If you wait until damage is visible, control will be very difficult.

Inspect the undersides of old and new leaves weekly for all whitefly stages. The more plants you inspect, the more likely you will be to detect problems sooner.

Record the number of whiteflies per plant or the percentage of plants infested. This information is essential in deciding whether or not treatment is necessary.

If you use yellow sticky cards, remember their primary use is to detect when and where whitefly adults occur. Place them above the plant canopy and check and replace them every week. Use a magnifying lens (10X) to properly identify white fly eggs and immature stages on a leaf.

After you have detected whiteflies, it is important to accurately identify the species. Silverleaf whiteflies and greenhouse whiteflies (Trialeurodes vaporariorum) are the two most common species attacking ornamentals. Other whiteflies can occur, depending on your region and the plants you are producing.

A few adults feeding on plants will usually not cause significant damage. Depending on the crop, they may not warrant treatment. If scouting reveals the number of immature whiteflies on the plant is increasing, a curative treatment may be needed. Newly hatched crawlers and adults are most susceptible to chemical controls, but the waxy covering on the larger immatures makes them more difficult to cover thoroughly.

Resistance is a problem, so it is important to properly select, apply and rotate

Adults and newly hatched crawlers are most susceptible to chemical controls. A few whiteflies are capable of producing thousands of whiteflies in a very short time.

insecticides. The many and varied trade names for insecticides can sometimes lead to the common mistake of rotating between compounds in the same chemical class or with the same mode of action. In the worst-case scenario, this application error can result in ineffective control and an increase in selection for resistance.

How to create a successful plan

Effective product rotation depends on switching among modes of action. To determine a product's mode of action, refer to the Insecticide Resistance Action Committee's numbering system (www.irac-online.org). By choosing products with different modes of action, you lessen the chance for resistance and improve control.

Review product labels for restrictions and local guidelines on how often a material can be applied and to develop an integrated plan.

Growers must learn from experience which chemicals, when correctly applied, fail to give satisfactory control, then try products in different classifications. Most university researchers feel that no more than two to three applications of materials with the same mode of application should be applied during a given crop cycle. For example, this would mean that one application of Chemical A from Group 4, one application of Chemical B from Group 4 and one application of Chemical C from Group 4 would be the limit during the entire greenhouse crop cycle.

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