

WHITEFLY Q & A FOR BEDDING PLANT PRODUCERS

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This spring many of you may be getting questions about the Poinsettia whitefly from your customers. Here are a list of answers to some of the questions that we received during the Poinsettia Panic last fall. Pay particular attention to question #2 which explains why there is no need to panic. We suggest that you provide a photocopy of questions 1 and 2 to your customers. The remaining questions deal with planning control strategies.

1. What is a whitefly?

Whiteflies are tiny insects (1/16 inch long) that feed on leaves with sucking mouth-parts. Both the powdery white adults and the scale-like immatures feed on the undersides of leaves. The two common whitefly species in Indiana are the greenhouse whitefly (GWF) and the sweet potato whitefly (SWF). The immature nymphs of the GWF are green to white, while those of the SWF tend to be orange. Pupae of GWF are spiny and SWF are smooth.

2. What is the Poinsettia whitefly?

There is no insect with the accepted name of "Poinsettia whitefly". This name has been used by the media to describe a strain of sweet potato whiteflies (SWF) that severely damaged California's vegetable crop last year. This strain, called "type B" SWF feed on more different types of plants and reproduces at a much faster rate than the normal, or "type A" SWF. Type B SWF feeds on over 300 species of plants including squash,

pumpkins, melons, cucumbers, eggplant, peppers, tomato, cabbage, broccoli, cauliflower, poinsettias, bedding plants, especially petunias, geraniums, fuchsia and ornamental cabbage and numerous other cultivated and non-cultivated plants.

3. What does the type B strain of SWF mean for Indiana?

There is no need to panic. Type B SWF has been around for at least a year or two. We have already seen the telltale silver leaf symptom on squash in greenhouses with SWF in this state. Growers should be aware that type B SWF does exist, and be on the lookout for silver leaf on plants in the squash family. You can avoid massive field problems with type B SWF when you avoid transplanting infested seedlings. Treat infested plants before transplanting.

4. How to identify type B strain?

First determine if you already have, or are receiving whiteflies in your shipments. Greenhouse growers should put their entire operation on a regular inspection schedule. Purchasers of flower and vegetable transplants should inspect plants carefully for immature and adult whiteflies when they receive them. When possible these purchased plants should be isolated for about a week to allow adults to emerge and be detected as follows.

The immature nymphs of the GWF are green to white, while those of the SWF tend to be orange. Pupae of GWF are spiny and SWF are smooth.

Keep track of your whitefly problem by using yellow sticky cards as adult traps. These are highly attractive to adults when hung about 6 inches above the plant foliage. Just place a single 3" x 5" sticky card for every 500 square feet of greenhouse space. Be sure to place some of the cards near vents and doorways where whiteflies can enter.

Second determine if you have SWF. After you find whitefly in a trap, start turning over leaves and looking for the immature form on plants near the trap. Adult whiteflies usually prefer to feed on the young leaves. The immature form is about 1/16" long and scale-like. The immature of SWF are generally orange, unlike the GWF which tend to be whitish or green.

Finally determine if you have the type B strain of SWF. Plant zucchini from seed in your greenhouse, or quarantine area. When the type B strain feeds on plants is causes a distinct leaf discoloration called

silver leaf. Leaf surfaces get a silver color because the upper leaf surface begins to separate from the lower leaf surface.

5. What should I do if I have type B SWF in my greenhouse?

If you have type B SWF on plants that you are intending to transplant in to the field, it is important that you control them before you get to the field. You have much more control over the environment in the greenhouse and much less area to cover. If you don't have the type B SWF under control by the time you begin transplanting, you may be setting yourself up for some of the problems that growers in the southwestern U.S. have had.

6. Should I plan to use routine sprays in my greenhouse to control type B SWF?

No. Any pesticide use should be part of an IPM program. Use the steps listed

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Table 1. Recommended Pesticides by Class.

Insecticide Class	Name
Carbamates	bendiocarb (Dycarb)
Organophosphates	acephate (PT 1300, Orthene 75 S) oxamyl (Oxamyl 10 G, Vydate L) d-phenothrin (Sumithrin) thiodan sulfotepp (Plant Fume 103)
Pyrethroids	biphenthrin (Talstar) fluvalinate (Mavrik) resmethrin (PT 1200, Resmethrin) - not as effective
Avermectin	avermectin (Avid)
Insecticidal Soap	insecticidal soap
Growth Regulator	(Kinoprene) Enstar Neem (Margosan-O) (Safe on bracts)
Oils	(Sunspray)

Any pesticide use should be part of an IPM program.

Eliminate all weeds in the greenhouse and 10-20 feet around your greenhouse. Weeds can hide and foster a whitefly population.

You can greatly increase the effectiveness of your control program by spraying before populations "get out of hand".

Reduce resistance by rotating insecticide classes with each new generation of whitefly.

Be sure to inspect the plants that you have sprayed to give you a indication of spray effectiveness. Remember, not all insecticides work quickly.

above to determine if you have a problem with type B SWF before you initiate any control program. The overuse of insecticides may increase the development of insecticide resistance in the SWF and you may lose the use of some important tools for managing this pest.

7. What are some pointers for starting an IPM program directed for type B SWF?

1. **Start clean.** Eliminate all weeds in the greenhouse and 10-20 feet around your greenhouse. Weeds can hide and foster a whitefly population.
2. **Plant some indicator zucchini plants and inspect regularly for the silver leaf symptom.** Silver leaf symptoms will occur in less than 2 weeks.
3. **Monitor for whitefly with yellow sticky cards to detect and record early infestations.** Heavy infestations of whitefly are much more difficult to control. You can greatly increase the effectiveness of your control program by spraying before populations "get out of hand".
4. **Select an appropriate control tactic and be timely.** See Table 1 for different options.
5. **Apply different classes of insecticides to each generation of whitefly to reduce insecticide resistance.** Each class of insecticides kills insects in a different way. When succeeding generations of insects are repeatedly exposed to the same insecticide class they can become less susceptible to its effects. Reduce resistance by rotating insecticide classes with each new generation of whitefly. Mixing insecticides or exposing the same generation to more than one type can simultaneously bring on resistance to multiple insecti-

cide classes. Rotate your insecticide class every 3 weeks because it takes about 3 weeks for eggs to develop to adults. Table 1 contains the recommended pesticides by class. Always be sure to follow label directions and precautions.

Unlike other classes, Enstar is a growth regulator. It takes a longer time to act on whitefly than other compounds because it kills when nymphs change their skins between growth stages. It is therefore more successful early in the season when the offspring of invading adults establish themselves in the greenhouse. Enstar is less effective when a larger proportion of the whiteflies are adults. Margosan-O is effective against all stages.

Rescue treatments of low rates of Orthene with synthetic pyrethroid give best control. Consistent application of this use pattern is likely to reduce effectiveness of this rescue.

6. Evaluate tactic effectiveness and the need for continued control.

Be sure to inspect the plants that you have sprayed to give you a indication of spray effectiveness. Remember, not all insecticides work quickly. It may take 5 days, and up to a week in the case of Enstar, or Margosan-O to see death of whitefly. The records from your sticky trap counts will also help you determine the effectiveness of your program.

