

Floriculture IPM Notes

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Current Situation...

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The risk of pest damage, during early stages of propagation, is high! Vigilance now will limit losses, improve crop uniformity and overall vigor and quality.

How will the unseasonably mild temperatures in early winter affect the survival of insect pests and pathogens? In pondering the possibilities, the only certainty is uncertainty! Diligent monitoring and sanitation is well worth the time invested and it's the best insurance against unnecessary pest battles later in the season.



Symptoms of INSV on vegetatively propagated lobelia.

Image Jim Willmott

Be alert for: **downy mildew** on bacopa, coleus, impatiens, and argyranthemum; **black root rot** on vinca, calibrachoa, petunia, pansy, and others; **INSV** on *Impatiens wallerana* and New Guinea impatiens, lobelia, and others. **Cyclamen mites** have been more common in recent seasons and infest many crops, especially New Guinea impatiens.



Cyclamen mites often cause distorted growth of young developing tissue as shown here on a New Guinea impatiens.

Photo Dan Gilrein

Detecting problems on arrival is key since suppliers will resolve problems if they believe they are at fault. Don't expect suppliers to be as receptive if you report problems weeks later when your greenhouse could be the source. Additionally, identifying problems that may just involve a few flats will allow action to prevent spreading them throughout your whole operation via mixed combination planters.

Insignia Fungicide registered for use on Ornamentals

Nora Catlin, Cornell Cooperative Extension of Suffolk County

Insignia (BASF Corp.), a systemic broad-spectrum fungicide previously only registered for use on turfgrass, is now registered in NY for use on ornamental plants. Insignia has the following use sites listed for ornamental plants on the label: outdoor nurseries, retail nurseries, greenhouses, lath- and shade-houses and other enclosed structures, containers, residential and commercial landscapes, interiorscapes, and recreational areas including golf courses. Insignia is a restricted use pesticide.

Insignia is labeled for application to manage certain anthracnoses (*Gloeosporium*, *Colletotrichum*), Monolinia blossom blight, crown and basal rots (*Rhizoctonia*, *Pythium*, *Phytophthora*, *Fusarium*), leaf spots (*Alternaria*, *Cercospora*, *Mycosphaerella*, *Didymellina*, *Ramularia*, *Septoria*, *Diplocarpon rosae*, *Entomosporium*, powdery mildews (*Erysiphe*, *Microsphaera*, *Oidium*, *Phyllactinia*, *Podosphaera*, *Sphaeotheca*, *Unicula*), *Pythium* and *Phytophthora* aerial blight, *Rhizoctonia* blight, *Botrytis* rot of tulip, *Sclerotinia* rot, downy mildews (*Peronospora*), rusts (*Puccinia*, *Gymnosporangium*, *Melampsora*), scab (*Venturia*, *Cladosporium*). Insignia is also labeled as a preventative drench of soilborne diseases caused by *Fusarium*, *Phytophthora*, *Pythium*, and *Rhizoctonia*, and dip treatments to manage *Fusarium* and *Penicillium* bulb rot and mold.

Do not apply to or allow drift to reach impatiens, petunia, wintercreeper (*Euonymus vegetus*), nine bark (*Physocarpus opulifolius*), or the grape varieties Concord, Worden, Fredonia and Niagra, as injury may result. Insignia is not labeled to treat any food or feed crops.

Insignia is a strobilurin, or QoI, fungicide and should be rotated with a chemical with an alternate mode of action to avoid the development of resistant fungi. Do not rotate with other strobilurin fungicides such as azoxystrobin (e.g. Heritage) or trifloxystrobin (e.g. Compass). As always, read and follow all label instructions and recommendations for handling and application.

Diagnosis of Diseases on Greenhouse Flower Crops in 2006

Margery Daughtrey, Cornell University

There were 171 samples received from greenhouses for diagnosis in 2006. *Botrytis* blight affected many crops, including poinsettia, fuchsia and catharanthus. *Rhizopus* stem rot was a serious early-season problem on catharanthus, occurring along with *Botrytis* to cause stem cankers; *Rhizopus* was also associated with a zonal geranium problem in which fungus gnats were also a contributing factor. Powdery mildew did not occur on poinsettias in 2006, but was troublesome on ageratum, begonia and verbena—and also on Ming aralia in an interiorscape. In one case, potted cucumber acquired powdery mildew from a verbena being grown in the same greenhouse, as both are susceptible to the same powdery mildew, *Podosphaera xanthii*. Downy mildew was a major problem on coleus during greenhouse production and in landscape plantings this year, causing leaf spots, flecking, twisting, and leaf drop (this new disease was first observed on



