



Late Season Poinsettia Problems

As we draw towards the completion of another hopefully successful poinsettia season there are a few problems that you should watch for. The list of poinsettia diseases is long and diverse with a variety of fungal and bacterial problems during propagation, some mid-crop diseases and finally those that are most common during the finishing stage for the crop.

The most common diseases I encounter at this critical stage are root rot due to Pythium, stem rot due to Botrytis and leaf and bract spots also due to Botrytis (photo, below). Treatment of any problem once the bracts have colored is problematic due to safety concerns. However,



the fact that the plants are at final spacing and will not be handled again until packing for shipment makes fungicide applications especially difficult. For crops that have not reached this stage of canopy closure, it might be a good idea to get a last preventative treatment for Botrytis in. This is your last chance to be truly effective in your coverage.

Our trials over the past ten years have shown that the best Botrytis products are chlorothalonil (like Daconil Ultrex), fenhexamid (Decree), fludioxinil (Medallion) and iprodione (like Chipco 26019). REI, safety, residue and cost each affect which products you choose. If you have experienced stem rot in the final phases of producing poinsettias you might consider using a product like Medallion or Chipco 26019 since both have been safely used as soil drenches as well as foliar sprays. The application should be directed to the crown or center of the plant if possible for maximum protection against Botrytis stem rot.

Don't forget about the roots on the poinsettias. The only way to check them is to knock plants out of their pots. Although it may be easiest to check pots on bed or bench edges, it is important to check some into the centers as far as you can reach. The plants on the edge dry more quickly and may have better root systems than those in the center that never dry out thoroughly. Check a variety of cultivars and pot sizes. Remember that healthy poinsettia roots

are white, firm and not water-soaked. If you see any discoloration, sloughing of the outer tissues or mushiness you may have Pythium. Other root pathogens are not common during finishing. Treatment with products such as mefenoxam (Subdue MAXX) or etridiazole (Terrazole and Truban) maybe most effective at this stage. If you can apply the fungicide through the drip system you will minimize crop damage due to handling. Don't expect too much in terms of re-growth of roots during the last four weeks. Simply stopping further damage may be the best you can achieve.

Finally, watch for powdery mildew. The product you choose should be based on your experience. With the introduction of new cultivars each year it is not possible to know what fungicide will be safe. Try to take the time to do a quick phytotoxicity test under your conditions.



Remember that if you have to apply a late season spray for Botrytis you can reduce residue to a minimum by adding a wetting agent (like 2 oz/100 gal of Capsil) to products like Decree. The coverage is excellent and residue is minimal since the fungicide remains evenly distributed across the leaf surface.

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Controlling Bacterial Leaf Spots on Woody Ornamentals

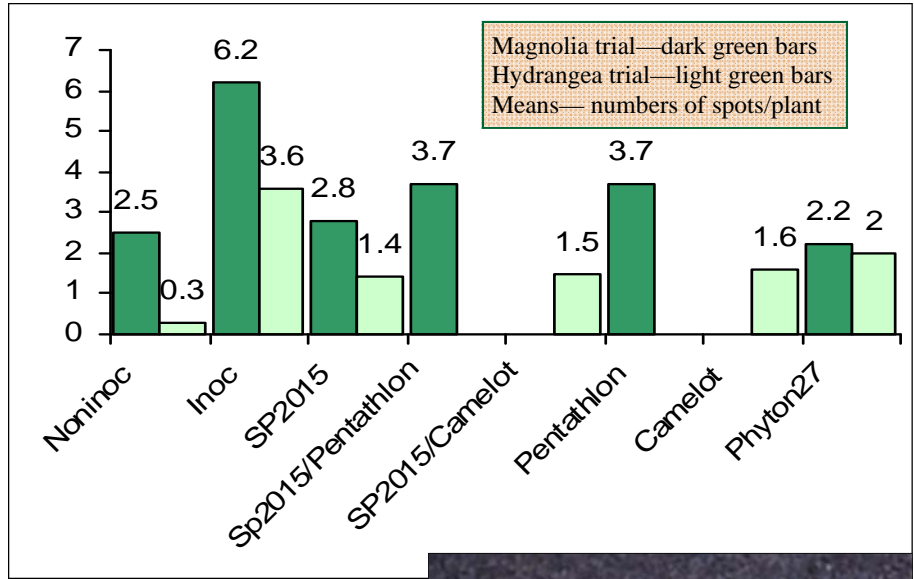
We have been working on bacterial leaf spot control whenever possible in the past ten years. The first trials, centered on use of Phyton 27, quickly followed by Camelot, Kocide and Junction. At this time we are working on a numbered product from SePRO Corporation—SP2015. Results of two of these trials are presented here.

