

The Dirty Secrets About Whitefly Biotypes & Spider Mite Species



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COMING UP THIS WEEK:

Salary & Benefits Survey
Q Biotype Whitefly
Whitefly Biotypes
Controlling Whiteflies
Spider Mite Species
Controlling Lewis Mites

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Salary & Benefits Survey Time

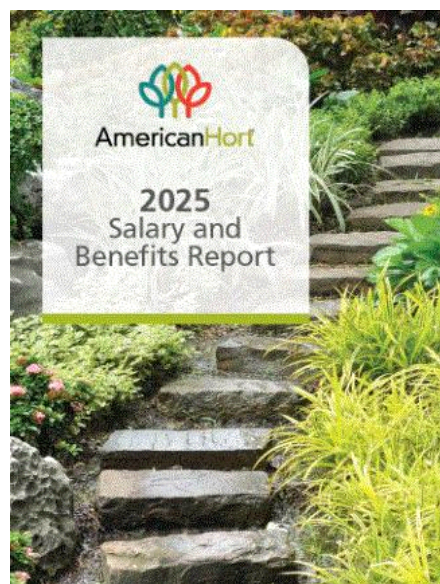
I want to start this newsletter with an ask.

I'd like to ask for your participation in the annual [Salary & Benefits Survey](#). This is a collaboration between AmericanHort, *GrowerTalks/Green Profit* and Industry Insights. The goal of the survey is to identify trends in salary and benefits in our industry, collecting data, anonymously, on company demographics, salary, benefits, and other aspects of HR and staffing.

The deadline for participating is September 30 and you don't have to be a member of AmericanHort or a subscriber of *GrowerTalks* or *Green Profit* to participate. However, participants who are AmericanHort members will get access to a full report prepared by Industry Insights, giving you a sense of where you stand among other similar companies. You'll also gain insights into hiring, retention and planning strategies. Participants who are also AmericanHort Premium members will get a report personalized to their companies.

General overview of the results will be published in the December issue of *GrowerTalks* and the January issue of *Green Profit*. Go [HERE](#) for a summary of the 2025 survey results published in *GrowerTalks*, where concerns over labor costs and shortages continued to dominate discussions.

Again, y'all have less than two weeks to participate. Click [HERE](#) to take the survey.



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Remember the Q Biotype?

Last week, I received an inquiry that almost seemed like a call from the past: Q-biotype whitefly. The eye of the “Q-biotype storm” was hovering over us around the mid- to late 2010s, but slowly moved on over the next 10 years. Sure, there are still research papers written about this biotype, but I hardly hear about it from growers anymore. Not that they’ve disappeared, but y’all haven’t seemed to worry about it in the past few years.

That’s why I raised my eyebrows and went, “*Really??*” when I got the email. My skeptical self wondered how the person knew with such certainty that Q biotype was plaguing his crop. There’s no way a person (including a Ph.D.-level entomologist at a well-equipped diagnostic lab) can tell a Q biotype from a B biotype just by looking at it. The only way a Q-biotype whitefly can be distinguished from the more common B-biotype whitefly is through genetic analysis, commonly referred to as biotyping.

In fact, I don’t even know who to send a sample for biotyping if I received one today. (Well, without me calling in a favor, that is.) Not that a typical diagnostic lab can’t do genetic analysis, but no one openly advertises this service. Q biotype is simply not an ever-present issue that any lab feels necessary to spend time and money on maintaining the expertise.



Which one is the Q biotype? The one on the right? Can you tell? Bull! (Photo credit: USDA-ARS.)

Then I realized knowing whether a whitefly is *really* Q-biotype or not is beside the point. My focus should have been a grower had a whitefly infestation and he needed solutions. It's likely that that the grower observed reduced efficacy of some insecticides he used and assumed Q biotype or he simply wanted to avoid products that Q biotype is already resistant to. Doesn't matter—my duty is to provide solutions to the whitefly infestation on a poinsettia crop, not to dwell on the scientific question of whether this is really a Q biotype or not.

I'll share my recommendations for B- and Q-biotype whiteflies on poinsettia in the third segment. For now, if you'll allow my pedantic self to shine ...



Whitefly Biotypes in North America

There are many whitefly species out there. Some older training materials on whiteflies, including my own, mentioned three major whitefly species on greenhouse crops: the greenhouse whitefly, the sweetpotato whitefly (I include the silverleaf whitefly in this group) and the bandedwinged whitefly. These days, however, I hardly see any greenhouse and bandedwinged whiteflies in greenhouses. That means

management could just focus on the sweetpotato whitefly. I think insecticides that are effective against the sweetpotato whitefly should also be effective against greenhouse and bandedwinged whiteflies. Biological control options, particularly parasitoids, may be different among the whitefly species.