Powdery mildew on Dahlietta. Photo Jim Willmott

Long Island in 2005). On impatiens, one case of downy mildew was seen, as well as some *Alternaria* and *Pseudomonas* leaf spots. Other fungal leaf infections included *Cercospora* on pansy and geranium rust; there was also one case of the federally-quarantined chrysanthemum white rust in 2006. Bacterial diseases included *Xanthomonas* leaf spots on begonia and ornamental pepper, bacterial blight on geranium, *Pseudomonas* leaf spot on colocasia, an *Erwinia* leaf spot on *Phalaenopsis* and what appeared to be a bacterial blight on nemesia. Impatiens necrotic spot virus (INSV) was the most significant virus problem: it was seen on angelonia, begonia, coleus, crossandra, impatiens, lipstick plant, New Guinea impatiens and salvia. Other virus problems identified were a combination of calibrachoa mottle virus and TMV in calibrachoa and a combination of cymbidium mosaic and odontoglossum ring spot in *Phalaenopsis*. Root problems included black root rot caused by *Thielaviopsis basicola*, which caused losses on calibrachoa, gaillardia, petunia, catharanthus, pansy and lavender. *Pythium* species were isolated from rotted areas of root systems of chrysanthemum, poinsettia, New Guinea impatiens, ivy geranium, zonal geranium, primula, and xanthosoma. *Phytophthora* species caused losses in English ivy, lavender, and verbena. *Rhizoctonia* affected begonia, poinsettia, New Guinea impatiens and petunia.



The random stunting and yellowing on these petunias was caused by *Thielaviopsis basicola*. Photo Jim Willmott

Pollen Reduces Effectiveness of *Beauveria bassiana* for Western Flower Thrips in Impatiens

While it is generally recognized that pollen promotes thrips populations, recent research demonstrated that it also limits the efficacy of *Beauveria bassiana* against Western flower thrips in impatiens crops. The authors suggest that if *B. bassiana* is to be used successfully as a thrips management tool in impatiens crops, it must be applied before pollen becomes present and targeted against immature thrips stages to kill them before reproductive maturity.

Source: Ugine, T.A., Wraight, S.P., and Sanderson, J.P. 2006. Influences of impatiens pollen and exposure to *Beauveria bassiana* on bionomics of western flower thrips *Frankliniella occidentalis*. *Biological Control* 37(2): 186-195.

Greenhouse Industry in PA Continues to Profit with IPM

UNIVERSITY PARK, Pa. - The greenhouse industry in Pennsylvania is a growing one, with the state ranked sixth in the U.S. in greenhouse production with over \$175 million per year in the production of vegetables, flowers and herbs.

"Those numbers should continue to increase because greenhouses allow growers to extend the growing season to serve urban and suburban markets with fresh, locally produced food and plants", says Cathy Thomas, Pennsylvania IPM coordinator and biocontrol specialist. "In addition, many farmers are shifting to greenhouse production as a minor crop to replace or supplement income lost from low market prices in other crops. Greenhouse agriculture is also a popular choice among Amish and Mennonite growers in the state because a greenhouse operation doesn't require much space and farmland is becoming harder to obtain."

As with any type of crop, agricultural pests can be limiting factor for yield and quality and can limit a farmer's profit. Pests can include insects, fungal disease and weeds. In the past, pesticides were

the mainstay of pest control, but recently consumers are demanding crops grown with fewer pesticides. Integrated pest management (IPM) allows the production of a healthy and profitable crop while reducing, and sometimes eliminating, pesticide use.

The Pennsylvania IPM Program (PA IPM) has supported the greenhouse industry in Pennsylvania for over 15 years by providing research-based recommendations to greenhouse growers. A greenhouse IPM program follows a biointensive strategy that relies upon sanitation, mechanical barriers, biocontrol and scouting. Targeted pesticides are used only when necessary.

Biocontrol uses beneficial organisms (good bugs) to control pests. Since most pests have various parasites, diseases and predators that can kill them, beneficial organisms can be purchased and released into greenhouses as a means of control. According to Thomas, using biocontrols within an IPM program is catching on because many growers are looking for viable alternatives to using pesticides.

In a new project, Thomas will be showing vegetable greenhouse growers how a successful IPM/biocontrol system can replace traditional pesticides. Through use of biologically compatible pesticides combined with biological controls, growers can slow pesticide resistance in target pests, create a safer working environment for the family and farm workers, and maintain quality crops while increasing profitability when marketed as "pesticide free."

According to Thomas, growers will meet with an IPM/biocontrol specialist on a weekly basis starting at the beginning of the growing season. They'll be taught pest-scouting techniques and identification, lifecycles of pests and biocontrols, and proper record keeping to monitor pest populations and determine pest thresholds. "The program will allow growers to identify pest problems specific to their location and develop a practical plan of control that fits into the production constraints of their own farm," Thomas explains.

In addition to its support of greenhouse projects, the PA IPM program has helped to develop many resources for greenhouse growers, including a pest 'problem solver' web site (<http://paipm.cas.psu.edu/ProblemSolvers/grnhseProblSolv.htm>) and the manual, "Greenhouse IPM with an Emphasis on Biocontrol". The manual was developed to help greenhouse growers implement biocontrol and IPM. The full-color publication (number AGRS-96) contains almost 100 photos and is available as a free downloadable PDF file from Web site <http://paipm.cas.psu.edu/ghmanual.html>. To order a hard copy, contact Penn State's Publications Distribution Center toll free at 1-877-345-0691. For additional greenhouse IPM resources, see the PA IPM Program's Greenhouse IPM Web site at <http://paipm.cas.psu.edu/green/greenhouse.html>. For more information, contact Thomas at (717) 772-5204 or e-mail caththomas@state.pa.us.

