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Xanthomonas on Gardenia

CHASE RESEARCH GARDENS, INC.

CHASE NEWS

Some Like it Hot!!!!

July was exceptionally hot for the majority of the country. In Sacramento, it was common to see 110 F or higher although in Mt. Aukum, we had it easy at 104 many days! There are a variety of diseases that surface under conditions of extreme heat. Some are diseases that actually prefer heat to cold while others take advantage of stressed plants to act. Still others wait until conditions cool before they strike.

The pathogens that are most active in the heat of summer are soil-borne fungi like *Rhizoctonia* and *Phytophthora* and bacterial pathogens like *Erwinia* and *Xanthomonas*.


Erwinia on Dracaena

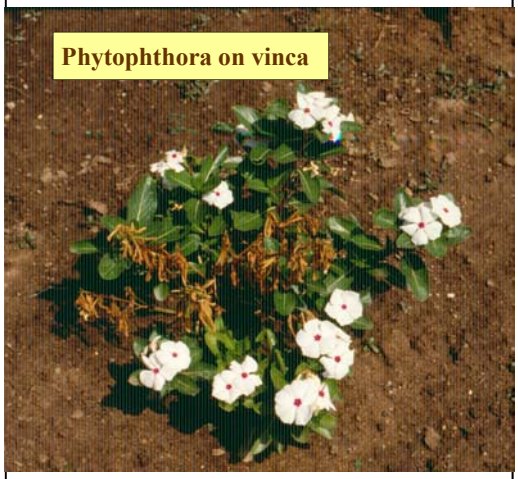
When tests are conducted in temperature controlled growth chambers, these pathogens grow best when temperatures are 90-95 F. In cooler weather, you may never see these diseases since they will lie dormant until temperatures rise to the optimum for their growth.

When temperatures are extremely high, plants are watered frequently to keep them from being damaged due to drought. Unfortunately, over-watering is easy and sometimes impossible to avoid. A rapid loss of plants due to *Pythium, Fusarium, Phytophthora, Cylindrocladium* or *Rhizoctonia* is common. The combination of heat stress, over-watering and presence of a pathogen can lead to complete root loss in a few days.


Rhizoctonia on Gomphrena

Rhizoctonia causes stem rot, cutting rot, damping-off and aerial blights if you live where it rains in the summer or you over-head irrigate. See page 2 of this issue for an update on controlling Rhizoctonia diseases.

Summer is also the season when *Phytophthora* is most severe. We just finished a trial on Phytophthora root rot on myrtle and are working on Phytophthora root rot on poinsettia right now. Not all *Phytophthora* spp. grow best under high temperatures but many do.


Phytophthora on vinca

If you manage to escape these hot weather diseases by cultural and chemical means you should not relax too much. Our weather cooled off about 20 degrees with night temperatures near 55 F some nights. The result was an outbreak of powdery mildew in less than 5 days. Another disease to watch out for if the nights have unexpectedly cooled down is rust. Both powdery mildew and rust are transitional diseases and start when humidity is high and dew formation occurs overnight.

Inside this issue:

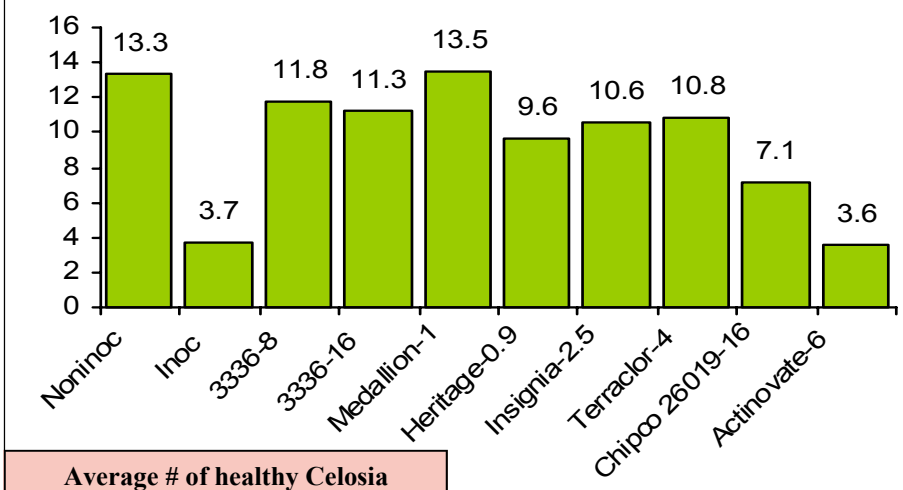
Watch Out for Rhizoctonia!

