Volume 5, Issue 4

April, 2006

CHASE RESEARCH GARDENS, INC.

CHASE NEWS

SAF Pest Management Conference 2006

Last month I reviewed some of the highlights from the Society of American Florists' Pest Management Conference held in February of this year. I concentrated on some of the pathology reports and this month I am concentrating on some of the entomology reports.

Dr. Ron Oetting, Professor of Entomology at the University of Georgia covered fungus gnats and shore flies. He started with a comparison of the two insects since they are often mistaken for each other. Ron described how the fungus gnat larvae feed on roots of healthy and diseased plants. Slow growing plants are especially susceptible to their damage since they do not recover rapidly. Fungus gnat larvae and adults (as well as fruit flies, shore flies and moth flies) are effective carriers of many soil-borne fungi further damaging the plants.

Control of fungus gnats relies heavily on insecticides especially insect growth regulators (IGRs). Reducing conditions that favor fungus gnat development such as keeping the potting medium surface as dry as possible is always the best first step. Ron reports that biological control with bacteria (*Bacillus*), predatory mites (*Hypoaspis*), and nematodes (*Steinernema*) has given mixed results. The shelf life of the nematode is apparently the largest concern. The sage of larvae present and host plant can also affect efficacy of many biological control agents.

Dr. Oetting reports excellent results with Flagship, Safari and Marathon (all neonicotinoids). Use of IGRs like Adept, Citation, Distance ad Enstar II each give good control of the juvenile forms but not adults.

Jim Bethke, Entomologist at the University of California at Riverside reviewed the threat of the Q-biotype of the sweet potato whitefly. Jim gave an overview of the introduction of this new pest including development of the special taskforce and technical advisory committee on Q-biotype. He reported on his trials at UCR for chemical control of his strain (table below).

Degree of control			
100%	90-100%	70-80%	50-60%
Avid + Talstar	Avid	Celero	Talstar
Judo	Distance	Dursban	Talus
	Flagship	Marathon II	
	Safari	Tame	
	Sanmite		
	Tristar		

Bethke gave is recommendation that a management strategy for Q-biotype is critically needed. Jim recommended the following website as an excellent source of answers for this serious insect pest: http://www.mrec.ifas.ufl.edu/LSO/bemisia/bemisia.htm.

Dr. Oetting also gave report on mealy bugs. His first control strategy is to throw away heavily infested plants. Ron has been testing many materials for control of different mealybugs. He reports good results with Orthene, Talstar and Horticultural oils on Madeira mealybugs. IGRs, Talus and Enstar II provided excellent control of this Mealybug in a light infestation. Citrus mealybugs are the most common greenhouse mealybug. Dr. Oetting's trials on this pest show excellent results with Aria, Flagship, Orthene, Safari, Talus and Tristar.

Please consider attending this conference next time it is announced. It is the single greatest concentration of ornamental pest management information available and an excellent place to meet with other growers and share your trials and tribulations.

Inside this issue:

Bacterial Blight—Systemic vs. Localized

Probably your first question is—Why do I care if a disease is systemic or localized? The answer is that the steps you take to control it will be very different. If you choose steps that work on localized spots and the disease happens to be systemic you may achieve some short-term success but in the end it will not be enough. So should you choose to use the more stringent steps needed for systemic infections for a localized infection you will be successful but the cost will be higher than needed. In either case, you will be wasting money.

The second question is what is the difference between localized and systemic infections with bacteria? Local infections start from moving bacteria with water splash or by hand or cutting instruments. The infection starts in a single area where the leaf is damaged or where there is a natural entry point (like hydathodes along the leaf edges). The symptoms that develop from localized infections are often scattered on the leaf surface like the pictures show to the right.

In contrast, systemic infections sometimes cause wilting (D). Bacteria make gums and other polysaccharides that plug the vessels and cause infected stems to wilt. It is common for only a few stems in a pot to show this symptom. Another sign of systemic infection is some leaves on a plant show yellowing and black spots all at once (E). Xanthomonas infections in wallflower are sometimes localized from rainfall or irrigation water splashing them but can also be systemic when cutting become infected early in the propagation routine. It is also likely for cuttings from systemically infected plants to be systemically infected.

If you suspect you have systemic bacterial infection you must discard the plants. They will not be affected by bactericides and should never be sued for stock plants. Localized infections can be controlled by eliminating overhead water to avoid new spots and routine sprays of copper (like Phyton 27 or Camelot) alternated with Rhapsody.

The two Lavender species (A and B) and the rosemary (C) each show typical symptoms of a localized infection with Xanthomonas. Spots are scattered all over the leaf surface and have started on edges, tips and even in centers. By the way, *Pseudomonas* spp. also cause these types of spots on lavender and rosemary. Xanthomonas causing systemic infection on lavender (D) and wallflower (E). Note wilt on the lavender (D) and yellowing leaves (E) on the wallflower.

