



# FROM ONE END OF AUSTRALIA TO THE OTHER

## FROM THE TRADESHOW FLOOR BY MIKE ZEMKE

Every time I claim I am cutting down on travel I am presented with a opportunity I am loathe to pass by. This time, I was asked to help Scotts Australia launch Zyban in the Australian ornamental industry. Mike and I left on May 1st and did not return until May 17th. We really had a great trip visiting Australian producers, asking and answering questions and examining all of the country's major cities and airports. After eight presentations in nine days we were pretty tired. Our hosts and everyone else we met were great. The only thing we did not see was Australia.

It was interesting to see what problems we share and the problems we don't share. Australia does not have many fungicides legally registered for ornamental use. This is regulated to various degrees in the various states. Although they have many of the same crops and pests, the testing must be done in Australia for a legal registration to occur. Sounds like California doesn't it? The unfortunate part for Australia is that not many international companies have chosen to work with their relatively small ornamental industry. It just costs too much for the potential sales volume.

Australian growers are ahead of us in some key areas including use of fully composted bark media, use of Phos-acids for disease control and water-treatment. Here they have really taken the research from Europe and adapted it to their own conditions. The scarcity of water in much of the country makes this a critical issue. Systems based first on sand-filtration (to remove much of the particulates in the reclaimed water) have been used with chlorine, bromine and ultra-violet with excellent results.

One area where we appear to be leading is the use of plug technology. Most, if not all, of the bedding plant producers in Australia grow their plants from seedlings. We visited one producer in Perth (Western Australia) who grows in a sand-based medium. This makes a lot of sense when you see where his products will be utilized.

Mike and I had a great time and look forward to a vacation in Australia, someday. It would be fun to see the highest concentration of deadly critters in a single country from closer than 25,000 feet.

We were in Australia from May 1<sup>st</sup> through the 17<sup>th</sup> doing a road show for Scotts. We virtually did a "bottom smiley face" of Australia.

The growers over there seem to have the same types of problems we have here (hope some of you are relieved now). It was great trying to help these people out with books or products that could help solve their problems. I came back with new ideas for products designed to help these people more effectively. I have to give great big thanks to Scotts.

At the end of May, we were in Indianapolis for Dr. Roger Styer. Roger put together a good conference with excellent grower participation. Again I came back with some new ideas as I hope the participants did. For a single consultant to put something like this together shows real dedication and initiative. It could not have been easy and I am happy we were able to help, after all that's part of what we do also! My hat is off to Roger.



View of Sydney (New South Wales -East Coast) from the observation tower (above). Perth (Western Australia-West Coast) view from King's Park (right).

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# RHIZOCTONIA UP CLOSE AND PERSONAL

*Rhizoctonia* spp. are among the most diverse of plant pathogens, causing root, stem and foliar diseases of many of our most important herbaceous and woody ornamentals. *Rhizoctonia* spp. usually attack plants at the soil line, causing root loss and constriction of the stem which results in girdling and death of the tops. This pathogen can attack leaves as well and is especially severe when plants are grown close together and kept moist. Entire stock beds or flats can be lost to *Rhizoctonia* in a few days when conditions are optimal. The pathogen is soil-borne which means it lives in the soil or potting medium and causes both pre- and post-emergence damping-off of many seed produced crops such as vinca, impatiens, stock and snapdragon.

*Rhizoctonia* root rot can be common in some plants including: aglaonema, azalea, begonia, ferns, holly, impatiens, juniper, philodendron and spathiphyllum. In addition, *Rhizoctonia* can cause stem rots on impatiens, poinsettia, and pothos and aerial blights (also called web-blight) occur on azalea, holly, juniper and pittosporum. It is important to determine which type of *Rhizoctonia* is present since not all isolates can infect all hosts or even cause disease. Research has also shown that not all *Rhizoctonia* isolates cause disease on the plants they are found on or on any crop as far as we know. These *Rhizoctonia* isolates are saprophytes and do not need to be controlled.

