

My Travels with Marge



I recently spent a few days touring California with my friend, Margery Daughtrey. Marge is Senior Extension Specialist at Cornell University's Long Island Horticultural Research Lab and we have known each other for about 25 years.

We started the tour by joining Marianne Waindle, our technical sales rep at a Watsonville ornamental producer. We saw so many poinsettias and newly emerging ornamentals that even Marge was happy. The new plants coming in from Australia are especially interesting and we are looking forward to seeing them find their place in our landscapes.

Marianne, Marge and I then visited Steve Tjosvold's research trials on Sudden Oak Death or Ramorum Blight. Steve is the Farm Advisor for the University of California (Santa Cruz County) and he has been on the forefront of nursery-oriented research in California on this serious disease. Steve actually took Marge and me to one of the first sites with the disease a few years ago and we were very interested in seeing his newest research. Steve has been testing recovery of *Phytophthora ramorum* from a natural stream, infected native trees as well as doing trials on spread from artificially inoculated *Rhododendron* and *Camellia*. The ability of the

pathogen to spread from an infected plant under both nursery and landscape conditions will be key to determining its potential damage and ways to control it.

The next day Steve held his 2005 Disease Symposium. He has had this meeting about every two years for the past six years or so. This year topics included from "Phytophthora ramorum update" (Tjosvold), "Bulb Diseases" (Gary Chastagner—Washington State University) and "New diseases in California" (Steve Koike—University of California Farm Advisor in Monterey County). We even got the chance to see Stephen Wegulo who has recently relocated from the University of California at Riverside to a new position at the University of Nebraska. Stephen spoke on *Botrytis*. The day also included talks on "Bacterial Diseases", "Powdery and Downy Mildews" and "Rusts". Marge ended the day with a great overview of "Perennial Diseases". Thanks to Steve Tjosvold for the opportunity to participate in a whole day dedicated to disease!

Marge and I then headed down to the central valley where we were scheduled to witness the annual harvest of the garden roses. The majority of the US garden roses are grown in California and Arizona by a small group of growers. We met Gary Osteen, a Pest Control Advisor and Chase



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We had a great tour from one end of the harvest process to the other by several Bear Creek experts. In the field, the roses are rough cut, have their leaves knocked-off and re-cut followed by an application of a fungicide. They are finally under-cut them to remove them from the ground. This requires four passes of machinery. They are then collected by hand, bundled, placed on open trucks, washed and held in a shade structure until they can be further processed. In the packing house they are graded, trimmed to remove any broken canes, wrapped and packed in storage boxes. This is accomplished in an assembly line and runs very smoothly. Marge and I finished our tour and headed north. I had a great time and hope Marge did too!

CHASE RESEARCH GARDENS, INC.

CHASE NEWS

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Recent Trials at Chase Research Gardens

Pink Rot on Palms

I have been hearing about an increase in severity of pink rot on many palms including landscape types (King Palm) and indoor types (Parlor Palm). The latest research on fungicide controls of this disease (*Gliocladium vermescenti*) were made in the early 1980's so one can imagine that little is known of the effects of the newer fungicides like strobilurins and sterol inhibitors.

We obtained some King Palm seedlings and applied fungicides as a spray directed to stem bases three times over a two month period. Plants were inocula-

Treatment	Rate/ 100 gal	Disease severity
Water-noinoculated	—	1.1 a
Water-inoculated	—	2.1 b
Medallion	4 oz	2.1 b
Heritage	4 oz	1.0 a
Cleary 3336	16 oz	1.4 ab
Banner MAXX	6 oz	1.4 ab
Terraguard	8 oz	1.8 ab
Kocide TNO	32 oz	2.2 b

ted after the first fungicide application and disease severity was rated from 1 (no symptoms) to 5 (dead palm).

Heritage provided 100% prevention of pink rot. Other products provided moderate control with the exception of Kocide which provided no significant control in this trial. We tested two combinations of Heritage and Medallion which also provided less control than Heritage alone but more than Medallion alone. I had hoped that a combination would be more effective than either alone but this was not the case. We plan to do additional trials next spring and summer when it warms up.

