

CHASE NEWS

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CHASE HORTICULTURAL
RESEARCH, INC.

What is Wrong With This Plant?

In the past month or so we have received a few of the less common diseases in our diagnostic lab. I thought some of you who are growing these crops might like to see what their less common diseases might be.

The Mandevilla to the right has *Corynespora* leaf spot. This fungal pathogen is common in the tropical regions of the world and attacks many foliage plants including ficus, lipstick vine and zebra plant. Use fungicides that work on *Alternaria* as the two fungi are closely related.



Another disease of tropical origins is found on this *Ensete* (banana). This fungus is *Deighthoniella* and I first saw this in Florida on banana but this sample actually came from California. This fungus is also related to *Alternaria* and fungicides like Daconil Ultrex, Chipco 26019 and Medallion have been very good in our trials on these types of fungi.

These *Campanula* plugs were from a California nursery too. The rapid meltdown was expected to be a bacterium but ended up being caused by *Myrothecium roridum* (another fungus that prefers warmer climates). This pathogen was first described on pansy but can be found on many vegetables as well as tropical foliage plants. We also got a



sample of *Myrothecium* petiole rot on *Syngonium* from Florida about a week ago. The best fungicides in our trials have been Medallion, Chipco 26019 and Insignia.

This variegated Citrus was infected with *Phyllosticta* (one of the anthracnose fungi). It is a very common pathogen causing leaf spots and dieback on nursery crops. Little work has been done to see if there is any host specificity in this fungus so we do not know if a single species could attack a wide range of plants or if there are specific species of *Phyllosticta* for each crop. The best products for *Phyllosticta* have been Insignia, Medallion and Spectro. Be sure to check labels for legal use rates and sites BEFORE using a new product.



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Our Diagnostic Lab will be closed from December 24, 2007 through January 1st, 2008.

Inside this issue:

Update on Fungicides for <i>Pythium</i> and <i>Phytophthora</i>	2
Subdue MAXX and Downy Mildew Control	3
Daphne Resistance to Black Root Rot	3
<i>Monarda didyma</i> INSV infection	3
Stopping Anthracnose on Mandevilla	4

Update on Fungicides for *Pythium* and *Phytophthora*

The most common and costly diseases of ornamentals are caused by *Pythium* or *Phytophthora*. The fungicides that can control these two organisms are often the same and have received a large amount of focus in research funding on a federal and private level. While the two fungi are closely related, the ways they develop in many ornamentals is very different.

Pythium is probably the most common pathogen found in roots of plants sent to diagnostic labs throughout the country. It is found on bedding plants, potted greenhouse crops and often the only pathogen on nursery crops and perennials. In contrast, *Phytophthora* is far less common. There are a few key crops in most categories of ornamentals that are commonly affected by *Phytophthora* and even then, the pathogen is not found every year on these crops. Another key difference is that *Pythium* does not usually kill the plants it is infecting while the outcome of most *Phytophthora* infections is a sudden death of the crop.

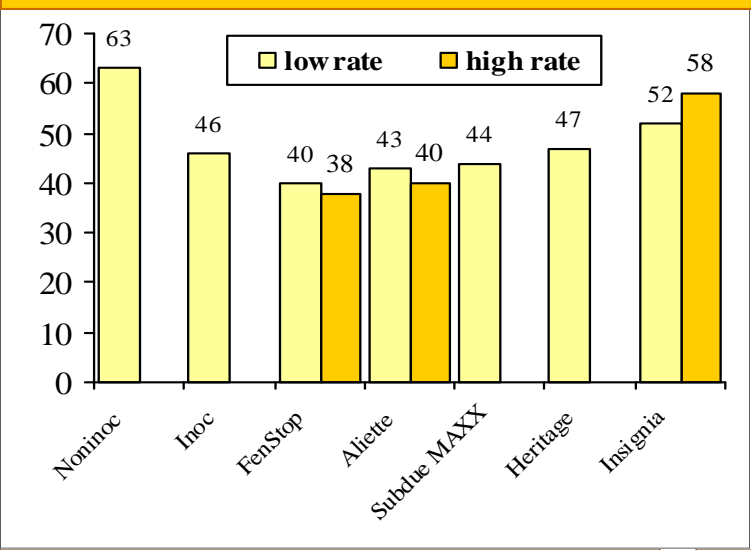
All that being said, we sometimes see *Phytophthora* cause “Pythium-like” symptoms of simple root rot. This happens mainly when we are trying to do trials during the fall when the weather is not conducive to *Phytophthora*. We did one such trial on rosemary with *Phytophthora* root rot caused by *P. parasitica*. Rooted cuttings were planted in 3.5 inch pots containing Fafard Mix 3B and top-dressed with Osmocote Plus 15-9-12. The plants were drenched with fungicides four times on a 14-day interval starting one week before they were inoculated. Fungicides included FenStop (a new product from OHP at 7 or 14 oz/100 gal), Aliette (12.8 or 16 oz/100 gal), Subdue MAXX (1 oz/100 gal), Heritage (0.9 oz/100 gal) and Insignia (the new strobilurin from BASF at 8 or 16 oz/100 gal). There was no response for plant tops for height or overall appearance however the roots did show differences. The final rating of healthy appearing roots is shown in the graph below.