We work on *Rhizoctonia* every year and just like *Phytophthora* the trials have to wait for heat. Unfortunately, we have all been getting more heat than we like or indeed than our crops like. But this is the time to do tests on *Rhizoctonia*. Last month we reported on use of soil drenches right after seeding Celosia for control of Rhizoctonia damping-off. The results were more or less what I would expect with the exception of the lack of benefits of using Chipco 26019. We repeated the trial in late June and early July and this time, Chipco 26019 (16 oz/100 gal) provided significant control. Disease severity was lower in the second trial. Other products were about the same as the first time with best control achieved with Medallion at 1 oz and 3336 (8 or 16 oz). Insignia, Terraclor and Heritage were also very good to excellent. The graph shows the average germination for the two trials.

Last month we also trialed some experimental products for control of Rhizoctonia stem rot on common Impatiens. In this trial, we applied products as sprenches directed to the stem base twice on a 14-day interval. The table below shows the treatments and rates as well as the results of the trial.

Treatment	Rate/ 100 gal	Disease severity
Noninoculated control	——	1.0 a
Inoculated control	——	4.2 d
Rhapsody	2 quarts	3.4 c
Cleary 3336	16 oz	1.0 a
Rhapsody and 3336	2 quarts and 8 oz	1.2 a
Palladium	1 oz	1.0 a
Palladium	2 oz	1.0 a
Palladium	4 oz	1.4 a
Palladium	6 oz	1.0 a
Experimental A	8 oz	1.0 a
Experimental A	16 oz	1.0 a
Experimental B	8 oz	2.4 b
Experimental C	2 quarts	1.0 a

Numbers followed by different letters are significantly different.



Average # of healthy Celosia seedlings (two trials) products were applied in oz/100 gal once.

We found that Rhapsody at 2 quarts/100 gal (1/2%) did not provide much control of this Rhizoctonia stem rot. Since the product is used as a foliar spray at present it did have a chance of working. It may have worked better at a higher rate. We generally see best control of foliar diseases with 1-1 1/2 % so choosing such a low rate for this trial may have resulted in a low level of control. All treatments with 3336 (8 or 16 oz/100 gal) gave excellent control as years of thiophanate methyl use for this disease would suggest.

The new combination product from Syngenta (Palladium) gave excellent control when used at 1-6 oz, although a single plant in the 4 oz treatment did develop *Rhizoctonia*. Palladium is composed of fludioxinil (Medallion) and cyprodanil (an active ingredient we do not have for ornamentals at this time). The *Rhizoctonia* control is presumably given by the Medallion component.

Finally, we include three experimental products being researched and developed by Cleary Chemical. This test indicates that Exp. A and Exp. C will be excellent products for *Rhizoctonia* prevention. Exp. C (a combination of thiophanate methyl and iprodione) would be expected to give superior performance on Rhizoctonia due to its active ingredients. Exp. B gave significant but less preventative control at the rate tested. It is good to know our choices for disease control continue to grow.