*Rhizoctonia* aerial blight or leaf spot occurs in the warmer months when high moisture levels also occur. This is common in the summer in the Southeastern US when rainfall and temperatures both peak. In other areas of the country, the nurseryman creates ideal conditions for *Rhizoctonia* diseases by growing plants in covered structures which are heated and irrigated overhead.

Severe disease development can occur in less than a week so plants should be scouted and monitored for symptoms at least once a week.

Brown, irregularly shaped spots form anywhere on foliage or stems. When humidity is high the web-like brown mycelium of the pathogen covers infected portions of the plant. This can be seen many times in aerial blight and sometimes when flats of seedling crops have been attacked. *Rhizoctonia* stem rot is typified by brown cankers forming at the soil line. The cankers are sunken and dry appearing and can cause the plant tops to collapse. Root rot may occur in some cases of stem rot, but not always.

Root rot caused by *Rhizoctonia* appears much like root rots caused by other fungi. Roots become brown, somewhat mushy and disintegrate. An accurate laboratory diagnosis is therefore crucial since fungicides that control *Pythium* do not control *Rhizoctonia* and vice versa. You must also keep in mind that mixed infections, cases where two pathogens are active, are also common. Only an accurate diagnosis will allow you to choose the best and most complete control strategies. Be sure to watch plants for above ground signs of root rot: yellow or pale green leaves, small leaves, wilting and stunting.

Soil-borne pathogens such as *Rhizoctonia* spp. can escape notice and therefore cause serious losses before they are identified. Prevention is therefore the key to controlling *Rhizoctonia* diseases. Use healthy plants, new or sterilized pots and potting media and avoid placing plants directly on the ground whenever possible. If you follow these steps the fungicides you apply will have the greatest chance to work.

Fungicides continue to be an important part of ornamental plant production. As mentioned earlier, *Rhizoctonia* spp. occur in the potting medium and can cause stem and leaf diseases, making the application site for a fungicide critical. Four trials we completed during the past year are detailed on the following page.



Rhizoctonia cutting rot on poinsettia



Rhizoctonia damping-off on Celosia seedlings



Rhizoctonia leaf spot on Peperomia



Rhizoctonia aerial blight on Pittosporum

# GETTING YOUR PLANTS RHIZOCTONIA READY—2002 TRIALS

The information on this page represents our four trials with Rhizoctonia disease performed for the 2002 season. By the end of the season, the weather has usually changed enough to make Rhizoctonia less of a concern—thus I decided to present the information right before the 2003 season.

Results of the first three trials are summarized in table to the right. On vinca and impatiens, the products were applied as drenches on a preventative basis. For the Spathiphyllum leaf spot trial, we tried eradication of a moderate level of disease using sprays. Disease was not very severe last year in any of the trials. The rates used in the Spathiphyllum leaf spot trial were perhaps too low. Products like Medallion, 3336 and Chipco 26GT usually give good to excellent control but all failed in this single trial.

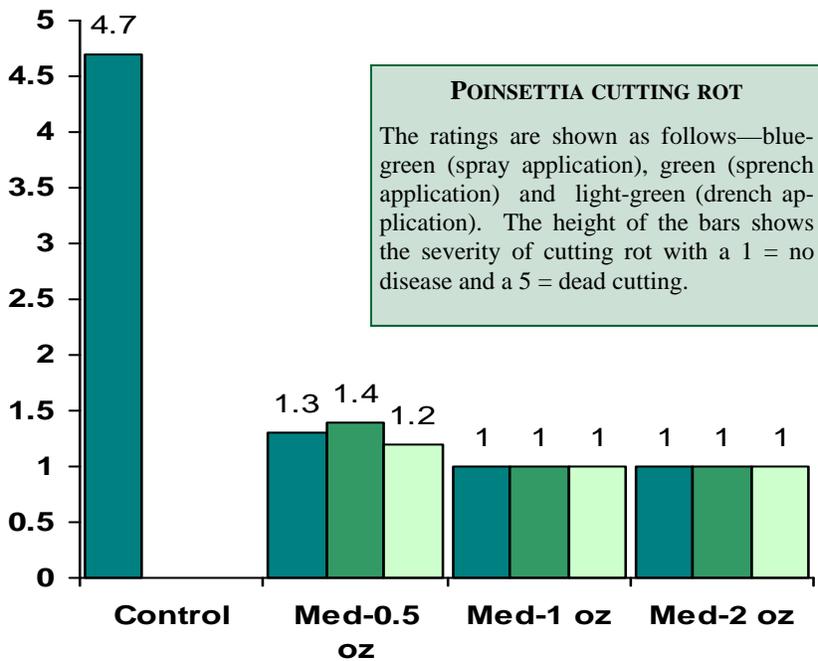
Some of the lesser known products we tested include Contrast, Endorse and Terraneb. Terraneb (ai. chloroneb) has been around for 15 years but is not widely known outside of the southeastern states. We did a few trials with it in the early 90's on pittosporum and Boston fern and had very good results. It was nice to see excellent control with the product in our canker trial.