Eradication of Snapdragon and Pansy Downy Mildews

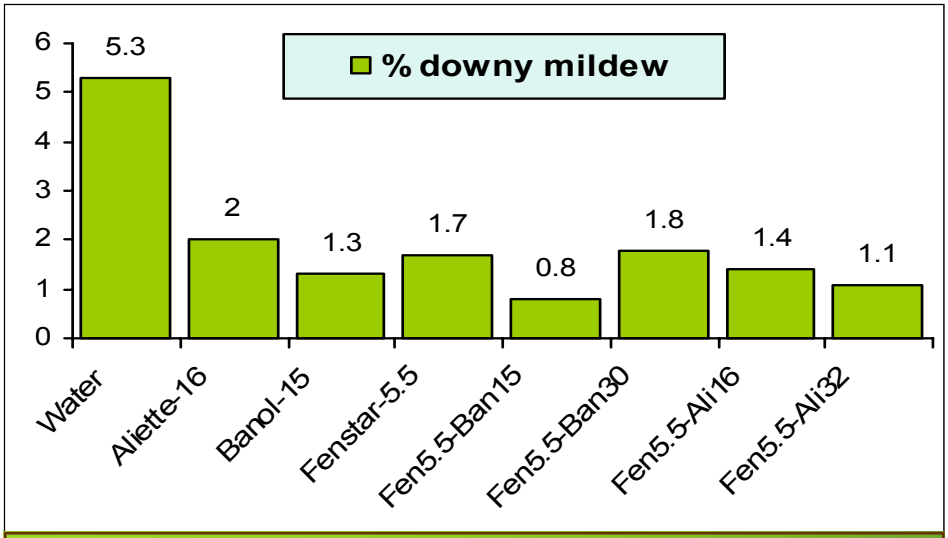
We have been working on fenamidone (Fenstar) for 8 years. The fungicide was first developed by Bayer (then Rhone-Poulenc) and has most recently transferred to OHP. Fenstar woks on *Pythium, Phytophthora* and downy mildew.

As one final step before reaching the market we helped test decreased rates of Fenstar alone and in combination with Aliette and Banol (propamocarb). An opportunity arose in February to work on snapdragons infected with downy mildew (*Peronospora antirrhini*). The plants were sprayed three times on a weekly interval and the percent sporulation was evaluated every week. The data are presented in the graph for the final rating. The rates are given in the table in oz/100 gal.

After the first spray, disease decreased for many of the treatments but differences were not statistically significant until the third application. The mean % of active downy mildew sporulation for all fungicides was significantly different than for the water sprayed control. There were no differences between the fungicide treatments although least sporulation was seen with the combination of Fenstar with the lower rate of was seen with the combination of Fenstar with the lower rate of Banol.

This trial shows that the 5.5 oz/100 gal of Fenstar was significantly effective in eradicating snapdragons downy mildew.. Adding Banol at 15 oz/100 gal was slightly better although not significantly better according to statistics. In a 2005 report from S. N Wegulo, downy mildew on statice was best with Fenstar applied on a 10 day interval at 7 oz/100 gal. Use of Fenstar at 14 oz per 100 gal was not statistically superior. It appears that the rate of Fenstar should perhaps be lower for downy mildew than for the soil-borne pathogens, *Pythium* and *Phytophthora*. Tests on these pathogens have typically evaluated 14-28 oz/100 gal of Fenstar.

The second eradication trial we completed recently was performed on pansies with an active downy mildew infection (*Peronospora violae*). Plants were sprayed weekly three times and we rated % downy mildew infection every week right before the fungicide application. The fungicides we tested and rates are given in the table to the right.



Test 1. Effect of Fenstar combinations on eradication of snapdragon downy mildew. Treatments are as follows: Aliette (16 oz/100 gal), Banol (15 oz/100 gal), Fenstar (5.5 oz/100gal), Fen5.5-Ban15 = Fenstar (5.5 oz/100gal) and Banol (15 oz/100 gal), Fen5.5-Ban30 = Fenstar (5.5 oz/100 gal) and Banol (30 oz/100 gal), Fen5.5-Ali16 = Fenstar (5.5 oz/100 gal) and Aliette 16 oz/100 gal) and Fen5.5-Ali32 = Fenstar (5.5 oz/100 gal) and Aliette (32 oz/100 gal).

After three applications, the percent reduction of active downy mildew sporulation was highest for plants treated with Insignia at 8 oz/100 gal and Stature DM at 6.4 oz/100 gal. All other products did reduce sporulation to a lesser degree. Aliette (16 oz/100 gal) was moderately effective reducing sporulation by 61%. Terrazole gave a similar result. Both Heritage and the experimental Cyazofamid reduced disease about 50% while Fenstar only reduced disease about 36%. Results on the snapdragon indicate that perhaps a combination of another fungicide with the 5.5 oz rate of Fenstar will give better results than use of this rate of Fenstar alone.

Most recently, we completed a third eradication trial. In this case, we tested ability of Subdue MAXX ad Heritage alone and in combination to eradicate pansy downy mildew. We applied products on a 14 or 30 day interval (Subdue MAXX at 1 oz and Heritage at 2 oz/100 gal). Other treatments were Subdue MAXX alone (0.5 and 1.0 oz/100 gal), Heritage (2 or 4 oz with 4 oz of Latron B) and combinations of Subdue MAXX at 0.5 or 1 oz with 2.0 oz of Heritage. We treated plants twice and then rated active sporulation as usual.