Some of the most common plants attacked by Rhizoctonia

Stock (Matthiola—above) damping-off

Celosia damping-off

Vinca damping-off

Gomphrena damping-off

Impatiens damping-off and stem rot

Poinsettia cutting rot and stem rot

Hydrangea cutting rot

Fern aerial blight

Ligustrum web blight

Pittosporum web blight

Azalea web blight

Alternaria Leaf Spot on Impatiens

We often run Alternaria leaf spot tests on impatiens, pittosporum and zinnia. This season we got ready for a zinnia test only to find our zinnia isolate of Alternaria was DEAD. The species of Alternaria are distinct for these three plants and cannot be interchanged, unfortunately. They also don't survive for long periods in tests tubes. So we dumped the zinnias and started over a few weeks later with impatiens. The first test (orange portion of the table) had very high disease pressure while the second test (green portion of the table) had low disease pressure. The tests were run at about the same time (end of June through mid-July) but the temperature during the inoculation period was considerably higher for the second test than it was for the first test and resulted in a lower disease incidence.

The first trial was started on 22 June and employed two foliar applications on a 7-day interval. Plants were inoculated with spores of *Alternaria alternata* three days after the first fungicide application. The second 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. Number of leaf spots per pot was recorded 5 days after the final fungicide treatment for the first trial and one day after the final fungicide treatment for the second trial.

Treatment	Rate/100 gal	Disease control
Experimental D	10 oz	Very good
Pentathlon and Exp. D	24 oz and 10 oz	Excellent
Pentathlon	24 oz	Very good
Heritage	1 oz	Very good o excellent
Insignia	2.5 oz	Very good to excellent
Compass O	1 oz	Very good to excellent
Palladium	2 oz	Excellent
Palladium	4 oz	Excellent
Experimental E	2 oz	Very good
Medallion	2 oz	Excellent
Heritage	1 oz	Very good
Daconil Ultrex	1.4 lb	Excellent
Insignia	2 oz	Very good
Insignia	4 oz	Some
Experimental F	8 oz	Good
Experimental G	7 oz	Very good to excellent

We had a few treatments in both trials, namely Insignia (slightly different rates) and Heritage. 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 Heritage and Insignia resulted in very good control. It seems that a few spots may form in treated plants regardless of disease pressure which is the opposite of conventional wisdom.

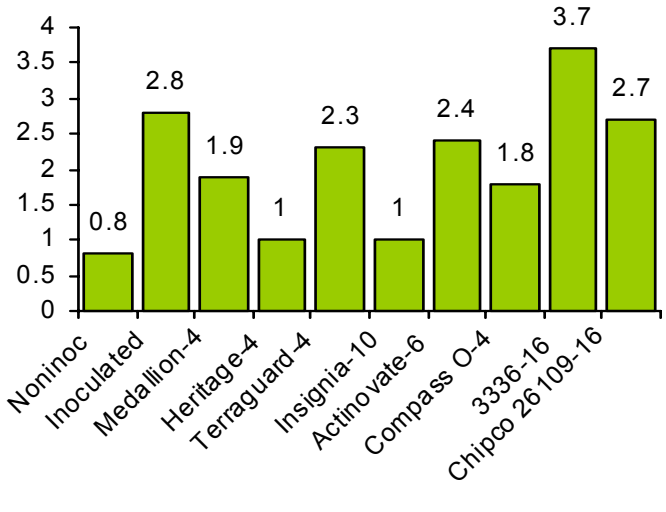
Pentathlon (mancozeb) or Exp. D (each from SePRO) gave very good control but when the two products were combined control was excellent.

Palladium (Syngenta combination of fludioxinil and cyprodanil), Medallion (fludioxinl) and Daconil Ultrex each resulted in 100% control. Exp. E (from Syngenta) gave very good control. Exp. F and G are both from BASF and they resulted in good or very good to excellent control, respectively. We still have to do the zinnia trial so you can look for results of that trial in October.

Fusarium Stem Rot on Christmas Cactus

Sometimes I miss working on diseases I saw often during the 14 years I spent in Florida. Since some of them occur throughout the US, we can still perform trials. One of these diseases is Fusarium stem (or cladophyll) rot on Christmas cactus. We did one trial (see June Chase News) with low disease pressure and we decided to repeat it last month. This time we had slightly higher disease pressure and added two treatments (3336 and Chipco 26109). Fungicides were sprayed twice on a 7-day interval and plants were inoculated (including wounding with a dissecting needle) 3 days after the first application. Rates are given in oz/100 gal). We rated the number of stem spots (mainly at wounds) one week after the final application.

