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CHASE RESEARCH GARDENS, INC.

CHASE NEWS

USDA/ARS Floriculture and Nursery Research Initiative

We have benefited from the research funded by the USDA/ARS Floriculture and Nursery Initiative that was started a number of years ago. One of the key research units is located at Michigan State University and run by Dr. Mary Hausbeck. Mary's research team has been involved in control of Phytophthora, Botrytis and Sphaceloma on floral crops from 2000-2005. She recently presented a report on the first project and an update on the current project (Novel strategies to manage water molds and floral blights affecting floral crops).

Downy Mildew—Dr. Hausbeck has concentrated on controlling this disease on both coleus and rose. The rose work is performed in Florida and the coleus work is performed in Michigan. Environmental monitoring and spore trapping are teaching us the conditions that promote spore release and subsequent disease development in both crops. Mary also has worked on chemical control of rose downy mildew with best results achieved with Daconil Weather Stik (1 pint/100 gal), Heritage (4 oz), Stature DM (12.8 oz) and Junction DF (3.5 lb). Additional work with combinations of these products and experimental products show real promise on this serious and difficult disease. The intervals of treatment were unfortunately not included in the report.

On Coleus, the best products were Stature DM (12.8 oz/100 gal and Junction DF (3.5 lb). There were many others tested but none were very impressive on this new downy mildew.

Pythium—Dr. Hausbeck's research team has also been busy working on Pythium root rot control for Geranium and Poinsettia. Truban 30WP (10 oz/100 gal) has remained very effective despite being used in our industry for more than 30 years. The active ingredient is Terrazole and if you live in California the maximum use rate is 6 oz (not 10!). Subdue MAXX (1 oz/100 gal) is very good in some trials but not others. Quite a number of new experimental fungicides are also under development (Cleary, Syngenta, Valent) and some show promise for Pythium control.

Phytophthora—Poinsettia, vinca (*Catharanthus*) and snapdragon have been tested for chemical control of Phytophthora root rot and foliar blight. Best control of Phytophthora root rot on poinsettia was achieved with Stature DM (6.4 oz/100 gal) followed by cyazofamid (under development from ISK BioSciences). In contrast, Aliette (12.8 oz/100 gal) was the best treatment in the Phytophthora aerial blight trial on vinca with Stature DM almost as effective. Finally, Insignia (16 oz/100gal) gave 100% prevention of Phytophthora root rot on snapdragon. Cyazofamid and Stature DM were also very effective in this trial.

Botrytis—Botrytis blight on geranium is the system Dr. Hausbeck reports on for this disease. Best control was achieved with Daconil Weather Stik (22 oz/100 gal) but remember this formulation is registered for outdoor use—not greenhouse where Daconil Ultrex is labeled. The trial also showed that a number of experimental products actually increased severity of Botrytis blight compared to the untreated controls. This is a common phenomenon in our Botrytis trials and has been linked to phytotoxicity.

Are you going to the OFA Short Course?

Be sure to check the program for your favorite speakers like Ray Cloyd, Margery Daughtrey, Jim Barrett, Lance Osborne and Mary Hausbeck.

There is a lot to learn!

Inside this issue:

Controlling Rhizoctonia Damping-off on *Celosia* and Cercospora leaf spot on *Mollucella*

In recent months, we have been testing the benefits of a single post-seeding sprench for disease control. We tested effects on development of a seed-borne disease (Cercospora leaf spot on *Mollucella*) back in May and decided to repeat the test and do another one. This time we did a trial on Celosia seeds and inoculated them with *Rhizoctonia solani* (the cause of damping-off).

Both trials were started by planting 15 seeds into 3.5 inch pots filled with Sunshine No. 1 potting medium. We followed with a fungicide sprench the next day. In the *Mollucella* trial we just waited for seed emergence and finally development of Cercospora leaf spot. We inoculated the Celosia trial with *R. solani* about three days after the fungicide drench and then waited for seedling emergence and signs of damping-off. The table gives results of both trials.