The first trial was started in May with *Magnolia* 'Leonard Messel' that is often infected with *Pseudomonas* and/or *Xanthomonas*. In this case, we used an isolate of *Pseudomonas*. Plants were treated with the products once before inoculation on 27 June, 2006. They were treated a total of three times on a weekly interval and treatments included: noninoculated control, inoculated control, SP2015 alone, SP2015 combined with Pentathlon DF (24 oz/100 gal), Pentathlon alone (same rate) and Phyton 27 (25 oz/100 gal). Height, top grade (quality) and disease severity were all rated on 13 July about one week after the final application.

Height and top grade were unaffected by treatment in this test. Disease severity, rated from 1 (no spots) to 5 (dead plant) were significantly lower for plants treated with any of the bactericides or the combination (graph above—dark green bars). SP2015 worked as well alone as when combined with Pentathlon. It was interesting that Pentathlon alone also gave significant control of *Pseudomonas* leaf spot on the *Magnolia* that was equivalent to the standard, Phyton 27. In the 1980's, trials were performed on bacterial leaf spots on tomatoes and peppers in Florida combining a mancozeb compound (like Pentathlon) with a copper. The presence of the mancozeb was somewhat effective alone (as we see here) but proved to be beneficial in combination with a copper product. The amount of copper available for bacterial kill was higher when mancozeb was present than when it was used alone. This effect was especially important in situations where the bacterium had become resistant to copper.

The second trial was run using *Hydrangea* 'Glowing Ember' and was run in August. Plants were once again treated once before they were inoculated and twice afterward (10-day interval). The

treatments



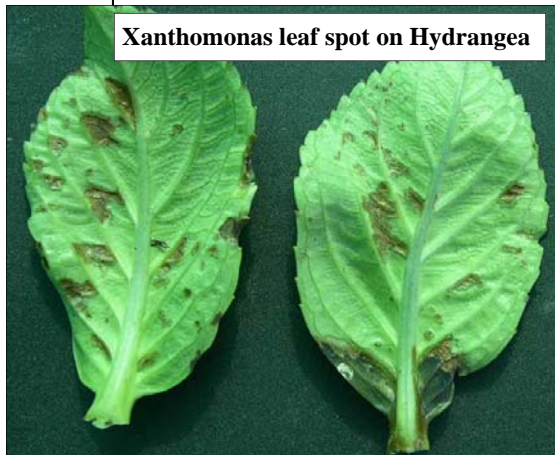
Were similar to the first trial with the exception that Camelot (4 oz/100 gal) was used as the combination partner for SP2015. The number of spots (light green bars in graph) and phytotoxicity was evaluated about 10 days after the final application. All of the treatments were equally effective in reducing bacterial leaf spot on *Hydrangea*. Phyton 27 used at 25 oz caused slight but significant damage (speckling) on these *Hydrangeas* while the other treatments were safe.

It was most interesting to me that SP2015 supplied as high a level of control of these two bacterial leaf spots when used alone as when used in combination with either a mancozeb (Pentathlon) or a copper product (Camelot). This will be a nice addition to our copper, Rhapsody rotation for bacterial leaf spots.

Pseudomonas leaf spot on Magnolia



Xanthomonas leaf spot on Hydrangea



Some Bacterial Leaf Spots on

Magnolia—*Pseudomonas*

Hibiscus—*Pseudomonas* and

Arbutus—*Xanthomonas*

Photinia—*Xanthomonas*

Hydrangea—*Xanthomonas*

Rosemary—*Xanthomonas* and
Pseudomonas

Prunus—*Xanthomonas*

Wax Myrtle—*Xanthomonas*

Gardenia—*Xanthomonas*

Update on Alternaria Leaf Spot on Impatiens

We reported on a trial for control of *Alternaria* leaf spot on Impatiens (photo to the right) in the August issue of Chase News. This first test (orange bars in Table below) had low disease pressure so we repeated the trial last month with some extra impatiens. It is important to evaluate products under diverse conditions to make sure they will work well in the real world.