Results from the two trials were very similar so they were combined. The best products were Heritage and Insignia (both strobilurins). Compass O is also a strobilurin but did not work quite as well on this disease. Medallion was as effective as Compass O but the remaining products gave very little control. 3336 was actually statistically worse than doing nothing.



Research Reports and Industry Updates

After the Society of American Florist's meeting in Los Angeles last winter, I started receiving a newsletter from a private consulting business in England. It has been interesting to read the reports of diseases and insect pests every month as well as well as biological and chemical control suggestions.

This month, **ADAS Hardy Ornamentals Plant Notes,** reports the following diseases for July.

❖Powdery mildew (*Acer, Clematis, Lonicera, Mahonia, Quercus* and *Spirea*).

❖Phytophthora root rot (*Choisya, Escallonia, Euphorbia, Geranium* and *Lavandula*).

❖Viral diseases (*Canna*)

We have also been seeing many of the same problems. Many locations in the US are experiencing record heat. After a few weeks above 100 F, we had a cooler period for about a week. Our hydrangeas destined for an anthracnose trial this fall were found with powdery mildew yesterday. Check all of your crops that are suscpeitble to powdery mildew before it gets out of hand.

It is also important to realize that watering to beat the heat can lead to root rot. Seems counter-intuitive but the fact is that sometimes all of the water needed to keep the crop alive results in over-watering the root systems. It may be a good idea to apply a preventative fungicides for *Phytophthora* and *Pythium*. Foliar sprays with Aliette have been shown to control root diseases caused by these fungi. This method of application would be ideal since it does not add yet more water to a potentially water-logged root system. The phosphorous acids (phosphonates), like Alude and Vital, also work when applied as drenches but I don't know if they can effectively be applied as foliar sprays for root rots. The tops do tell you what is happening to the roots but it is usually after significant root damage has occurred and treatment options are therefore limited. The only way to know how the roots are doing is to look at them. I suggest getting your hands dirty today by knocking a few plants out of their containers.

Pythium root rot

Irrigation Method Affects Mites and Their Predators—In June, Opit et al. reported on the effects of overhead vs. drip irrigation on populations of two-spotted spider mites and *Phytoseiulus persimilis* (HortScience 41:691-694). This Kansas State University research team used impatiens as the test crop and found that overhead irrigation significantly reduced populations of both the good and pest mites. Irrigation alone reduced two-spot mites but in combination with the predator mite control was the highest. The use of overhead irrigation may be effective on crops that do not have issues with foliar diseases like Alternaria leaf spot and Pseudomonas leaf spot. However, these types of diseases can be avoided almost completely using an irrigation method that does not get the leaves wet. Wouldn't it be nice if life were simpler and a single method was best for all pests!

Two-spotted spider mite damage on New Guinea Impatiens

Herbicide-treated Mulches for Weed Control—Case and Mathers reported on the benefits of treating mulches for weed control in nursery containers crops in June (J. Environ. Hort.24:84-90). Although there are a range of effective products for weed control in containers, they can result in crop damage. These Ohio State researchers found that effective prevention of weeds by treating mulches with herbicides occurred without damaging the crop. Efficacy was increased and extended compared to traditional application methods. A variety of mulches and herbicide were tested on ligustrum, creeping juniper and wintergreen boxwood.

Potting Medium Affects Biological Control of Black Vine Weevil—In June, (J. Environ. Hort. 24:91-94), Bruck reported on the effect of potting medium components on infectivity of *Metarhizium anisopliae*. The work was performed at the USDA-ARS Horticultural Research Lab in Corvallis, OR. Dr. Bruck tested coir, fir bark, hemlock bark, peat moss and perlite for effects on the biological control agent. The research demonstrated that the fungus lived for at least 133 days after a single application at 8 oz/cubic yard and it maintained its ability to control black vine weevil larvae. The author suggests that a single soil incorporated application of *M. anisopliae* has the potential to control this insect pest for at least one and perhaps more growing seasons.