Do you know there are more than 40 cryptic species in the species we call the sweetpotato whitefly, *Bemisia tabaci*? These cryptic species look identical to each other. The only way one can tell them apart is using genetic analysis, just like what we do to distinguish B and Q biotypes. We used to have a native biotype, called New World 1, in North America. (Conveniently, the biotype names often reflect their origins.) New World 1 biotype was largely replaced by the B biotype, scientifically referred to as the Middle East-Asian Minor 1 (MEAM1) biotype, which invaded in the 1980s. The Mediterranean or Q biotype arrived in North America in the early 2000s.

Although they look the same, biotypes differ in their developmental traits, host range, behaviors and (importantly) insecticide resistance. For example, Q biotype is resistant to many commonly used insecticides, notably neonicotinoids and insect growth regulators. Frequent use of these insecticides allows Q biotype to become dominant over the B biotype in some areas. However, when insecticide pressure is lifted, B biotype can outcompete Q biotype because B biotype can lay more eggs than Q biotype.

See? Biotype matters when it comes to management.



Controlling Whiteflies on Poinsettia

In an [article](#) I wrote in 2021, I exclaimed, “When growing poinsettias, nothing can be said to be certain, except whitefly.” (Sorry, Benjamin Franklin.) I also said that a successful whitefly management program, whether you use neonicotinoids or not, must be an integrated one. Believe it or not, both statements are still true in 2026. Check out the article for my recommendations on cutting dips and insecticide selection, which I won’t repeat here.

The 2021 [article](#) focused on insecticides that can replace neonicotinoids (IRAC 4A). Although neonicotinoids (imidacloprid and dinotefuran were tested in the experiment described in the article) are effective when drenched or sprayed, there are other options. Cyantraniliprole (Mainspring; 28), flupyradifurone (Altus; 4D) and spirotetramet (Kontos; 23) are also effective when drenched. These three products, plus cyclaniliprole (Sarisa; 28; also in Pradia, 28 + 29) and pyrifluquinazone (Rycar; 9B), are also options for spraying.

Although afidopyropen (Ventigra; 9D) and flonicamid (Aria; 29) didn’t perform as effectively as other products in that experiment, folks have had good control using them. Good spray options that I didn’t include in the article are acetamiprid (TriStar; 4A), buprofezin (Talus; 16), pyriproxyfen (Distance; 7C), s-kinoprene (Enstar; 7A), spiromesifen (Savate; 23) and horticultural oil (UC).

It’s likely that successful whitefly management will require multiple applications. Remember to rotate to a different mode of action or IRAC number for each whitefly generation (about three weeks or so at typical greenhouse temperature). The experiment described in the article was conducted against B biotype. If you suspect that you have a Q-biotype whitefly population, avoid neonicotinoids (4A), insect growth regulators (pyriproxyfen and buprofezin), pyrethroids, organophosphates and carbamates.

I also didn’t talk much about biological control in the 2021 [article](#). Biological control is an effective and, therefore, highly recommended approach against whiteflies, particularly the Q biotype. In fact, I’d go as far as saying that biological control against whiteflies is the best example of successful uses of biological control.

Entomopathogenic fungi, such as *Beauveria bassiana* and *Isaria fumosorosea*, can be integrated with other insecticides and form the foundation of a spray program. Parasitoids (*Encarsia* and *Eretmocerus*),

predatory mites (*Amblyseius swirskii* and *Amblydromalus limonicus*) and beetles (*Delphastus catalinae*) are available. These biological control agents perform better if multiple species are employed (to cover as many life stages as possible) and used preventively from the start to the end of a crop. Use compatible insecticides and miticides. Check with your biocontrol agent suppliers for pesticide compatibility information.

Entomologists Have Interesting Minds

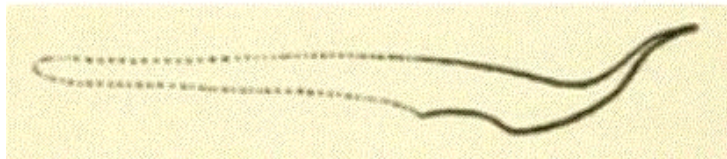
Here's another fun inquiry from last week: spider mites on poinsettia. (Okay, fun to me at least.)

These days, spider mites I see on poinsettias are almost always Lewis mites. Folks (me included) often have a hard time distinguishing Lewis mite from its more common cousin, the twospotted spider mite. It's particularly difficult in this inquiry because the mites in the pictures seem to have only two spots. When I give presentations about mites, I often show a picture that shows six spots on a Lewis mite's body. In truth, I've seen six, four and even two spots on Lewis mites, so the number of spots isn't a good diagnostic characteristic for spider mite species.