The first trial was started on 20 June and fungicides were applied four times on a 7-day interval. In this case, inoculation occurred one day after the first fungicide spray with spores of *Alternaria alternata*. The second trial was treated three times on a weekly interval and started on September 6th. The number of leaf spots per pot was recorded after the final treatment in each trial.

Under high disease pressure all three strobilurins (Heritage, Insignia and Compass O) each gave very good to excellent prevention of *Alternaria* leaf spot. Under low disease pressure all products gave significant and equal control of *Alternaria* leaf spot on Impatiens. However, there were some spots on the plants treated with Heritage and Insignia. Heritage showed some spots in the second trial but Insignia appeared to work a little better in the second trial.

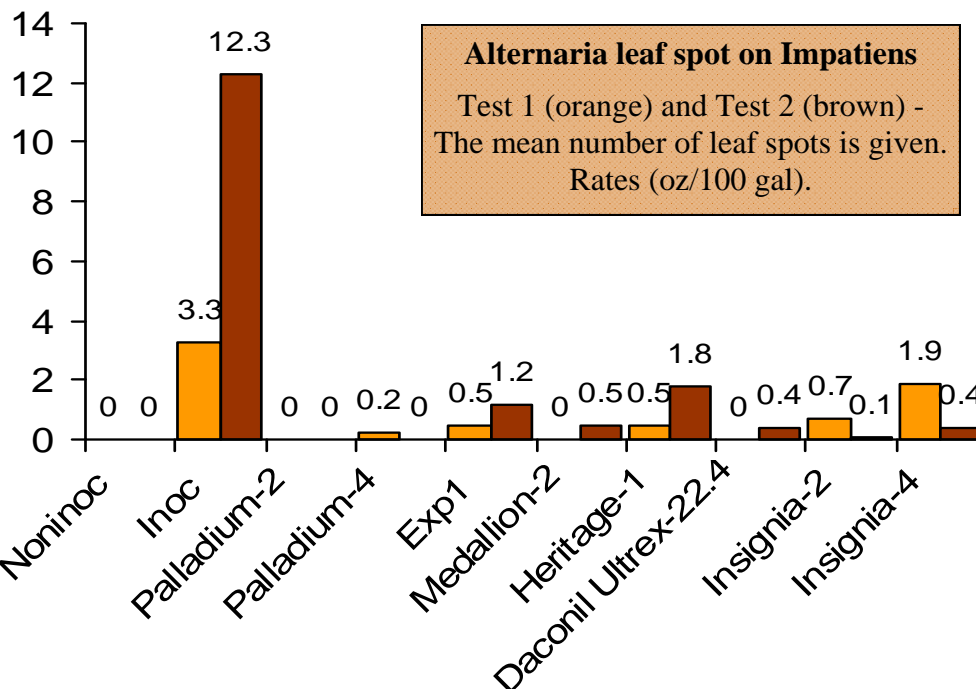
For both trials, the best prevention was seen with Palladium, Medallion and Daconil Ultrex. Palladium is a combination of fludioxinil (Medallion) and cyprodanil. Exp1 (from Syngenta) gave very good control in the first trial and had a few spots in the second trial.

We still had a few more extra impatiens and a question we wanted to answer. Since Medallion is so effective against *Alternaria* leaf spot, is it safe to use on Impatiens for this purpose? We checked the Medallion label and found the following caution regarding its use under the notes section—“Drench or ____ at seedling applications to Impatiens or New Guinea Impatiens may cause stunting and/or chlorosis” [the missing word is presumably spray but might be sprenc].

We applied the following treatments to the ‘Super-seeded Pink’ variety on September 5 and 12: water, Medallion spray at 4 oz/100 gal, Medallion drench at 1 oz/100 gal and Medallion drench at 4 oz/100 gal. Drenches were applied to give complete wetting of the potting medium (Sunshine Mix. No. 1). We recorded plant height, top grade and root grade (Table below).



