

# Pest Management

Experts weigh in on notable developments, emerging trends and the impact of sustainability on the evolving field of pest management.

Compiled by Darhiana Mateo

## At the Table

**James Bethke**  
University of California  
Cooperative Extension, San Diego

**Daniel Gilrein**  
Cornell Cooperative Extension  
of Suffolk County, Long Island  
Horticultural Research and  
Extension Center, Riverhead, N.Y.

**Raymond Cloyd**  
Department of Entomology  
Kansas State University, Manhattan

### What are some notable developments in the field of pest management?

**James Bethke:** I think that one of the best things that has happened in the last couple of years is when my colleagues and I put together a great pesticide management program for whiteflies. We were able to form a consensus on how whiteflies should be treated in the many stages of plant development from rooting to finishing. We came together to solve the Q biotype invasion, and the management program was one of the accomplishments.

**Daniel Gilrein:** At least concerning recent developments in greenhouse insect and mite pest management, I see a greater interest in biological controls, as well as insecticides and miticides with more selective efficacy (which means they work well on one or a few kinds of pests) and new modes of action. There are “greener” pest-control products now available and being used in horticultural production. Costs for inputs have increased sharply; growers are more watchful of bottom lines and costs for pest management (e.g., labor, materials, biological controls).

**Raymond Cloyd:** The introduction of a new product called Overture for western flower thrips control that’s available this year from Valent is an important development. The availability of Overture is significant because of the issues related to resistance with spinosad (Conserve). It’s a welcome to have a new product with a supposedly different mode of action that the growers can use in a rotation program to alleviate problems with western flower thrips and also minimize the prospects of resistance. It adds another tool to the limited arsenal they have right now. It’s good to have a product that has efficacy against western flower thrips — and a potentially different mode of action than spinosad.

### Describe some of the biggest challenges growers face when attempting to manage pests in the greenhouse.

**James Bethke:** In my area, one of the biggest challenges is for growers to comply with new regulations that require pesticide treatment applications for the myriad of invasive pests that have invaded recently. The problem lies with the cost of treatment, the sheer volume of product needed at times to cover their entire facility, and the potential for a destruct order by the regulators. There are typically few pesticides required under the protocols, and some are on a ground water and runoff water watch list.

**Daniel Gilrein:** Perhaps highest on some greenhouse growers’ minds is the issue of pesticide-resistant (or -tolerant) insect and mite populations. We’re seeing issues with thrips control for example, and in some cases there are few new products coming along to address the situation. Smaller-scale growers often can’t afford to segregate plant material in individual ranges, so older insect and mite populations can persist and move to uninfested new plants season after season, exacerbating the problem. Growers using biological controls or trying to grow organically have occasional difficulty managing pests with available tools. While ideal or easy solutions are elusive, growers still have some control over these issues.

Some steps they can take are: Identify situations where resistance is likely or quick to occur; rotate materials to include those with other modes of action, promptly discard unneeded or heavily infested plants; regularly monitor for insects and mites (visually, with sticky cards, and/or by tapping over white paper or board); remove pests



## pests & diseases

by hand or other physical means where practical (e.g., pinch off and bag unneeded flowers with thrips, which has helped in some cases); segregate infested from uninfested material; incorporate biological controls and/or insecticides with

nonspecific modes of action; and keep the greenhouse clean and free of weeds or "pet plants" that can harbor pests and plant pathogens.

**Raymond Cloyd:** There's always the challenge of trying to deal with

multitude of different insect and mite pests and also to use insecticides and/or miticides with different modes of action to provide control and minimize resistance. More than anything, growers need to implement scouting programs



Silverleaf whitefly (Photo: USDA/ARS)

and practice good sanitation; just provide an environment that is not conducive for development of insect and mite pests that are commonly encountered in greenhouses. Furthermore, growers have to sustain what's available because it doesn't appear there is going to be an influx of new products introduced into the greenhouse industry for five to 10 years. They need to implement proper pesticide (insecticides and miticides) stewardship in order to sustain the longevity of those products currently available.