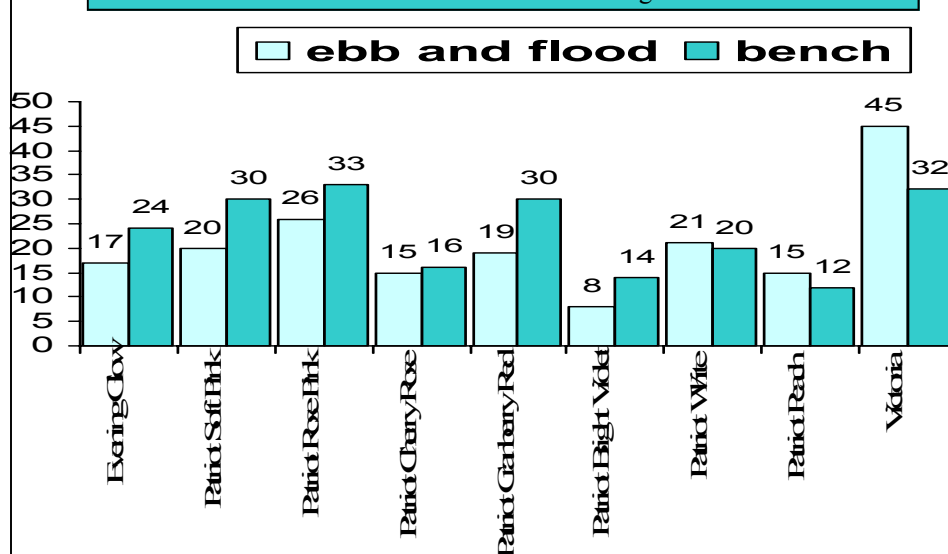
Geranium Cultivars Respond to Pythium Root Rot

We recently found ourselves in possession of 25 rooted cuttings of nine *Pelargonium x hortorum* cultivars. We set up a trial to evaluate their ability to resist *Pythium* root rot on a normal greenhouse bench and in an ebb and flood system. Rooted cuttings were established in 3.5 inch pots and fertilized with Osmocote Plus 15-9-12 as a top dressing. When they were about 5 weeks old we inoculated them with an isolate of *Pythium irregulare*. The ebb and flood benches irrigated plants once a day for 28 days before we evaluated their roots. The graph below shows the percentage of roots recorded by inverting pots and removing them to check the root balls.

These cultivars generally produced a better root system with hand irrigation (bench) as needed compared to scheduled irrigations (ebb and flood). Most cultivars responded to the *Pythium* consistently whether they were irrigated with a hose or using an ebb and flood system. The most susceptible cultivars (lowest percent roots) were 'Patriot Bright Violet', 'Patriot Peach' and 'Patriot Cherry Rose'. The least susceptible cultivar was 'Victoria' followed by 'Patriot Rose Pink'.

This test showed that susceptibility to *Pythium* root rot differs according to cultivar but not according to watering method.

Percent Roots on Geranium Cultivars in bench irrigation and ebb and flood



Rose Downy Mildew

It's downy mildew season once again. In some places on the Pacific Coast it is always downy mildew season. We have been hearing about downy mildew on snapdragons and now roses. We decided to perform a quick trial test ability of a few fungicides to prevent sporulation on infected rose leaflets. We collected them from a field that had an active downy mildew epidemic. Leaflets were dipped into a fungicide solution and placed in a Petri dish with a piece of damp paper towel.

Treatment	Rate/ 100 gal	DM severity
Water	—	4.8 b
Aliette	16 oz	1.8 a
Heritage	4 oz	0.8 a
Subdue MAXX	1 oz	1.6 a
Stature DM	9.6 oz	0.6 a
Terrazole 35W	6 oz	0.2 a
Fenstar	5 oz	0.2 a
Cyazofamid	5 oz	0.8 a

We then waited 4 days and examined them under a microscope for sporulation. Numbers in the DM severity column were rated from 0 (no sporulation) to 5 (all leaflets with sporulation). Numbers followed by different letters were statistically different than each other. All treatments significantly reduced sporulation of *Peronospora sparsa* on detached rose leaflets.