Treatment	Rate/ 100 gal	Disease (No. spots) Mollucella	Healthy plants (No./pot) Celosia
Water-non-inoculated	——	3.0 b	13.7 c
Water-inoculated	——	Not applicable	0.7 a
3336	8 oz	0.1 a	11.3 bc
3336	16 oz	1.0 a	11.2 bc
Medallion	1-2 oz	0.9 a	13.8 c
Heritage	0.9 oz	0.3 a	9.0 b
Insignia	2.5-4 oz	0.9 a	9.4 b
Terraclor	4 oz	Not tested	10.9 bc
Chipco 26019	16 oz	Not tested	3.2 a
Actinovate	6 oz	Not tested	1.4 a

Numbers in the same column followed by different letters are statistically different.

Each of the fungicides tested prevented development of Cercospora leaf spot on *Mollucella*. The only unexpected result was seen with Medallion since it failed to give significant control in the first trial but worked well in this trial (the same rate was used both trials).

The Celosia trial showed that optimal prevention of Rhizoctonia damping-off occurred when seedlings were treated with 3336, Medallion or Terraclor. Heritage and Insignia were effective to a lesser degree but Chipco 26019 and Actinovate failed to give significant control in this trial.

For some seed crops, a single fungicide drench will aid in control of seed-borne or other seedlings diseases.

Fungicide Effects on *Nandina* Quality and Severity of Phyllosticta Leaf Spot

Sometimes we help evaluate trials completed by nurserymen. Last spring we helped finish a trial on *Nandina* that was conducted to determine safety of different products. We found that they liners also had a leaf spot that turned out to be Phyllosticta when we cultured it in our labs. The liners were sprayed in flats (56 each) twice about a month apart and we rated plant quality as well as leaf spot severity on 7 April. Plant quality (ignoring leaf spots) was rated from 1 = dead to 5=excellent. Averages in this column with the same letter are not statistically significant using a mean separation analysis.

Treatment	Rate/ 100 gal	Plant quality	Phyllosticta leaf spot
Control	-----	2.8 a	Moderate severity
Heritage	4 oz	3.5 b	None
Heritage	8 oz	3.2 ab	None
Banner MAXX	6 oz	3.6 b	None
Banner MAXX	12 oz	3.3 ab	None
Protect T&O	16 oz	3.1 ab	Moderate severity
Protect T&O	32 oz	3.2 ab	Moderate severity
Compass O	4 oz	3.0 ab	None
Compass O	8 oz	3.0 ab	None

Numbers in the same column with different letters are statistically different.

None of the products tested damaged the top grade (quality of the *Nandina*). The control *Nandina* were poorer quality than those treated with Heritage at 4 oz and Banner MAXX at 6 oz.. The lower rates were generally safer than the higher rates and the higher rates of Heritage and Banner MAXX caused leaf curl damage. Control of the leaf spot was excellent with Heritage, Banner MAXX and Compass O at both rates tested. The leaf spot was already present when the trial started so this became an eradication trial. The two strobilurins (Compass O and Heritage) and the triazole (Banner MAXX) were very effective in eradication while mancozeb (Protect T&O) was ineffective. We have found that mancozeb generally works better in prevention than in eradication.

Eradicating Hypericum Rust

Stopping certain rust diseases can be an exercise in futility. We see this happen often in crops that grow densely and rust can get a foothold long before tits presence ins known. Hypericum rust is caused by *Uromyces triquetrus*. It has been very hard to control due the growth habit of the plant., Hypericum is widely used as a ground cover making a dense mass of leaves that repel water (and spray). The pustules usually form underneath the leaves further making their presence difficult to assess. Another form of the plant is used for cut foliage/flower production. In this case a bed with many plants may be 2-4 feet wide and reach 4 feet in height.

We have worked on this disease for about 8 years and find that prevention always works better than eradication. We finished a prevention trial a few months ago and decided to make double use of the plants, allowing them to become infected with rust. Then we tried to clean them up. The treatments, rates and intervals we used are given in the table above.