Contrast (flutolanil) is a relatively new fungicide with very good to excellent activity against Rhizoctonia diseases as well as southern blight (*Sclerotium rolfsii*) and some rust diseases. While some of our early tests with Contrast employed higher rates, we continue to have excellent results with 1 oz/100 gal.

Endorse is the newest product to us. We have been trialing it for about 2 years now on a variety of diseases including Alternaria leaf spot, Botrytis blight, Fusarium wilt and the Rhizoctonia stem rot trial reported here. Our best results with this product have been on Alternaria and Botrytis.

The final trial we performed last year explored different rates of Medallion applied in different ways. The graph to the right shows the results of a single Rhizoctonia cutting rot trial on poinsettias. It is clear that both srench and drench applications are slightly more effective in preventing disease than the spray application at 0.5, 1 and 2 oz/100 gal.

Fungicide	Rate per 100 gal	Stem rot on Impatiens	Canker on Vinca	Leaf spot on Spathiphyllum
3336	16 oz	Not tested	Not tested	Poor
BAS500	8, 16 oz	Good	Not tested	Poor
Chipco 26GT	2 quarts	Not tested	Not tested	Poor
Contrast	1 oz	Very good	Excellent	Very good
Endorse	0.55, 1.1, 2.2 lb	Some	Not tested	Not tested
Fungo Flo	20 oz	Some	Excellent	Not tested
Heritage 50WDG	1 oz	Not tested	Not tested	Excellent
Medallion 50WP	1 oz	Very good	Not tested	Poor
Spectro 90WDG	16 oz	Very good	Not tested	Not tested
Terraclor 400 Terraclor 75W	9 oz 6 oz	Not tested	Very good	Very good
Terraguard 50W	8 oz	Not tested	Not tested	Excellent
Terraneb SP	9, 12 oz	Not tested	Excellent	Not tested



**CHASE RESEARCH GARDENS, INC.**

**8031 MT. AUKUM RD., SUITE F, BOX 529**

**MT. AUKUM, CA 95656-0529**

**PHONE/FAX (530)620-1624**

**MTAUKUM@DIRECTCON.NET**



# POTPOURRI OF TRIAL RESULTS—THE END OF WINTER

## Sclerotinia on Petunia

Last year, we completed two successful trials on Sclerotinia blight on petunias. This year, in our ignorance we started a similar effort in January. By the end of May it became clear that this would not be our year for Sclerotinia work. We spent five months with little obvious disease. The graph on the top, right of this page shows the percentage of the crown with dieback due to Sclerotinia on petunia. While the differences were not statistically significant, there were some interesting trends.