Ornamental Hosts of *Rhizoctonia solani*

compiled by Sue Harris

Scientific Name	Common Name
<i>Abelmoschus</i>	Silk Flower
<i>Achillea</i>	Yarrow
<i>Ageratum</i>	Floss Flower
<i>Ajuga</i>	Carpet Bugle
<i>Aloe</i>	Aloe
<i>Amaranthus</i>	Amaranth
<i>Antirrhinum</i>	Snapdragon
<i>Aquilegia</i>	Columbine
<i>Arabis</i>	Rockcress
<i>Asclepias</i>	Butterfly Weed
<i>Aster</i>	Aster
<i>Begonia</i>	Begonia
<i>Calendula</i>	Calendula
<i>Callistephus</i>	China Aster
<i>Campanula</i>	Bellflower
<i>Capsicum</i>	Pepper
<i>Catharanthus</i>	Annual vinca
<i>Celosia</i>	Cockscomb
<i>Centaurea</i>	Bachelor's Button
<i>Chrysanthemum</i>	Mum
<i>Clarkia</i>	Godetia
<i>Coreopsis</i>	Tickseed
<i>Cosmos</i>	Costmos
<i>Cuphea</i>	Cigar Plant
<i>Cynoglossum</i>	Chinese Forget-Me-Not
<i>Dahlia</i>	Dahlia
<i>Delphinium</i>	Larkspur
<i>Dianthus</i>	Carnation, Pink
<i>Dimorphotheca</i>	African Daisy
<i>Erysimum</i>	Wallflower
<i>Eupatorium</i>	Trumpetweed
<i>Euphorbia</i>	Poinsettia
<i>Gaillardia</i>	Blanket Flower
<i>Gerbera</i>	Gerbera Daisy
<i>Gladiolus</i>	Gladiolus
<i>Gomprhena</i>	Globe Amaranth
<i>Hedera</i>	English Ivy
<i>Helianthus</i>	Sunflower
<i>Hibiscus</i>	Hibiscus
<i>Iberis</i>	Candytuft
<i>Impatiens</i>	New Guinea Impatiens
<i>Iris</i>	Iris
<i>Lamium</i>	Dead Nettle
<i>Lathyrus</i>	Sweet Pea
<i>Lilium</i>	Lily
<i>Limonium</i>	Statice

Rhizoctonia solani is most commonly the cause of stem and crown rots on ornamentals. Occasionally we see Rhizoctonia root rot but often a close examination will reveal stem, cutting or crown rot but not actual root rot.

In the southeastern states, or anywhere that heat and humidity are high, the fungus often causes aerial blights. Ferns, pittosporum and azaleas are especially susceptible to aerial blight. While there are other species of *Rhizoctonia* that can attack a few ornamentals as well as turf but often the cause is *R. solani* AG4. Some binucleate species of *Rhizoctonia* attack woody ornamentals specifically but most isolates of *R. solani* are not host specific and can attack a very wide range of ornamental plants.

We have seen a few *Rhizoctonia* diseases come into our diagnostic lab in the past few weeks including damping-off on stock seedling being grown for cut flowers (below, right) and aerial blight on Boston fern in a hanging basket (below, left).

Scientific Name	Common Name
<i>Linaria</i>	Toadflax
<i>Lobelia</i>	Lobelia
<i>Lupinus</i>	Lupine
<i>Malva</i>	Mallow
<i>Matthiola</i>	Stock
<i>Mentha</i>	Mint
<i>Narcissus</i>	Daffodil
<i>Nasturtium</i>	Nasturium
<i>Nephrolepis</i>	Boston Fern
<i>Nicotinia</i>	Flowering Tobacco
<i>Oenothera</i>	Evening Primrose
<i>Oxalis</i>	Oxalis
<i>Papavar</i>	Poppy
<i>Pelargonium</i>	Geranium
<i>Petunia</i>	Petunia
<i>Phlox</i>	Phlox
<i>Pittosporum</i>	Pittosporum
<i>Portulaca</i>	Moss Rose
<i>Potentilla</i>	Cinquefoil
<i>Primula</i>	Primrose
<i>Ranunculus</i>	Ranunculus
<i>Rhododendron</i>	Rhododendron, Azalea
<i>Rosa</i>	Rose
<i>Salvia</i>	Sage
<i>Saxifraga</i>	Saxifrage
<i>Senecio</i>	Dusty Miller
<i>Tagates</i>	Marigold
<i>Verbena</i>	Verbena
<i>Veronica</i>	Speedwell
<i>Viola</i>	Pansy
<i>Zinnia</i>	Zinnia



Rhizoctonia aerial blight on Boston Fern.