So what is a good characteristic?

Nothing outward, unfortunately. We can guess which is the more likely culprit based on host plants (such as it's more likely Lewis mite on poinsettia) or behavior (such as Lewis mites don't produce a lot of webbing and they're "lazy," i.e. they spread rather slowly), but that doesn't give us a definitive identification.

If you really want to identify a spider mite species, you'll have to: 1) Find and collect males (this may be a hard task because males are usually only 20% of a stable population and fewer in a newly established population); 2) make their bodies translucent, then dye them using special chemicals; 3) mount them on microscope slides; 4) examine them under the highest magnification; and 5) pull out all your hair.



Aedeagus of a twospotted spider mite under a microscope (top) and in a line drawing (middle), and that of a Lewis mite in a line drawing (bottom) (Credit: J. J. Beard, [Lucid Central](#); Ehara and Gotoh 1996, *Journal of the Acarological Society of Japan* 5: 17-25; McGregor 1943, *Proceedings of the Entomological Society of Washington* 45: 127-129.)

Why do you need to use the highest magnification? Because you'll have to look at the number, shape and placement of hairs and grooves on the bodies, legs and the tiny claw-like structures at the end of the legs (called empodia). And the most definitive characteristic used by taxonomists to identify spider mite species is their aedeagus (AKA penises) in anthropomorphic term. See the picture above. (I have to go to the original taxonomic description of Lewis mite, published in 1943, to find a drawing of its aedeagus.)

Think looking at mite junk is weird? Go find out how you can identify white grub species using their raster patterns. (Raster = hairs on the rear end.)

Using aedeagus in species identification is quite common in entomology because a special aedeagus makes sure a male can only inseminate a female that has a perfect morphological fit. Who came out with that system? I don't really know. Beetle and butterfly taxonomists in the 19th and 20th centuries were the pioneers in this field, but I think there was a less-concerted effort earlier than that. People in the Metternichian and Victorian Eras had to have some fun, even if it's through finding less laced-up ways of identifying insects and mites.

Controlling Lewis Mite

Lewis mite infestation was at an outbreak level in 2024, but not too bad in 2025. Not sure how it's going to be in 2026. I hope it'll be more like 2025, not 2024.

Here's some information on how to control Lewis mite, just to get you ready for this year. I wrote about that in the [November 7](#) and [November 25](#), 2024, issues of this newsletter. I'll summarize the information here.

Most Lewis mites are introduced via cuttings. I expect cutting dips, if they can be done in your operation—with 0.1% horticultural oil, botanical oil (such as EpiShield and Romivex) and hexythiazox (Hexygon)—can be effective against Lewis mite.



There isn't a whole lot of published efficacy data on Lewis mite. Effective miticides in my own research and published and unpublished studies (such as those of Dan Gilrein of Cornell Extension) include abamectin (Avid and others; IRAC 6), acequinocyl (Shuttle; 20B), bifenazate (Floramite and others; 20D), cyflumetofen (Sultan; 25), fenpyroximate (Akari; 21A), hexythiazox (Hexygon; 10A) and spiromesifen (Savate; 23). I don't have data, but I expect the newly introduced Barracuda (abamectin + bifenazate) and Vykenda (isocycloseram; 30) to be effective. Chlorfenapyr (Pylon; 13) was found to be effective in Dan's and my trials, but note that the label indicates sensitivity of poinsettia to Pylon.

Just like managing twospotted spider mites, catching the infestation early and good spray coverage (especially on the underside of leaves) is critical to managing Lewis mite infestations. You'll have to select miticides that are safe to bracts later in the season. Go [HERE](#) and [HERE](#) for crop safety of miticides and insecticides.

Predatory mites are the best option for biological control. In a [study](#) on strawberries, *Phytoseiulus persimilis* didn't feed on Lewis mites, whereas *Neoseiulus californicus*, *Neoseiulus fallacis* and *Amblyseius andersoni* did. *N. fallacis* and *A. andersoni* fed on both when Lewis mites and twospotted spider mites were present at the same time, but *N. californicus* fed on Lewis mites first, which then allowed twospotted spider mites to escape control.

I suggest starting biological control soon after sticking. Because I'd heard mixed results from biological control programs, I suggest keeping a close eye on the Lewis mite population and being prepared to intervene with miticides when the population rises. Check with your biocontrol agent suppliers for compatibility of miticides with predatory mites.

See y'all later!



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