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CHASE RESEARCH GARDENS, INC.

CHASE NEWS

This can't be Pythium!

What does Pythium look like? This seems like a simple question with an obvious answer. For most of us, Pythium causes root rot. But to tell the truth we have been seeing quite a variety of symptoms lately with diagnostic samples that turn out to be infected with *Pythium*. We have even seen *Pythium* causing sudden wilt, stem rot only, black streaks on stems and even collapsed stem sections well above the potting medium level. Most of these symptoms are not accompanied by the typical root loss we all expect from *Pythium*.

Many growers apply preventative fungicides for Pythium root rot and since they expect them to work, they do not think Pythium could be the cause of a stem or blight disease. The most common misdiagnosis of the cause of these symptoms is of *Rhizoctonia* stem rot. It will be unlikely to choose an effective product for *Pythium* from the list of effective products for *Rhizoctonia*. In addition, the fact that fungicide resistance may be rearing its ugly head is not even considered and an ineffective product continues to be used. Final outcome – lots of fungicide use followed by filling a dumpster.

Since we started doing diagnostics on a larger scale this year, I try to not to underestimate the ability of a common fungal pathogen like Pythium to do uncommon things.

Where does Pythium come from? Here is a perennial question that nobody really wants to answer. I have had my nose rubbed in it lately, however, by failing to deliver on a few trials with Pythium root rot on geraniums. We propagate our own plants from geranium stock plants in new rooting cubes and then new potting media. The "healthy controls" have started to look exactly like the inoculated controls and isolations have yielded none other than PYTHIUM. The symptoms are root rot and now a roaring case of black leg. Black leg on geraniums is well named. A black discoloration starts at the base of the cutting and moves into the upper portions the plant rapidly killing it. Earlier in the fall we saw un-rooted cuttings with Pythium black leg. In this case, I have to wonder about the potting medium as a potential source since we propagate our own cuttings.

Pythium sudden wilt on snapdragon.

Pythium cutting rot on ivy.

Inside this issue:

Coniothyrium Canker on Rose

Rose canker is caused by *Coniothyrium fuckeliana* (as well as several other fungi to a lesser degree). The organism attacks wounds in stems caused by de-eying the canes, pruning and cutting flowers It has been more than 20 years since a researcher has reported on rose canker control. We have been working with a group of growers in the central valley of California. Many of the garden roses produced for the US start their lives in the Wasco area.

Last summer, Chase Research Associate, Gary Osteen, collected a number of rose samples with canker symptoms. We isolated several fungi but only *Coniothyrium* sp. proved to be pathogenic in subsequent trials. We now report the first trial on efficacy of fungicides in preventing rose canker caused by *Coniothyrium*.

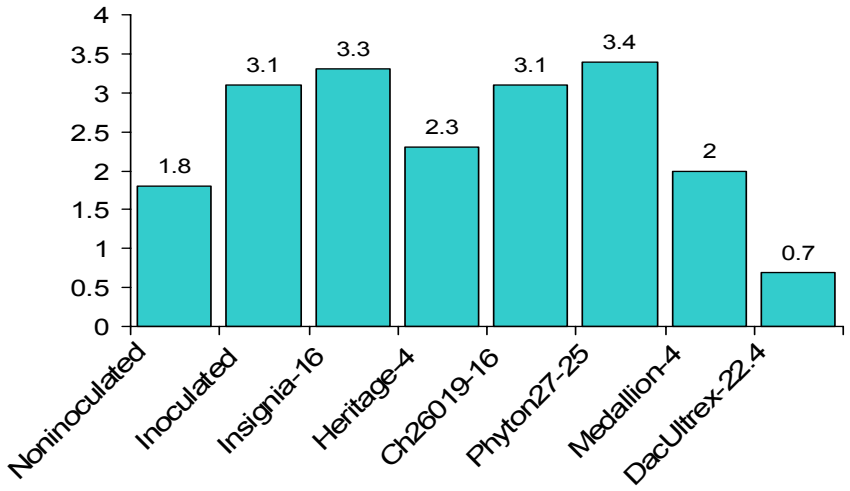
Gary sent us foot long sections of rose cane (Dr. Huey root stock) which we removed eyes (5 per cane), sprayed with the fungicide and allowed to air dry. The fungicides and rate (oz/100 gal) are given in the graph. When dry, the canes were inoculated by dipping into a spore suspension of the fungus and wrapped tightly in plastic wrap. Two weeks later they were evaluated for canker development.

The canes were apparently naturally infected since there was some development of canker on the noninoculated controls. Best prevention of rose canker was given with Daconil Ultrex at 22.4 oz/100 gal. We are currently repeating this trial.