Treatment	Rate/ 100 gal	% reduction in downy mildew sporulation
Stature DM	6.4 oz	82%
Aliette	16 oz	61%
Cyazofamid	6 oz	50%
Fenstar	5.5 oz	36%
Heritage	2 oz	50%
Terrazole 35W	6 oz	60%
Insignia	8 oz	90%

Best reduction of sporulation was seen on plants treated with Subdue MAXX at 1 oz/100 gal with Heritage 2 oz/100 gal of (73%). Subdue MAXX at 1 oz alone and Heritage at 4 oz gave 66% reduction in sporulation. Other treatments resulted in 30-50% reduction.

These trials indicate that combinations of different fungicides are the most effective in eradicating some downy mildew outbreaks.

Recent Research Reports

Guava Rust is Gaining Ground. Uchida and Zhong have reported myrtle rust spreading throughout Hawaii on *Metrosideros* (Ohia). This rust (*Puccinia psidii*) is found on many members of the Myrtaceae including guava and eucalyptus. In mid 2005, the rust was found for the first time on *Syzygium, Eugenia* and *Psidium.* The rust has a wide host range in Florida, and Central and South America. We also saw an outbreak on *Myrtus communis* grown for cut foliage in California this last fall (photo below).

For a complete report see **Plant Disease 90(4):524.**

***Phlox paniculata* is found infected with Alfalfa Mosaic Virus (AMV).** Holcomb, Valverde and Gutierrez recently described a new virus disease on garden phlox. These researchers first found symptoms in 2001 and 2002 in routine garden surveys. Symptoms included bright yellow mosaic, chlorotic and necrotic ringspots and necrotic lines. Subsequent testing identified the cause as AMV. This virus can be transmitted by green peach aphid as well as through infected seed. Ajuga, petunia, sweet pea, zinnia, Japanese peony, Buddleia and lavender have each been found infected with AMV. Weeds such as lambsquarters, pokeweed, black nightshade and chickweed are also hosts of AMV and can act as sources of the virus in the garden or nursery. A complete report was published in April, 2006 in **HortScience 41(2):474-476.**

Root knot nematodes make Mouse-ear on Pecan worse. Nyczepir, Wood and Reilly have found that Pecans infected with root knot nematodes were more prone to development of nickel deficiency. This minor element is responsible for "mouse-ear" in a variety of crops including pecan and some species of birch. The parasitism of the nematode may impair root uptake of Ni as well as other nutrients resulting in nutrient deficiencies like mouse-ear. **HortScience 41(2):402-404.**

New Perennials are Affected by Bacterial Fasciation. Putnam and Miller reported on some ornamentals currently affected by the bacterium responsible for fasciation (*Rhodococcus fascians* = *Corynebacterium*). Since 2001, many plants are submitted to the Oregon State University Diagnostic Laboratory with symptoms of fasciation. The new hosts were: *Acanthus mollis, Campanula sarastro, Heliopsis helianthoides, Nemesia, Hosts, Verbascum, Veronica spicata* and *Viola.* For a complete report see: **Plant Disease 90(4):526.**

Bulb Research Update—Chastagner, Washington State University

Dr. Gary Chastagner is Professor of Plant Pathology at theWashingtons State University Puyallup Station. He performs trials each year on a variety of ornamentals including bulb crops like tulip, iris and daffodil. Gary works on the most important diseases of these crops including scorch (*Stagonospora*) on daffodil, gray bulb rot (*Rhizoctonia*) on bulbous iris and tulip, Mycosphaerella leaf spot on bulbous iris, Fire on lilies (*Botrytis elliptica*) and tulip (*B. tulipae*) and the postharvest blue mold on tulip and iris bulbs caused by *Penicillium.* The table to the right summarizes some of his field trials from 2005.

The best products for Stagonopsora and Mycosphaerella was Insignia (BAS500). We are expecting EPA registration on this new strobilurin from BASF in June of this year. Daconil Ultrex did give good control of Mycosphaerella but not Stagonospora in these trials.

Botrytis blight (fire) was best controlled with Chipco 26GT and Daconil Ultrex.

Finally, in furrow treatments for control of Rhizoctonia was not significantly effected in dr. Chastagner's trials in 2005. However, bulb yield was doubled by Medallion, Moncut (also labeled as Contrast) and the industry standard Terraclor.

Fungicide	*Stagonospora*	*Botrytis*	*Rhizoctonia*	*Mycosphaerella*
Chipco 26GT	None	Very good	Not tested	Some
Daconil Ultrex	None	Good	Not tested	Good
Insignia	Delayed disease	Some	Not tested	Very good
Medallion	Not tested	Some	Doubled yield	Not tested
Moncut	Not tested	Not tested	Doubled yield	Not tested
Switch	Delayed disease	Poor	Not tested	None
Terraclor	Not tested	Not tested	Doubled yield	Not tested

8031 Mt. Aukum Rd., Suite F.
Mt. Aukum, CA 95656-0529
(530)620-1624 (phone/FAX)
www.chaseresearchgardens.com