The Pennsylvania IPM program is a collaboration between the Pennsylvania State University and the Pennsylvania Department of Agriculture aimed at promoting integrated pest management in both agricultural and urban settings. For more information, contact the program at (814) 865-2839, or Web site <http://www.paipm.org>. To view our archived news releases, see Web site <http://paipm.cas.psu.edu/newsrelease.html>.

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New Jersey Pesticide Container Recycling for 2007

The New Jersey Department of Agriculture, in partnership with the Cumberland County Improvement Authority, will continue to offer free recycling of empty plastic pesticide containers on specific collection dates in 2007. The collection program will be held at the Cumberland County Solid Waste Complex in the Township of Deerfield. This is a free program and will save pesticide license holders in excess of \$61/ton in landfill tipping fees.

Non-refillable, high-density polyethylene # 2 (HDPE #2) containers used by agricultural,

professional and commercial pesticide applicators will be accepted at the collection sites. Containers must be no larger than 55 gallons and properly rinsed.

The program is open to anyone who holds a New Jersey Department of Environmental Protection pesticide license and to state, county and municipal government agencies. Participants must follow the processing guide or material will be rejected.

One core credit will be issued to pesticide license holders who participate in the program. To receive credit, participants must bring their pesticide license to the collection site and must follow the processing steps.

If growers have plastic pails, bulb crates, or other plastics that are HDPE #2, contact the NJDA to determine if they are suitable for the recycling program and can be brought to the collection site.

The vehicles used to transport the pesticide containers to be recycled are not required to be licensed by DEP so long as the material is transported directly to the Solid Waste Complex.

Many of the pesticide containers arrive at the farm in cardboard boxes. Growers who wish to recycle the cardboard should flatten the cardboard boxes and bring them to the Solid Waste Complex and deposit them in the cardboard collection container located at the convenient center.

If you have any questions or need more details on the plastic pesticide container-recycling program, contact Karen Kritz, Recycling Program Manager, NJ Department of Agriculture, at (609) 984-2506.
2007 Collection Schedule

LOCATION: Cumberland County Solid Waste Complex
169 Jesse Bridge Road
(located off Route 55, Exit 29)
Deerfield, New Jersey

TIME: 9 a.m. to 12 Noon

DATES:
Friday, May 25
Friday, June 29
Friday, July 27
Friday, August 31
Friday September 28
Friday October 26
Friday November 16

Plastic Pesticide Container Processing Steps:

1. All pesticide containers must be either triple rinsed or pressure rinsed and drained;
2. All pesticide containers must be free of residue (other than stains);
3. Lids should be removed;
4. The MSDS booklet must be removed (it is not necessary to remove all of the paper labels glued to the container);
5. Only non-refillable pesticide containers will be accepted – drill a ¼-inch hole in the bottom of the container or with a utility knife make a 6-inch slit in the bottom of the container so the container will not hold liquids;
6. Only pesticide containers embossed with HDPE and the recycling #2 will be accepted;
7. Pesticide containers up to 55 gallons in capacity will be accepted but we are asking that if all possible they be cut in half, quarters, or eighths. This can be accomplished using a sawsall, chainsaw, circular saw, or jigsaw; and
8. Pesticide containers must have originally held an EPA registered pesticide.

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Items That Will Not Be Accepted and Will be Returned to the Recipient

Pesticide containers with dried formulation on the container, pour spout or the spout threads;

Pesticide containers with any liquid residue;

Pesticide containers where the insides are caked with dried residue;

Mini-bulk, saddle tanks and nurse tanks, which can be made of fiberglass;

Pesticide containers with lids or lids by themselves;

Containers that held any type of petroleum oil product or anti freeze.

Any agricultural, professional and commercial applicator of crop protection and other pesticide products who generate very large quantities of agricultural crop protection containers can contact USAg Recycling (www.usagrecycling.com) at 1- 800-654-3145 for direct service. USAg, an approved vendor of the Ag Container Recycling Council (www.acrecycle.org), will come to your site at no cost.

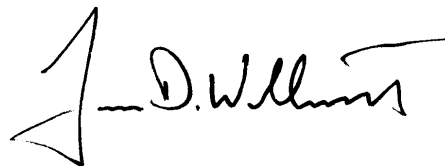
This publication contains pesticide recommendations. Changes in pesticide regulations occur frequently and human errors are possible. Some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold or applied in New York or New Jersey must be registered with the New York State DEC or New Jersey DEP. Questions concerning the legality and registration status for pesticide use should be directed to the appropriate Cooperative Extension Specialist or your regional DEP or DEC office. **READ THE LABEL BEFORE APPLYING ANY PESTICIDE.**

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Comments and suggestions welcome Please contact the editor:



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Photo Mary Hausbeck

Don't confuse downy with powdery mildew.



Downy mildew symptoms shown on coleus (upper left) can be subtle, but under moist conditions the pathogen sporulates on lower leaf surfaces (upper right). Powdery mildew occurs on the upper leaf surfaces.