Botrytis Control Update

Horst et al. recently reported on suppression of Botrytis blight on *Begonia hiemalis* with *Trichoderma*. This team of researchers evaluated the benefits of adding *T. hamatum* 382 to peat and compost-amended potting media. When the peat medium was inoculated with T382, severity of Botrytis blight was reduced. The reaction did not occur in composted medium. The researchers concluded that the reduction in Botrytis blight severity was due to a systemic acquired resistance reaction. It would be interesting to see if this type of reaction occurs with other soil-borne biological agents. For a complete report see—Plant Disease 89:1195-1200.

Dr. Mary Hausbeck (Professor of Plant Pathology at Michigan State University) recently reported on fungicide control of Botrytis on geranium in the December issue of GMPro (pages 61-63). The report caught my eye since Mary included one of the newest fungicides (Boscalid-under development by BASF Corp.) and one of the oldest (Captan). Excellent control was given with Captan (2.5lb/100 gal), Daconil Weather Stik (1.4 pint) and Boscalid (6.8 oz). ZeroTol was also included at 42.2 oz/100 gal as a preventative treatment or 128 oz as a curative treatment. Neither ZeroTol treatment was effective in reducing Botrytis blight in this test.

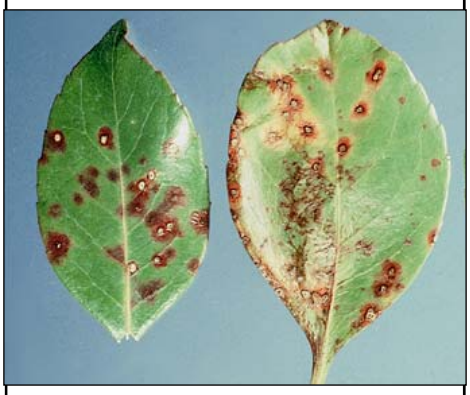


Severity of rose canker (number per cane with development—five possible)

Entomosporium Leaf Spot on *Raphiolepis*

by Marianne Waindle

This disease caused by the fungus, *Entomosporium mespili* or *E. maculatum*, is distributed nationwide and occurs in both production nurseries and landscapes. Most commonly found on members of the Rosaceous family like *Photinia*, *Raphiolepis* (Indian hawthorn), *Pyrus* (flowering pear), *Eriobotrya* (loquat) and *Heteromeles* (toyon), this leaf spot can cause more than



50% defoliation in wet springs and can be a constant battle for production nurseries until leaves mature.

Infection forms on young foliage in the spring from spores on older, infected leaves either still on the plant or in leaf litter. Spots have a reddish-purple border with small, pepper-like dots (pycnidia) in the centers as the spots mature.

These early infections can continue to infect leaves throughout the summer and early fall if not managed with fungicides. In landscapes, Indian hawthorn planted adjacent to Evergreen pear (*Pyrus kawakamii*) will share the disease and can totally defoliate plants in a warm, wet spring.

Research presented at the Southern Nursery Association Research Conference in 1995 identified resistant varieties of Indian hawthorn such as 'Dwarf Yedda', 'Olivia', 'Indian Princess', and 'Snow White'. Researcher reports most effective products to be chlorothalonil (Daconil) and propiconazole (Banner MAXX) on a 14 to 21-day interval until the leaves mature.

Look for a trial report comparing industry standards to products like Heritage, tebuconazole, and some new premix products in the early summer of 2006.

Products in Review—Heritage 50WDG

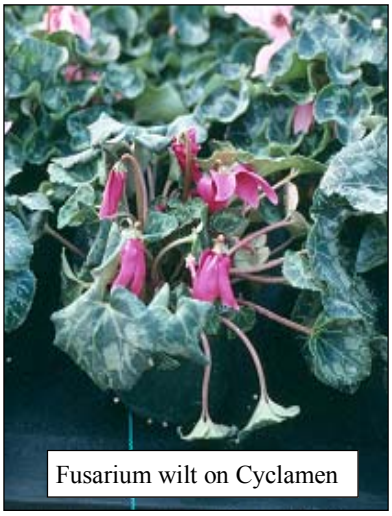
We have been working on Heritage 50WDG since 1998 when it was still a numbered compound. This fungicide is unique with systemic activity (upwards only) and a very broad range of action against the fungi that cause leaf, stem and root diseases. The table below summarizes results of our trials over the past 8 years as well as some of those reported by other researchers. We have most recently completed trials on two new diseases—Coniothyrium canker on rose (see page 2) and pink rot on palms (*Gliocladium*).

Heritage is the only strobilurin (currently registered) to give control of many root pathogens including *Rhizoctonia, Fusarium, Pythium* and *Phytophthora*. Heritage also works on many foliar diseases from leaf spots to mildews. Be sure to follow the label directions carefully, especially with respect to adding the appropriate wetting agent to foliar sprays. The ability of Heritage to eradicate some foliar diseases (like rust) is improved by the wetting agent, allowing the fungicide to reach the target.