Treatment	Height	Height	Top grade	Root grade
Water	16.1 b	17.2 a	4.7 b	3.5 b
Medallion spray-4	14.2 a	15.9 a	4.4 ab	3.3 ab
Medallion drench-1	14.7 ab	15.7 a	4.3 ab	3.3 ab
Medallion drench-4	13.9 a	15.7 a	4.2 a	3.0 a



RESULTS

This trial showed that an early reduction in height by the 4 oz rate of Medallion as a spray or drench was no longer significant after 10 days. The only treatment that significantly affected top grade and root grade was the 4 oz drench.

I will probably keep using Medallion as a fungicide standard in *Alternaria* leaf spot trials even when I am using Impatiens. As a grower, I would probably alternate products and perhaps only use Medallion once or twice during a production cycle for Impatiens. If I were growing plugs, I would avoid the product completely as the label indicates suggest damage is likely.

Watch Out for These Diseases

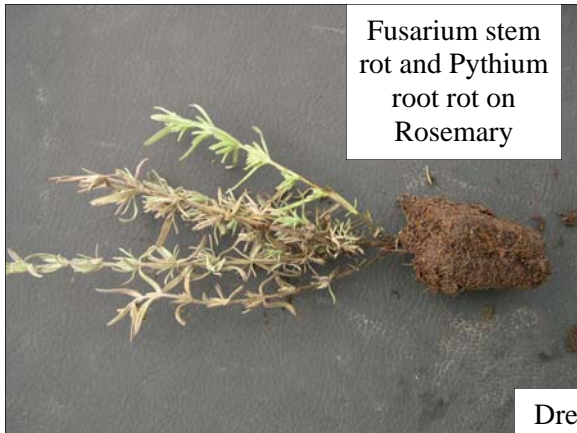
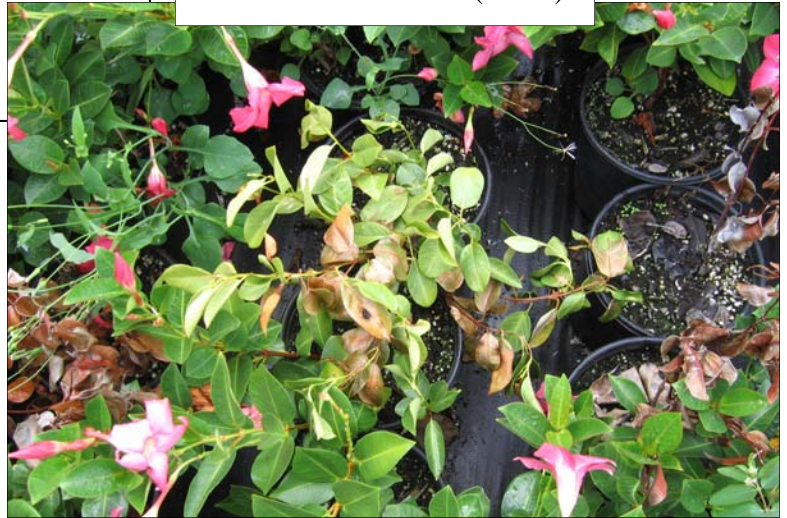
I thought I would show you some of the most recent diseases we have been diagnosing in our lab. I did make a trip to Texas earlier this month and rode with Jan Cough (Syngenta Professional Products). We saw a variety of crops and associated problems in the two days we toured. I almost felt like I was back in Central Florida with some of the crops. *Phytophthora* was especially active and although California temperatures are far below those in Texas, we have been finding the same pathogen on some of the same crops here in the past month.

Remember to check roots on your propagation materials. The Penstemon shown look like they are starved for fertilizer but the reason is that they were clobbered with *Pythium* root rot and could not absorb the nutrients that were being supplied. If you are not sure of what you are seeing, send a sample to your local lab or even to us.

The pansy with the *Drechslera* leaf spot were originally diagnosed with Round-Up damage but since the spots looked like such good candidates for a fungal leaf spot I checked them out. It seems likely that the Round-Up started the problem but the fungus had taken over. Sometimes these secondary infections stop on their own but other times a fungicide spray may be needed. Be sure to get the whole picture when diagnosing plant problems. It is the most cost effective way to solve them.



