Update on Insecticides and Miticides for the Ornamental Market

Find out what's on the horizon, what's losing registration and what's been updated in the insecticides and miticides category.

By Jim Bethke

Thrips.

I've been kidding around at some of the recent conferences by polling the audience to determine its makeup. First, I ask how many in the audience work in greenhouses, then how many work in nurseries or both since many nurseries have associated greenhouses. Lastly, I jest that what's left of the audience must be the chem-reps. It seems like at every conference of late, most of the representatives of the chemical companies are there to give a little speech about the latest products they have on the market for ornamentals. Mostly they concentrate on the fungicides, but occasionally they have a new or developing insecticide or miticide. Relatively few insecticides have been in development over the last few years, but there is hope on the horizon. I'm becoming aware of more compounds that are somewhat secret in nature, and if I told you about them I'd have to eliminate you. Well…they might eliminate me. However, that should provide you with some hope for the future. It is very important that the ornamental industry be provided with more alternatives for pest control. Resistance management begs for it.

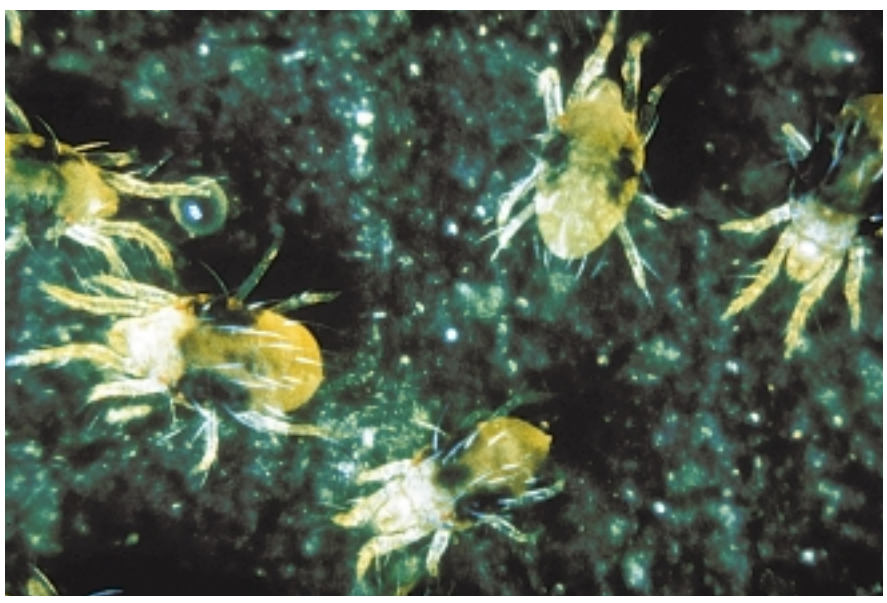
Although you can see more reps at every conference, you might not hear the same story every time. The companies themselves and labels have been changing very rapidly. It's easy to discuss what's available here in California, but that will leave out a number of ➧

pesticides that are first registered everywhere else. I particularly like Ann Chase's description of a list of fungicides she provided last year in her column. She said, "The majority of the products included are currently labeled somewhere in the United States, though you should check the label to see if they are registered for use in your area." I completely agree, and that's the approach I will take in this discussion.

MITICIDES

As you are probably already aware, there has been a flurry of new miticides in development over the past few years. Some of them are already on the market. The following is a review of the most recent changes.

EPA registration for Tetrasan 5WDG (etoxazole) from Valent USA and Ultiflora (milbemectin) from Gowan are expected this fall, hopefully by the time this article is published. Tetrasan is a 5-percent WDG (water dispersible granule) that can be used at 8-16 ounces 100 per gallon. It's a new class of miticide with a mode of action much like an insect growth regulator. Mites are not insects, but they still have to shed their skin to grow. Like insect growth regulators, they don't kill adults, but are active on eggs and nymphs, and may sterilize adult females.