Growers are also wanting to use biological controls, which are never going to eliminate every insect or mite pest, so growers may be caught in a catch-22: trying to produce a quality crop for sale but attempting to use biological controls.

### Is the push for sustainability impacting what chemicals are being introduced for pest control?

**James Bethke:** Absolutely. Most of the growers that I contact are expressing the need to test and use what they call softer chemicals, and they are being pushed, I believe, by the movement toward certification and sustainability. I am asked weekly by e-mail or telephone if there are any organic products that work on [fill in the blank].

**Daniel Gilrein:** Yes, although in some ways the "push" is more historic than recent, going back at least 15 years or more to EPA regulatory initiatives and incentives. Products with more favorable toxicological and environmental profiles seem to have less trouble getting through federal and state review, especially in New York State. Marketers also seem to be catching the wind, noting (even on labels) when products are compatible with use of

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natural enemies, and growers are much more conscious of product safety, as reflected in re-entry intervals and personal protective equipment requirements.

**Raymond Cloyd:** It's truly hard to say what sustainability has done, because I don't know exactly what this term actually means. My own experience is that growers are trying alternatives like biologicals; that's probably one of the biggest impacts. The growers still have a variety of effective insecticides and miticides, but there's a shift in at least attempting to use biological controls.

**Have you noticed any emerging trends in this field?**

**James Bethke:** Only negative. Every year there is more and more evidence that thrips are a very difficult pest to control and that there are very few control alternatives against them. I have been against tank mixing because of insecticide resistance prevalence, but we may be forced into more tank mixing because of to the lack of effective chemical control and lack of options. The latest chemicals have been more narrow in focus, requiring more chemicals to control pest complexes on selected ornamental crops.

**Daniel Gilrein:** With the now-common use of vegetative material propagated elsewhere (versus seed- and plug-grown starts), I suspect our increased detections of broad mite are not coincidental, although the reports were less common in 2008. I think the trend toward "greener" pest control products and use of biological controls will continue, but efficacy is still important of course.

The recent flurry in minimum-risk pesticide products seems to have slowed somewhat, although we'll probably continue to see new developments in this area. There are now a lot of new miticides registered for greenhouse use and unique products for control of caterpillars; the newest ones are not yet approved for use in production of greenhouse ornamentals. There are more generic insecticides than ever in recent years with a small trend in marketing proprietary formulations or combination (pre-mix) insecticides mostly for outdoor crops or landscapes.

**Raymond Cloyd:** The trend is obviously trying to rotate modes of action to minimize resistance. Growers are also focusing on improving sanitation. Growers are very cognizant of the insect and mite pests and are doing the best they

can to maintain populations below damaging levels. This can be accomplished by developing rotation programs with different modes of action to minimize resistance. **GPN**

*Darhiana Mateo is associate editor of*

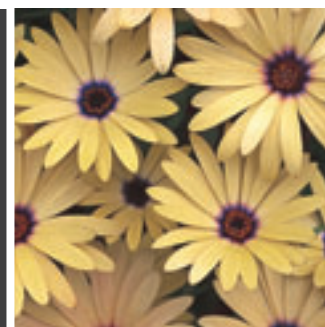
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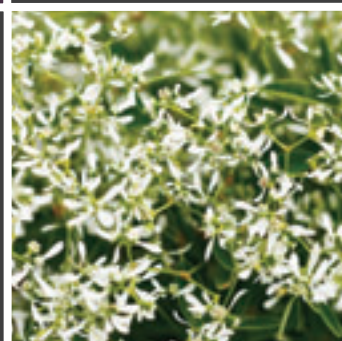
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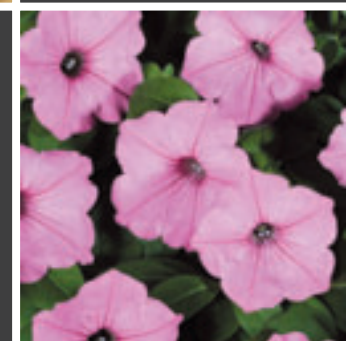
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