Phytophthora crown rot on Pansy above and Mandevilla (below)



Fusarium stem rot and *Pythium* root rot on Rosemary

Drechslera leaf spot on Pansy (following Round-Up damage)



Pythium root rot on Penstemon

Research Update

Are New Fungicide Formulations Always Better?

We are asked to test new formulations of fungicides sometimes to test safety and efficacy. This past summer we did an eradication trial on *Hydrangea* 'Glowing Ember' with powdery mildew. Both products are in the sterol inhibitor group—

Treatment	Rate oz/100 gal	Disease severity
Noninoculated	—	2.6
Inoculated	—	5.2
GWN 4400	10	2.3
Rubigan	10	0.6
Terraguard 4SC	4	0.7
Terraguard 50WP	4	2.0

Rubigan and Terraguard. We tested the new formulation, as well as the current formulation, each applied twice on a 10-day interval.

All of the fungicides gave statistically the same level of

control. While there were slight differences you cannot draw any conclusions regarding the new formulations being either more or less effective than those we are currently using. Differences may have occurred in a preventative trial. We did see the same results in a trial last year with the Terraguard formulations and powdery mildew on three rose cultivars.

Are Poinsettia Cultivars Resistant to Rhizoctonia Stem Rot?

We had a few rooted cuttings of four poinsettia cultivars left over from series of trials on *Pythium* and *Phytophthora*. So we decided to test them for possible resistance to *Rhizoctonia solani*, the cause of stem rot and cutting rot. We compared 'Red Elf', 'Prestige Red', 'Early Orion' and finally 'Freedom Red' by inoculating plants planted in 4 inch pots of August 14th. We inoculated them on August 22nd without any wounding and watched for symptoms. By September 6th, the plants, regardless of cultivar were dropping like flies. We rated disease from 1 (no disease) to 5 (dead). There were no significant differences between these four cultivars. Maybe next year I will collect 10 or 20 of the most common and test them again.

Cultivar	Disease
Red Elf	3.4
Prestige Red	3.3
Early Orion	2.9
Freedom Red	2.8

Relative Salt Tolerance of Five Herbaceous Perennials—Niu and Rodriguez (Texas A&M University) recently reported on trials with five popular herbaceous perennials. As water quality in many urban landscapes declines the ability of plant materials to withstand higher levels of salts is being tested. These researchers found that *Achillea millefolium* (yarrow), *Gaillardia aristata* (and *Salvia coccinea* (scarlet sage) were each tolerant of salts (4 dSme-1). In contrast, both *Echinacea purpurea* (purple coneflower) and *Agastache cana* (wild hyssop) were intolerant and damaged by this level of salt in their irrigation water. Hopefully, this work will continue to further the list of tolerant plants available to people in areas with poor water quality. See the full report at HortScience 41(6):1493-1497.

Disease Sightings From Both Sides of the Atlantic

This month, **ADAS Hardy Ornamentals Plant Notes**, reports quite a list of disease sightings. I decided to list some of my own sightings as well. Mine are based on our lab samples, nursery visits and conversations with growers from all over the country. Now is the time to be on the alert for some late summer or warm weather pathogens like *Phytophthora* but also to watch for downy mildew, powdery mildew and rust. The fall with the changing humidity and temperatures is the ideal time for pathogens like rust

Disease	England (plants)	United States (plants)
Downy	<i>Gaillardia, Helleborus,</i>	<i>Matthiola, Rosa, Geum</i>
Phytophthora	<i>Chamaecyparis, Taxus, Choisya, Weigela</i>	<i>Petunia, Viola, Mandevilla, Juniperus, Chamaleucium (wax</i>
Powdery mildew	<i>Hebe, Lonicera, Spireae, Aquilegia, Aster, Coreopsis, Delphinium, Digitalis, Monarda, Scabiosa, Viola</i>	<i>Rose, Euphorbia (poinsettia), Hydrangea</i>
Rust	<i>Bellis, Chrysanthemum</i>	<i>Hypericum, Chrysan-</i>

and powdery mildew. One grower recently told me about a powdery mildew outbreak on poinsettia that they attributed to a faulty boiler. The warm days and cool nights promote condensation on leaves and many troublesome pathogens like powdery mildew.

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