Top to bottom: silverleaf whitefly adult; green peach aphid; leafminer; two-spotted spider mite.

Residual activity lasts between 21-28 days. Ultiflora is a naturally derived, broad-spectrum miticide with translaminar activity. Like Avid (abamectin), Ultiflora also has activity against leafminers. Residual control is 21-28 days.

Floramite SC (bifenazate) has been around for awhile now as a wettable powder, but Uniroyal has developed an SC formulation. It already has a federal label and some state labels. It has a better wetting agent in the SC formulation, and Uniroyal has been demonstrating better activity with the SC than with the comparable WP. We've had similar results here at UCR against Lewis mite on poinsettia.

Akari 5SC (fenproximate) miticide from SePRO now has an interiorscape label, formerly greenhouse-only for spider mites. Outdoor registration is expected next year and SePRO is expanding the label to include eriophyid and tarsonemid mites.

INSECTICIDES

I won't belabor the fact that the broad-spectrum pesticides of the past are dwindling at an ever-increasing rate. Last year, Dr. Dick Lindquist mentioned fenoxycarb and bendiocarb in this report. This year (2002), greenhouse use of Knoxout GH (diazinon) and Fulex Dithio Smoke/Plantfume 103 (sulfotepp) were lost, and Nemacur (fenamiphos) will be phased out over the next few years. Diazinon sales must stop by the end of this year. Sulfotepp production and sale were to have been terminated by September 30 this year, and use must stop September 30, 2004. In spite of the bad news, the outlook is still promising because a number of new insecticides have been under development in the last few years and some are now available. The only downside is that they have a somewhat narrower spectrum of activity.

IGRS

Pedistal 10 SC (novaluron) is a new product from Uniroyal. It is considered a benzopheny urea much like diflubenzuron. It acts the same way too, as an IGR or a chitin synthesis inhibitor. It is expected to reduce the reliance on OPs, has low mammalian toxicity, and is considered to be a low risk to the environment and non-target organisms. It has activity against thrips, whitefly, lepidoptera and leafminer. An earlier version called Rimon 10EC received the federal and state labels first but was submitted for greenhouse use only. Uniroyal resubmitted for greenhouse, nursery, landscape, ➧

Figure 1. Information about the products mentioned in this article.

Trade name	Chemical class	Common name	Company	Status
Tetrasan 5WDG	Organic (MGR)	Etoxazole	Valent USA	Awaiting registration
Ultiflora	Glycoside	Milbemectic	Gowan	Awaiting registration
Floramite SC	Carbazate	Bifenazate	Uniroyal	New formulation available
Akari	Pyridazinone	Fenproximate	SePro	Expanded label
Knoxout GH	Organophosphate	Diazinon	Cleary Chemical	Lost registration
Fulex Dithio Smoke/ Plantfume 103	Organophosphate	Sulfotepp	Fuller System/ Plant Products Corp.	Lost registration
Nemacur	Organophosphate	Fenamiphos	Bayer Crop Science	Losing registration
Pedistal 10 SC	Organic (IGR)	Novaluron	Uniroyal	Newly registered
Rimon 10EC	Benzopheny urea	Novaluron	Uniroyal	Expanded label
Talus IGR	Organic (IGR)	Buprofezin	SePro	Under development
Flagship 25WG	Chloronicotinyl	Thiamethoxam	Syngenta	Awaiting registration
Tristar 70WP	Chloronicotinyl	Acetamiprid	Bayer Crop Science	Awaiting registration
Unnamed	Chloronicotinyl	Thiacloprid	Bayer Crop Science	Under development
Unnamed	Unknown	Flonicamid	ISK Biosciences	Under development
Mesurol 75W	Carbamate	Methiocarb	Gowan Company	Newly registered in Calif.
Mesurol Pro	Carbamate	Methiocarb	Gowan Company	Newly registered
Citation	Triazine	Cyromazine	Syngenta	No Activity

interiorscape and shadehouse use, and the SC formulation should be available sometime this fall.