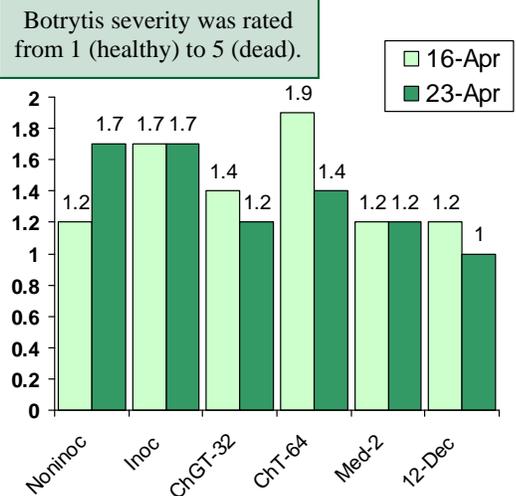
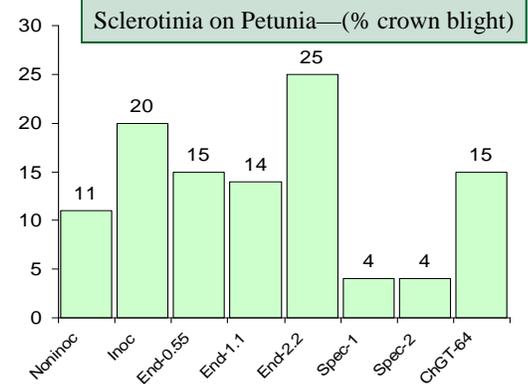
Products were applied as a weekly spray for two months. Endorse has been shown to be effective for Botrytis at the higher rates but, in this case, the 2.2 lb rate appeared to make disease a little worse than the inoculated control. Overall, Spectro gave the best results in preventing Sclerotinia blight (1 or 2 lb/100 gal). Chipco 26GT failed to give any control when used at 64 oz/100 gal. This was a disappointing trial but there is always next year.

## Botrytis blight on Pansy

Over the past six months we completed a number of Botrytis trials on cyclamen, geranium and finally pansy. The treatments included were Chipco 26GT (32 or 64 oz/100 gal), Medallion (2 oz/100 gal) and Decree (12 oz/100 gal). Products were sprayed on a 10-day interval a total of five times.

The ratings shown were made on the dates given and show slight disease overall. Chipco 26GT was slightly more effective at 32 oz than at 64 oz (maybe phytotoxicity). Medallion provided very good to excellent control as did Decree. By the end of the trial, there were no signs of any Botrytis with Decree.

These two trials continue to identify the best active ingredients for Botrytis and Sclerotinia. These include fludioxinil (Medallion), chlorothalonil (Spectro), fenhexamid (Decree) and Iprodione (Chipco 26GT). A special note concerning Botrytis—if the product causes any phytotoxicity, Botrytis control will be reduced and sometimes disappears altogether.



## Downy mildew

We snuck in two final downy mildew trials for the season. The first came as an opportunity to try some products as eradicants on an active downy infection on blue salvia. These plants were obviously infected when the trial started. We sprayed the plants with several fungicides including Phyton 27 (20 or 30 oz/100 gal), Alude (a Phos-acid product—32 or 64 oz/100 gal), Aliette (16 or 32 oz/100 gal) and Porters (a Phos-acid—64 oz/100 gal). The plants were sprayed to drip three times on a weekly interval.

When the test was complete, we were surprised at the excellent results all of the Phos-acid products gave at least at the higher rate tested. Aliette does seem to be more effective at lower rates than the others in this group. Phyton 27 was somewhat effective at 20 oz but gave better con-

trol when used at 30 oz/100 gal.

The second trial shown here was started as a rust prevention trial on snapdragons. While, some rust developed it was pitifully sparse and we rated downy mildew instead. Plants were sprayed to drip three times on a 10-day interval. We included three rates of Endorse (0.55, 1.1 and 2.2 lb/100 gal), Agri-50 (0.5%) and Rhapsody (called Serenade in the graph—1, 1.5 and 2%).

Results showed excellent prevention of downy mildew on snapdragons with 2.2 lb/100 gal of Endorse. Agri-50 gave about 50% prevention at the rate tested. Rhapsody was very effective, especially when used at 2%. The capacity of this new biological control agent is encouraging.

The list of moderately to highly effective products for prevention (and occasionally eradication) of downy mildew on ornamentals continues to grow.