Rhizoctonia damping-off on stock (left) and healthy seedlings (right).

PRODUCTS IN REVIEW UPDATE FOR TERRAGUARD

Disease	Efficacy on crops
Alternaria leaf spot	Very good to excellent on Dusty Miller, Schefflera, <i>Pittosporum</i> , zinnia and <i>Impatiens</i> .
Botrytis blight	Some to very good on <i>Impatiens</i> , <i>Spathiphyllum</i> and petunia.
Cercospora leaf	Very good on pansy.
Cylindrocladium root and petiole rot	Very good to excellent on <i>Spathiphyllum</i> .
Cylindrocladium cutting rot	Some to good on azalea.
Fusarium wilt	Very good on cyclamen and none on Christmas cactus.
Fusarium leaf spot	Excellent on dracaena.
Helminthosporium leaf spot	Good to excellent on palms.
Myrothecium petiole rot	Very good on <i>Syngonium</i> .
Pink rot	Some on King palms.
Powdery mildew	Excellent on Gerber daisy, miniature rose and crape myrtle.
Rhizoctonia diseases	Good to excellent on pothos, <i>Pittosporum</i> , vinca, <i>Impatiens</i> , English ivy, China doll, Boston fern, poinsettia, <i>Spathiphyllum</i> and liatris.
Rust diseases	Excellent on snapdragon and good on <i>Bellis</i> .
Scab	Excellent on poinsettia.

Weed Control in Florida Ornamentals

The November issue of *Ornamental Outlook* (pages 12 and 14) reports some interesting work performed by University of Florida researchers, Juanita Popenoe and Laura Miller. They tested a variety of preemergence herbicides in two crops for ability to control weeds. They report on percent weed control, weeding time, percentage weed coverage, number of weeds per plot and total fresh weight of weeds. I have summarized the data in the table below.

Treatment	Rate/acre	Cathedral Live Oak	Viburnum
Broadstar 0.25G	100 lbs	Very good	Very good
Dimension 0.15F	333 lbs	Very good	Some
OH2 3G	100 lbs	Good	Good
Rout 3G	100 lbs	Good	Very good
Showcase 2.5G	200 lbs	Very good-excellent	Very good
Snapshot 2.5TG	200 lbs	Very good	Very good
Treflan 5G	200 lbs	Good	Not included

For additional information the authors recommend "Preemergence Herbicides for use in Ornamentals" by Stamps, Rock and Norcini (<http://edis.ifas.ufl.edu>).

Downy Mildew—Environmental Effects

Byrne, Hausbeck and Sconyers recently reported on a three year study of environmental effects on sporulation of *Peronospora antirrhini* (the cause of snapdragon downy mildew). Their work was performed in Florida from 1999 to 2001. Minimum daily temperatures of less than 50 F significantly reduced sporulation while less than 44 F stopped sporulation and thus disease spread. On the high end temperatures in excess of 86 F also stopped sporulation.

They also found that leaf wetness periods of 6 to 11 hours resulted in formation and release of downy mildew spores. Peak spore releases occurred between 5AM and 7AM which corresponded to

the time when relative humidity decreased and temperatures increased. Producers in other areas of the country can expect specific times to differ from those found in the Florida study and should time sprays to occur right before spores release when possible. This is best judged to occur when the relative humidity drops and temperatures start to rise. It may be beneficial to obtain weather stations that will allow informed timing of fungicide sprays. Future work is being considered for other downy mildew pathogens on ornamental crops in other parts of the country.

For a complete report see: Plant Disease (2005) Vol. 89:1060-1066.



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