Phytotoxicity of Insecticides, Part 2

Research and News on the latest pest management techniques

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Pest Talks

COMING UP THIS WEEK:

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What the ... ?

I'm kind of jealous of my buddy Aaron Palmateer, plant pathologist extraordinaire and shaker and mover at Harrell's. Aaron lives near the Everglades and Robert Is Here. The latter is a beloved family business that sells my favorite tropical fruits, and makes the most tasty and exotic milk shakes. (Long live the guanabana!) I hit Robert Is Here just about every weekend when I worked as a post-doctoral researcher in Homestead and Miami.

The Everglades (but not the mosquitoes) and Robert Is Here are good enough reasons for my jealousy. Here's another reason: Aaron also lives in the capital of the oddest-looking insects, both native and invasive. Here's one Aaron shared with me last week on cassia or a related legume species.

What are these colorful critters?

Insecticide Phyto, Part 2

This is a continuation of my summary of insecticide phytotoxicity information. (See last week's newsletter for Part 1.)

Disclaimers, again: The information I've gathered here is for quick reference only, so you must read the labels to find the crop safety of the products. Better yet, do a trial on your own to make sure a new product is indeed safe on your crops.

Plant species with phytotoxic concerns are listed for each product:

Magus (fenazaquin): Use caution when use on roses.

Mainspring Xtra (cyantraniliprole + thiamethoxam): Applications to yellow varieties of honey locust (*Gleditsia triacanthos*) may cause temporary leaf chlorosis and leaf drop. Also, use on linden or basswood (tilia) is prohibited. These restrictions also appear on Flagship 25WG (thiamethoxam) label.

Malathion 8 Flowable (malathion): Ferns (Boston, maidenhair and pteris), some crassula species and canaert juniper. Spotting or discoloration of fruit or foliage can occur on various crops under high temperature, excessive runoff and other conditions.

Marathon 1% G and Marathon II (imidacloprid): Cannot be applied to linden, brasswood or any tilia species. Not necessarily due to phytotoxicity, but likely for pollinator protection.

M-Pede (potassium salts of fatty acids): Horse chestnut, Japanese maple, mountain ash, cherimoya, bleeding heart and sweetpeas. The label also recommends testing before use on bald cypress, begonia, chrysanthemum, crown-of-thorns (and other euphorbia species), cucumber, ferns, narrow-leaf evergreens, dieffenbachia, fuschia, gardenia, impatiens, jade plant, lantana, ornamental ivy, palms, poinsettia, redbud, river birch, schefflera, zebra plant and some succulents. Flowers of many common ornamentals—including African violet, azalea, rose and orchid—may also be damaged.

Neemix 4.5 (azadirachtin): Comice pears and other sensitive pear varieties, as well as wilted or stressed plants or newly transplanted material prior to root establishment.

Nufarm Chlorpyrifos SPC 4 (chlorpyrifos): Caution when used on azaleas, camellias, poinsettias, rose bushes and variegated ivy.

Orthene TTO 97 Spray (acephate): Huckleberry, Balm of Gilead, cottonwood, Lombardy poplar and *Viburnum suspensum*. Use caution when used on some chrysanthemum varieties (Albatross, Bonnie Jean, Dixie, Garland, Gem, Iceberg, Pride, Showoff, Statesman, Tally Ho, Westward Ho and Wild Honey) and crabapple varieties (Hopa, Ichonoski, *Malus floribunda*, Pink Perfection, Red Wine and Snow Cloud). Certain foliage plants—including *Bletchum gibbum*, *Cissus antarctica*, *Ficus triangularis*, *Fittonia verchaffeltii*, *Maranta leuconeura kerchoveana*, *Pachystachya lutea*, *Plectranthus australis*, *Polypodium aureus*, *Polystichum*, *Pteris ensiformis* and *Tolmiea menziesii*—may be sensitive.

Pedestal (novaluron): Poinsettias.

Perm-Up 3.2 EC (permethrin): Marginal leaf burn may occur on salvia, dieffenbachia and pteris fern. Direct contact with blooming plants may cause necrosis on petals.

Pradia (cyclaniliprole + flonicamid): Certain pansy varieties. IR-4's crop safety trials did not detect injury on pansy and geranium; check the report for varieties.

Pylon and Pylon TR (chlorfenapyr): Dianthus (carnations, pinks and Sweet William), kalanchoe, poinsettia, roses, salvia, zinnia and rhododendrons/azaleas.