The best roots were found on plants treated with the 16 oz/100 gal drench of Insignia. None of the other treatments gave a significant response in root growth and the FenStop and Aliette treatments actually looked like they might be damaging to the rosemary roots when used at the interval tested. A 14-day drench with these products may be too often.

We also continue to do trials on ranunculus for *Pythium* control. In this case we plant ranunculus bulbs in 3.5 inch pots containing Fafard Mix 2B and Osmocote Plus 15-9-12. Plants were treated on a 28-day interval with many of the same treatments used in the rosemary trial. The percentage of rotted roots is shown in the table below. The differences in these results compared to those of the rosemary trial are interesting. First, in this trial FenStop provided excellent control at 14 oz/100 gal used on a 28-day interval. The second is that Insignia did not give good control of *Pythium* root rot on ranunculus although it was the best product for *Phytophthora* control in the rosemary trial. This may be due to the fact that the active ingredient does not move in the potting medium but is bound to the organic matter in the upper part of the pot. This is a good way to control *Phytophthora* since it mainly causes crown rots but not *Pythium* since the root rot is usually distributed throughout the pot. Finally, note that Terrazole was excellent at both rates tested.

Watch for more results next year on the further complication of potting medium as it affects growth of bedding plants and efficacy of safety of some fungicides used for *Pythium*..

Percent healthy roots on rosemary infected with *Phytophthora* root rot



Treatment	Rate/100 gal	Percent rotted roots
Water	—	12
FenStop	7 oz	7
FenStop	14 oz	0
Aliette	12.8 oz	13
Aliette	16 oz	10
Subdue MAXX	1 oz	0
Heritage	0.9 oz	19
Insignia	8 oz	14
Insignia	16 oz	13
Terrazole 35W	6 oz	0
Terrazole 35W	10 oz	0

Subdue MAXX and Downy Mildew Control

We have been testing a variety of fungicides for the past 10 years against various downy mildew pathogens and several different crops. One of the products we have been hoping to see labeled for ornamental use against downy mildew is Subdue MAXX. This active ingredient of this fungicide, mefenoxam, has long been used for downy mildew on grapes, vegetables and other non-ornamentals. It is very effective when used appropriately. A recent report from Cornell University researchers, Kennelly, Gadoury, Wilcox and Seem demonstrated the efficacy of mefenoxam on downy mildew on grapes. They were able to prove that both systemic and vapor action for movement of the fungicide. The vapor action describes the ability of mefenoxam to move in the air around the leaves and give control of downy mildew on leaves that had not been directly sprayed. It was also important to note that mefenoxam has curative action up to 48 hours after infection. That means that the plants were infected 2 days before the mefenoxam was applied and control was still nearly perfect. For a complete report see **Plant Disease** 91:1260-1264.

We tested Subdue MAXX as a spray at 0.5 or 1 oz/100 gal in most cases on a 7, 10 or 14-day interval. The table below shows a summary of our results. We have heard some positive comments from Syngenta concerning registration of Subdue MAXX for downy mildew control on ornamentals and hope that this does come to pass.

Chase Horticultural Research trials on Downy Mildew Control on Ornamentals with Subdue MAXX			
Plants	Application method	Rate/100 gal	Efficacy
Osteospermum, Pansy, Rose, Snapdragon	Spray 7-14 day interval	0.5-1 oz	Very good to excellent

Daphne Resistance to Black Root Rot

For many years, plant pathologists have suggested use of disease-resistant cultivars as a critical part of an IPM program. I ran across an a nice study on *Daphne* cultivars and their resistance to black root rot caused by *Thielaviopsis basicola*. I have summarized their work briefly in the table below. For a complete report see **HortScience** 42(7):1639-1643. The researchers are Noshad, Riseman and Punja in British Columbia.

Resistant	Intermediate	Susceptible
<i>D. alpine</i>	<i>D. Xburkwoodii</i>	<i>D. arbuscula</i>
<i>D. bholua</i>	<i>D. Xeschmannii</i>	<i>D. circassica</i>
<i>D. caucasica</i>	<i>D. ginidium</i>	<i>D. cnerrum</i>
<i>D. kengwa</i>	<i>D. kosaninii</i>	<i>D. collina</i>
(hackenberry group)	<i>D. laureola</i>	<i>D. genkwa</i>
<i>D. giraldii</i>	<i>D. longilobata</i>	<i>D. 'Lawrence Crocker'</i>
<i>D. jasminea</i>	<i>D. odora</i>	<i>D. Xmantensiana</i>
<i>D. mezeum</i>	<i>D. Xrollsdorfii</i>	<i>D. Xnapolitana</i>
<i>D. mezereum</i>	'Arnold Cihlarz'	<i>D. pontica</i>
(alba)	<i>D. transcaucasica</i>	
<i>D. retusa</i>	<i>D. 'Whilhelm Shacht'</i>	
<i>D. rossettii</i>		
<i>D. tangutica</i>		

Other black root rot hosts include:

Calibrachoa, Catharanthus (annual vinca), Fuschia, Gaillardia, Ilex, Lithodora, Pansy, Petunia, Poinsettia, Salvia.