Another IGR making its way into the market is Talus Insect Growth Regulator (buprofezin 70%) from SePRO Corp. It is a new insecticide for control of immature stages of whitefly, scale, mealybug and leafhoppers. It is also a chitin synthesis inhibitor, so it affects the insect as it molts. The initial registration will be for outdoor use.

CHLORONICOTINYLS

Flagship 25 WG (thiamethoxam) is another insecticide of the chloronicotinyl class that's under development by Syngenta. It has excellent activity against aphids, whiteflies and mealybugs on ornamentals as well as grubs, billbugs and chinch bugs in turf. This product has flexibility of application including drench, irrigation and foliar. Registration is pending.

Here's another merger you should be aware of. Bayer Corporation is now known as Bayer Crop Science to merge the two company names of Bayer Corporation and Aventis Crop Science. They are divesting a new product called Tristar 70 WP (acetamiprid), which has great promise for the greenhouse, nursery and landscape industries. Like Flagship mentioned above, it is a new chloronicotinyl class insecticide. Its fate is not yet known, but it is sure to become a usable product for the future. It received reduced-risk status from the EPA, and it is expected to be available this year. Bayer Crop Science is also developing another chloronicotinyl called thiacloprid 480 SC. It is softer on non-target organisms, but the spectrum is broader to include some microlepidoptera (small moths), which are very small moths for the non-entomologist. Registration is not going to happen for awhile.

NEW CHEMISTRY

FMC is developing a new product from ISK Biosciences called Flonicamid. It will be registered for greenhouse use on ornamentals. Flonicamid 50 WG is considered an OP replacement and ➧

received reduced-risk status, which usually streamlines the registration process. Flonicamid is systemic and suppresses the feeding of sucking insects. At the moment, the mode of action of this chemical is unknown; however, it appears to be unique. We look forward to testing this new compound here at the university.

AN OLD STANDBY

For those of you folks in California, Mesurol 75W from the Gowan Company is now registered indoors and outdoors as a sprayable insecticide and molluscicide. It has a broad spectrum of activity, especially against western flower thrips, snails and slugs. Gowan is also introducing Mesurol Pro, which is a new bait formulation of the product for use indoors and outdoors against snails, slugs, sowbugs and millipedes. Both products can be used in ornamental production and landscape areas.

FINALLY

One trend that's picking up momentum is testing the compatibility of the newer, narrow-spectrum pesticides with biological control agents. Biological control was much more difficult in the past because of the consistent use of broad-spectrum insecticides and miticides. However, there are more and more examples of successful biological control of ornamental pests when used in an integrated pest management program. With the narrower spectrum of activity of the pesticides and the pest management restrictions on the label, many in the industry want to know the toxicity of their products against the more common biological control organisms sold commercially. The use of alternatives like biological control and IGRs early in a cropping cycle for some ornamentals will also prolong the efficacy of these newer pesticides.

I know that pesticide rotation may be a confusing issue to some. To start with, pesticide rotation should occur by chemical class, and there's plenty of published information now on pesticide chemical classes, but not much yet on what to start with and which to rotate to. A proper rotation scheme will most likely have to be designed specifically for each pest and host. As a simple example, there are not many pesticides to rotate amongst when trying to control the leafminer on chrysanthemums. Using an IGR like Citation early, possibly in combination with a parasitoid, will delay any chance of resistance buildup in the greenhouse. IGRs are compatible with many beneficials because they are usually deployed as adults, which are not susceptible. Following the IGR, a rotation to a more conventional pesticide like a pyrethroid or OP followed by Avid in the last stages of the crop is a good rotation scheme. More to come.

There…now I'm going to go out and see if I can find some nice, early, pest-free, Thanksgiving Day poinsettias. Happy holidays! GPN

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