Scab on Poinsettia

Disease—Crop(s)	Efficacy
Alternaria leaf spot – Dusty Miller, Zinnia and Impatiens	Very good to excellent
Botrytis blight – Geranium	Poor to good
Heterosporium leaf spot on Dianthus	Very good
Cercospora leaf spot—Pansy and Myrtle	Excellent
Cylindrocladium cutting rot – Azalea and Myrtle	Some to good
Diplocarpon leaf spot – Rose	Good
Downy mildew—Alyssum	Excellent
Downy mildew—Snapdragon	Excellent
Downy mildew – Rose	Poor to very good
Fusarium leaf spot– Dracaenas	Excellent
Fusarium stem rot – Christmas Cactus	Some
Fusarium wilt—Cyclamen	Very good
Gliocladium stem rot (pink rot) – King Palm	Excellent
Myrothecium leaf spot—New Guinea Impatiens and Dieffenbachia	Very good
Myrothecium crown rot – Pansy	Very good
Phytophthora aerial blight—Petunia and Vinca	Very good to excellent
Powdery mildew—Gerber Daisy, Salvia, Rosemary and Hydrangea	Very good to excellent
Pythium root rot – Pansy, Snapdragon and Geranium	Very good to excellent
Rhizoctonia cutting rot—Poinsettia and Hydrangea	Very good
Rust (*Coleosporium*) - Bellis and Solidago	Excellent
Rust (*Uromyces*) - Hypericum	Excellent
Rust (*Puccinia*) - Geranium	Excellent
Scab (*Sphaceloma*) – Poinsettia	Excellent
Sclerotinia blight—Petunia	Excellent


Rust on Geranium


Fusarium wilt on Cyclamen

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

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Cercospora Hosts by Sue Harris

Scientific Name	Common Name	Species
Abelmoschus	Silk Flower	*malayensis*
Ageratum	Floss Flower	*aciculina*
Amaranthus	Amaranth	*acnidae, brachiata and canescens*
Anemone	Windflower	*filiformis*
Antirrhinum	Snapdragon	*antirrhini*
Aquilegia	Columbine	*aquilegiae*
Asclepias	Butterfly Weed	*asclepiadis, asclepiodorae, clavata, elaeochroma, hansenii and verturioides*
Aster	Aster	*asterata and quarta*
Begonia	Begonia	*begoniae*
Calendula	Calendula	*calendulae*
Campanula	Bellflower	*minuta*
Centaurea	Bachelors Button	*centaureae*
Coreopsis	Tickseed	*bidentis and coreopsidis*
Cosmos	Cosmos	*zinniae*
Delphinium	Larkspur	*delphinii*
Eriogonum	Wild Buckwheat	*rubella*
Erysimum	Wallflower	*erysimi*
Euphorbia	Poinsettia	*euphorbiae, euphorbiaecola, heterospora and pulcherrimae*
Fuchsia	Fuchsia	*fuchsiae*
Galium	Sweet Woodruff	*tenuis*
Geranium	Cranesbill	*brunkii, geranii and ithancensis*
Gerbera	Gerbera Daisy	*gerberae*
Gaura	Gaura	*flagellifera and gaurae*
Hedera	English Ivy	*hederae*
Helianthus	Sunflower	*helianthi and pachypus*
Heuchera	Coral Bells	*heucherae*
Hibiscus	Hibiscus	*althaeina and malayensis*
Hypericum	St Johnswort	*hyperici*
Impatiens	New Guinea Impatiens	*fukushiana*
Lathyrus	Sweet Pea	*lathyri and lathyrina*
Limonium	Statice	*insulana*
Lobelia	Lobelia	*effusa and lobeliae*
Lupinus	Lupine	*longispora and lupinicola*
Mimulus	Monkey Flower	*mimuli*
Nasturtium	Nasturtium	*nasturtii*
Nicotiana	Flowering Tobacco	*apii and nicotianae*
Oenothera	Evening Primrose	*didymospora, oenotherae and oenotherae-sinuatae*
Oxalis	Oxalis	*oxalidiphila and oxalidis*
Papavar	Poppy	*papavericola*
Pelargonium	Geranium	*brunkii*
Penstemon	Beard Tongue	*pentstemonis*
Petunia	Petunia	*petuniae*
Phlox	Phlox	*omphacodes*
Ranunculus	Ranunculus	*ranunculi*
Rosa	Rose	*hyalina and rosicola*
Rudbeckia	Gloriosa Daisy	*tabacina*
Salvia	Sage	*salvilcola*
Senecio	Dusty Miller	*jacquiniana and senecionicola*
Solidago	Goldenrod	*solidaginis and stomatica*
Tagetes	Marigold	*tageticola*
Verbena	Verbena	*papillosa, septatissima, truncatella and verbenicola*
Veronica	Speedwell	*tortipes*
Viola	Pansy	*granuliformis and violae*
Zinnia	Zinnia	*zinniae*


Cercospora leaf spot on Myrtle


Cercospora leaf spot on Pansy