We tested Clevis (a combination of mancozeb and myclobutanil) with and without a wetting agent (Sync) and two different spray intervals. We also compared Phyton 27 to New Dimension (improved Phyton product). ZeroTol was applied once at 1% and then twice at 0.33%

Treatment	Rate/ 100 gal	Spray Interval	No. rust pustules
Water	——	7 days	38 ab
Clevis	16 oz	7 days	25 ab
Clevis and	16 oz each	7 days	20 ab
Clevis	16 oz	14 days	32 ab
Clevis and Sync	16 oz each	14 days	35 ab
New Dimension	25 oz	7 days	32 ab
Phyton 27	25 oz	7 days	26 ab
ZeroTol	1% once	7 days	35 ab
Heritage and	2 oz each	7 days	13 a

None of the treatments were statistically significant compared to the water-sprayed control. However, the least number of rust pustules occurred with Heritage and Latron B. This disease is very clearly difficult to eradicate and you should use preventative steps.

Some Pointers for Rust Eradication

- **Scout plants routinely and thoroughly—look for rust.**
- **Use a wetting agent to improve penetration of pustules.**
- **Apply fungicides on a 7-day interval until control is achieved.**
- **Use mancozeb products as preventatives not eradicants.**
- **Use Heritage as an eradicant and rotate with a sterol inhibitor (like Eagle).**

Host Range of Rust Isolates on Oregano and Mint in Florida

Stiles and Rayside reported recently on some work on *Puccinia menthae* (Plant Health Progress-2006-0417-01-RS). This rust species has been reported on spearmint, *Monarda*, water mint and oregano in California. Although the rust fungus appeared identical in form it obviously differed in their ability to infect these closely related plants. The difference may be important when deciding what plants to protect during an outbreak of mint rust.

Plant	Oregano rust isolate	Spearmint rust isolate
Oregano	Moderate	None
Sweet Marjoram	Moderate	None
Greek Oregano	Slight	None
Peppermint	None	None
Spearmint	None	Moderate

RUST ALERT!!!

Gladiolus rust (below) has been found in Florida and California. It is a quarantined pest at this time.

Guava rust (above) has been found on myrtle and is a serious problem on eucalyptus worldwide.

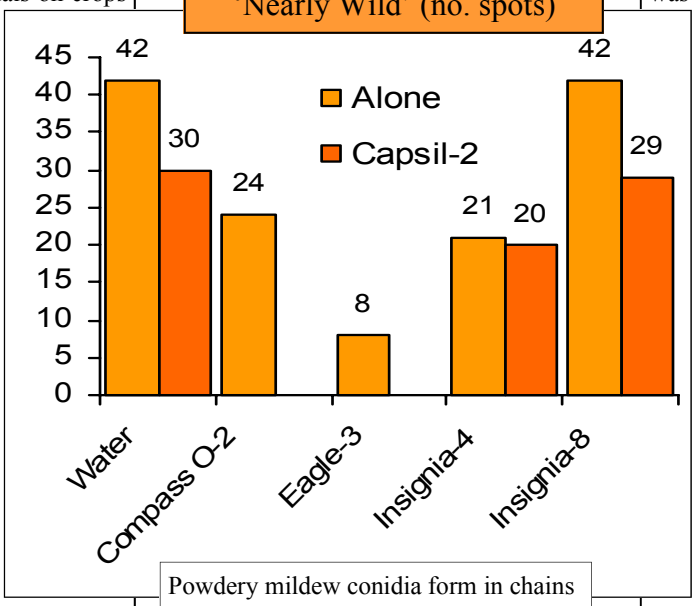
Eradicating Powdery Mildew on Rose

In the past ten years, we have performed quite a few powdery mildew trials on crops from woody ornamentals (crape myrtle, hydrangea, rose and azalea) to cut flowers (Gerber daisy, ranunculus and *Scabiosa*) to bedding plants (blue salvia and zinnia). Some were preventative and some were curative trials. *Sphaerotheca pannosa* is the species that attacks all manner of roses and it is by far, the most difficult powdery mildew to eradicate.