Monarda didyma INSV Infection

Naidu, Alabi, Karthikeyan and Nelson recently described Impatiens Necrotic Spot Virus (INSV) on *Monarda didyma* 'Gardenview Scarlet'. This herbaceous ornamental was found infected with INSV during the summers of 2006 and 2007 in Washington State. Symptoms included general leaf yellowing, yellow and black rings, spots and blotches and tip death and water-soaked areas on stems.



Western flower thrips were found on flowers of infected plants, which may have contributed to spread of the virus throughout the planting. For a complete copy of the report see **Plant Health Progress** doi:10.1094/PHP-2007-119-02-BR.

Stopping Anthracnose on Mandevilla

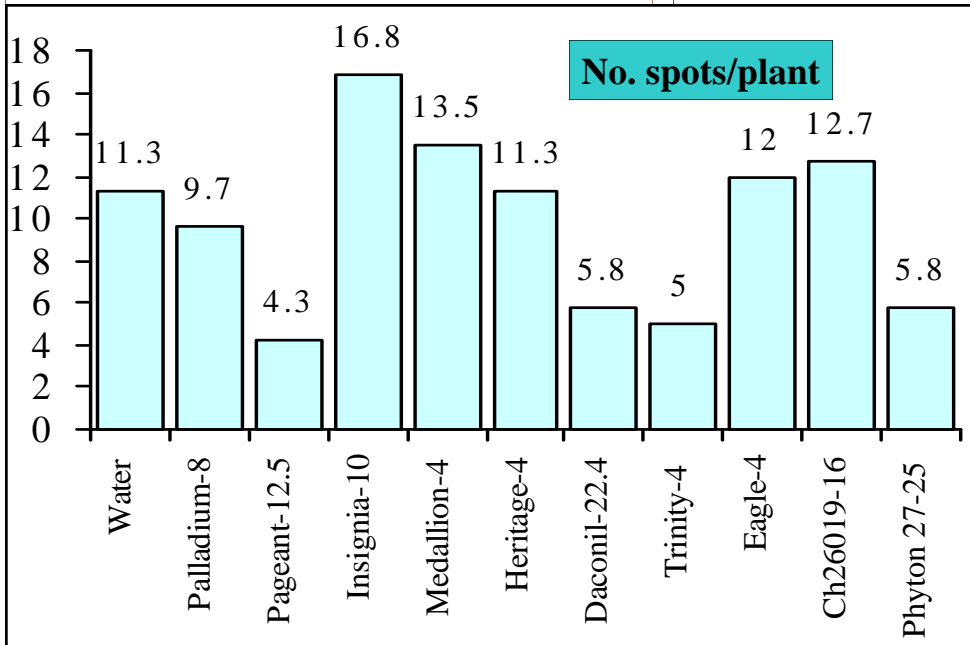
Over the past few years we have been trying to perform trials on an ever-increasing list of ornamentals that are attacked by anthracnose fungi. These trials have been harder to perform than I would have expected, partially since not all anthracnose fungi respond the same. Most of the trials that have in some measure been successful were conducted on plants that started with an anthracnose infection and we tried therapeutic treatments. Our most recent efforts were on *Mandevilla* 'Alice Dupont' that had an active anthracnose infection. In this case, the spots were caused by a *Colletotrichum* sp.

Plants were placed under a mist system to promote new spot formation. They were sprayed twice on a 10-day interval to mimic steps a grower might take if infected liners were received. The fungicides tested included some industry standards as well as some fungicides that will be new for our industry in 2008. Rates are given in oz/100 gal right after the fungicide name in the graph below.

When the trial started they had an average of 7 spots per 4 inch plant (about 8-12 inch vines). The final leaf spot count was made on 28 November, almost 3 weeks after the last fungicide spray. Many of the original spots were gone by the end of the trial due to leaf drop so most of those counted at the last rating were from new infections. The results showed that the best fungicides in preventing new spots were Pageant, Daconil Ultrex, Trinity and Phytion 27. Pageant is a new combination (pre-mix) fungicide from BASF that should be



It was interesting to see that the fungicides in a specific chemical class did not all act the same. One example was the Trinity and Eagle which are both triazoles but the Trinity was considerably more effective when used at the same rate in this trial. In contrast, neither of the two strobilurin fungicides (Heritage and Insignia) gave any control.



Another interesting (at least to me) comparison is with Palladium and its two active ingredients (fludioxinil in Medallion and chlorothalonil in Daconil Ultrex). Medallion was not effective in this case but Daconil was very good. Palladium was intermediate but overall not effective compared to the water sprayed control.

These results go to show that even closely related fungicides may act differently on some diseases. Our limited experience with anthracnose fungi shows that they cannot all be treated with the same fungicide even when they are caused by the same fungus.

available for ornamental use by the middle of 2008. The active ingredients are pyraclostrobin (Insignia) and boscalid (not registered for ornamentals). Trinity is another BASF product. It is a triazole fungicide that currently is labeled for turf.