Safari 20 SG (dinotefuran): Linden, basswood or other tilia. This is likely for pollinator protection.

Sevin XLR Plus (carbaryl): Boston ivy, Virginia creeper and maidenhair fern. Injury may also occur on Virginia and sand pines, and Early Dawn and Sunrise varieties of strawberries.

Savate (spiromesifen): Geranium (*Pelargonium* sp.), peperomia, dracaena and rose (variety Classy, Attache and Vogue). Insufficient tolerance information for lily-of-the-Incas (alstroemeria), New Guinea impatiens, bacopa, English ivy, cyclamen, argyranthemum, hydrangea, matthiola, Mexican heather, lobelia, fuchsia, cordyline, neanthebella palm and primula. Do not apply more than 2 fl. oz. per 100 gal. per application cycle to chrysanthemum, Shasta daisy, snapdragon, impatiens, gerbera daisy or marigold.

Shuttle (acequinocyl): Exercise caution when used on certain varieties of impatiens and miniature roses.

Spear-T (GS-omega/kappa-Hxtx-Hv1a): Use caution when dipping geranium, petunia and salvia cuttings.

SuffOil-X (mineral oil): Use caution and reduced dosage on Japanese maple, Amur maple and black walnut in the summer, and on sugar maple and redbud for dormant applications. Oil may remove the glaucous bloom from blue spruces (Colorado and Koster).

Sultan (cyflumetofen): Do not use on plants exhibiting stress symptoms, such as stunting, wilting, leaf burn or abnormal growth. Use an adjuvant to mitigate deposition of spray residue on certain plants, such as poinsettia. Impatiens may be damaged when applied at two or four times the label rates, according to IR-4's crop safety trials.

Tame 2.4 EC (fenpropathrin): Do not use high gallonage applications to certain chrysanthemum varieties and chrysanthemums and roses with open flowers. Do not mix with Orthene (acephate) when used on poinsettias after bract formation.

TetraCURB MAX (castor oil + rosemary oil + clove oil + peppermint oil): Do not apply on plants under stress or when temperature is 90F or above.

TetraSan 5 WDG (etoxazole): Poinsettia after bract formation.

Triact 70 (clarified hydrophobic extract of neem oil): Flowers of impatiens, fuchsia, hibiscus and rose. Also, ornamental olive trees, some carnation varieties, wilted or stressed plants, or newly transplanted materials prior to root establishment. Applications to poinsettias and cut roses aren't recommended.

Ventigra (afidopyropen): Coleus (Rustic Orange), *Ficus benjamina* and poinsettia at bract formation. May occasionally cause discoloration to flowers of impatiens and petunia. IR-4's crop safety summary for afidopyropen indicated that injury may occur on certain cultivars of columbine and dahlia, but additional testing is needed.

No Phyto Noted for These Products

No specific phytotoxicity issues are noted on the following products:

- Agree WG (*Bacillus thuringiensis* subsp. *aizawai*)
- Amdro Pro fire ant bait (hydramethylnon)
- Confirm 2F (tebufenozide)
- Extinguish fire ant bait (s-methoprene)
- Extinguish Plus fire ant bait (hydramethylnon + s-methoprene)
- Intrepid 2F (methoxyfenozide)
- LALGUARD M52 OD (*Metarhizium brunneum*)
- Mainspring GNL (cyantraniliprole)
- Mavrik Aquaflow (tau-fluvalinate)
- Meridian 0.33G (thiamethoxam)
- Millenium (*Steinernema carpocapsae*)
- Nemasys (*Steinernema feltiae*)
- Nemasys L (*Steinernema kraussei*)
- Notavo (clofentezine)
- OnyxPro (bifenthrin)
- Overture 35 WP (pyridalyl): IR-4's crop safety trials didn't detect any injury on some common ornamental plant species, including begonia, chrysanthemum, gerbera daisy, impatiens, marigold, petunia, verbena and zinnia. Mark Smith premptedly wrote in to note that he always advise adding a high-quality surfactant, such as Capsil, to further reduce the chance of phytotoxicity.
- Pounce 25 WP (permethrin)
- PyGanic EC 5.0 II (pyrethrins)
- Pyrethrum TR (pyrethrins)
- Rycar (pyrifluquinazon): IR-4's crop safety trials didn't detect injury on 23 plant taxa. These taxa have been included on the label except bacopa, calibrachoa, dracaena, fuschia and ivy.
- Sanmite SC (pyridaben)
- Sarisa (cyclaniliprole)
- Scimitar GC (lambda-cyhalothrin)
- Siesta fire ant bait (metaflumizone)
- Sirocco (abamectin + bifenazate)
- Spear-Lep (GS-omega/kappa-Hxtx-Hv1a)
- Talstar Nursery Granular (bifenthrin)
- Talstar Select Insecticide (bifenthrin)
- Talus 70DF (buprofezin)
- Taurus Trio G (fipronil + bifenthrin + lambda-cyhalothrin)
- TopChoice (fipronil)
- TriStar 8.5 SL (acetamiprid)
- Ultra-Pure Oil (mineral oil)
- Velifer (*Beauveria bassiana*)
- Venerate XC (heat-killed *Burkholderia* species)
- Vykenda (isocycloseram): IR-4's crop safety trials found no injury or minimal injury on impatiens, petunia and marigold.
- XenTari Biological Insecticide Dry Flowable (*Bacillus thuringiensis* subsp. *aizawai*)
- XXpire (sulfoxaflor + spinetoram)