We performed two trials on eradication of powdery mildew on potted roses. We used 'Nearly Wild Pink' in the first trial and a combination of that cultivar and 'Mistral' in the second trial. In each, products were applied three times on a 7-day interval.

The first trial (top graph) evaluated the effect of adding Capsil to a new fungicide—Insignia. This new strobilurin has not been labeled yet for ornamentals but is expected in January 2007. The best product for eradication of powdery mildew on this rose was Eagle 40W at 3 oz/100 gal. Compass O also gave significant control but it was not as good as Eagle in this trial. Capsil alone (2 oz/100 gal) gave statistically significant reduction of powdery mildew and increased the degree of control achieved with the higher rate of Insignia (8 oz/100 gal) but did not affect the 4 oz rate. One interesting effect was the reduction in residue that occurred when Capsil was added to Insignia at both rates. The reduction was statistically significant and residue was low. Top grade (quality) was not affected by these treatments in this month long trial.

Effect of Adding Capsil on 'Nearly Wild' (no. spots)



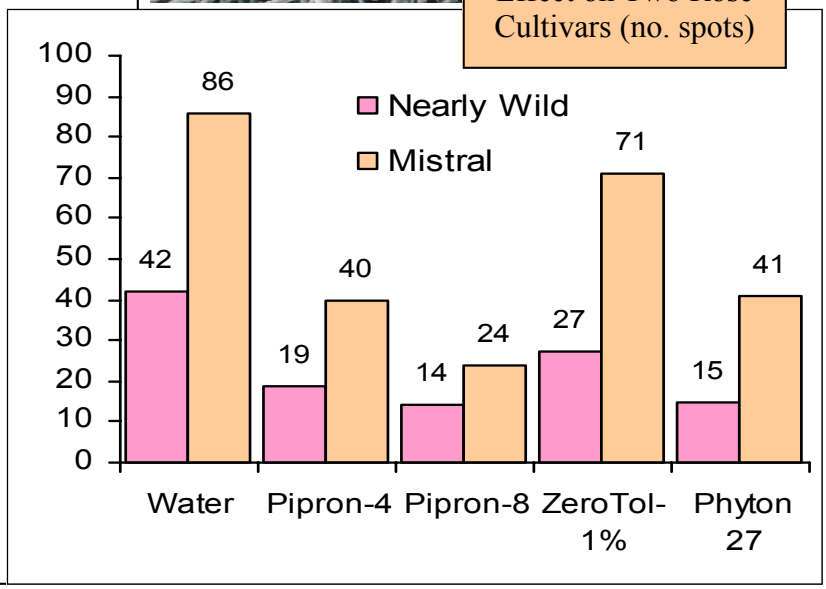
Powdery mildew conidia form in chains

The second trial (bottom, graph) was performed with left over roses so we used two sets ('Nearly Wild' and 'Mistral'). Treatments included Pipron (4 or 8 oz), ZeroTol (1% the first spray followed by 0.33%) and Phyton 27 (15 oz). In retrospect, it might have been better to apply ZeroTol at 1% throughout the trial and use Phyton 27 at 25-30 oz since disease pressure was so high. The trends on the two cultivars were similar.

Best eradication in this trial was seen with Pipron at 8 oz/100 gal or Phyton 27 at 15 oz/100 gal. Least control occurred with ZeroTol. The 4 oz rate of Pipron was statistically better than the water sprayed control, but it was not quite as good as the higher rate.

It is obvious from these two trials that eradication of rose powdery mildew is very difficult and can therefore be costly. The list below shows those products that have performed best in our trials over the past ten years.

Effect on Two Rose Cultivars (no. spots)



Alude
Insignia
Banner MAXX
Compass O
Cygnus
Eagle
Heritage
Insignia
Milstop
Phyton 27
Pipron
Rhapsody
Rubigan
Strike
Terraguard
Triact
Vital

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