I'll move on to the fungicides in the next issue.

Tackling INSV & TSWV

I want to direct y'all to Bill Calkins' *Tech On Demand* newsletter just in case you don't subscribe to it. (Why don't you?)

Bill talked about three issues that everyone should be watching out for this time of the year: aphids, impatiens necrotic spot virus (INSV) and tomato spotted wilt virus (TSWV). I'm not going to repeat the information Bill has provided about aphids, but certainly check it out since there's valuable information on how to scout for aphids.

A symptom of tomato spotted wilt virus infection on tomato. (Source: *Tech On Demand*.)

Both viruses are transmitted by thrips, which are getting active now. But thrips aren't the only way the viruses can get into the greenhouse. Infected plants that are otherwise not showing the typical symptoms of INSV and TSWV (i.e. asymptomatic plants) can also introduce the viruses into the greenhouse and they'll spread if there are resident thrips. Bill has provided a link to an e-GRO pictoral guide to INSV symptoms from Nora Catlin and Margery Daughtrey of Cornell Extension. Any dudpicious plants should be tested with immunostrips, which are widely available from (for example) Agdia.

Since there's no cure for viral diseases, it's very important for you to find and quickly dispose of the infected plants. I would suggest testing the asymptmatic plants in the same batch and dispose plants that are tested positive or (perhaps a bit extreme) all plants in the same batch.

Thrips management is important to prevent INSV and TSWV spread. Start treatment as soon as thrips are found, whether they're hiding in the flowers or leaves or are stuck on sticky cards. There are options in quickly reducing thrips population. My favorites are Hachi-Hachi SC (tolfenpyrad), Overture (pyridalyl), Pylon (chlorfenapyr), Aria (flonicamid), Mainspring (cyclaniliprole), Tristar (acetamiprid) and tank mix of

abamectin + bifenthrin.

I'll also throw in Conserve (spinosad) or XXpire (sulfoxaflor + spinetoram) since I'm still seeing good efficacy with them despite concerns over resistance to insecticides in IRAC Group 5.

I'm sure you have your own favorite program for thrips; do that early and consistently. And don't forget biological control. When done consistently, biological control can be effective in preventing a blowout of thrips.

Answer to "What the ... ?"

If you guessed colorful thorns on some kind of plant, well, sorry, no prize for you. But you're sort of … close?

Those aren't colorful thorns on a branch, but thorn bugs, *Umbonia crassicornis*. The thorn bug is a species of treehopper and fairly common in South Florida. Don't try to match the critters in the pictures above to those you may find online. Apparently, this species has several color forms. This specimen below looks quite different from the one in Aaron's picture, but they're the same species!

A different color form of the thorn bug. (Photo credit: Lyle Buss, University of Florida.)

Plant species in the legume family are major hosts. Infestations were found on cassia, powder-puff, royal poinciana, albizzia, acacia, tamarind and other species. They're also found feeding on hibiscus and jacaranda, according to this fact sheet from the University of Florida. I can see how a huge number of thorn bugs can suck the life out of a plant.

The fact sheet also states that thorn bugs didn't become abundant until the last 15 years, even though

they've been known in the area since the species' description in 1843. It seems like this species is spreading. But why? That's an interesting question to think about.

I don't think this is a species that needs management, unless the honeydew and sooty mold they produce is getting out of hand or is impacting plant health. Interesting bug, though.

See y'all later!

JC Chong
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PestTalks

This e-mail received by 27,847 subscribers like you!