

# CHASE NEWS

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CHASE HORTICULTURAL  
RESEARCH, INC.

## CHASE BASE is launched

As readers of **Chase News** you are among the first to read about results from our many trials on fungicides as well as other research performed by our expert team. If you have been subscribers since 2002 you may have all of the issues and our indices (on our website [www.chasehorticulturalresearch.com](http://www.chasehorticulturalresearch.com)) are tools you can use to review previous work. I know that I often want to remember what we have done on a particular fungicide or a particular disease and have taken hours to find specific reports I wanted to review.

Late last year, we decided to launch another page dedicated to retrieval of a specific fungicide trial. This new feature is called **Chase Base** to reflect the data developed by Chase Horticultural Research, Inc. over the past 12 years. **Chase Base** contains a series of fungicide trials showing the plant, pathogen and fungicides tested with a summary of the data we obtained. I have included one such report to the right for your information. **Chase Base** is fully searchable by plant, pathogen and fungicide. The PDF files can be downloaded and printed if desired. At present we have about 210 reports included and will be adding another 100 by mid 2008.

Unlimited access to **Chase Base** can be purchased once a year for \$99. Subscribing to this new service should simplify your searches for information on efficacy of specific fungicides or if you are looking for all of our trials on *Alternaria* leaf spots.

You can sign up for Chase Base in our On-Line store. With this, you will get a password that allows unlimited access.

Call Mike (530)620-1624 if you have any questions!



Title: Effect of fungicides on *Mycocentrospora* leaf spot on Pansy

Host: *Viola x wittrockiana* (pansy) 'Majestic Giant Yellow'

Inoculation: Plants were inoculated with spores from a culture of *Mycocentrospora acerina* mixed with sterilized water. The slurry was sprayed onto the inoculated plants with a hand-pump spray bottle on 6 February, 2006. After inoculation, plants were placed into plastic bags for the duration of the trial.

Treatments:	Rate/100 gal
A. Water - inoculated	-----
B. Medallion	2 oz
C. Chipco 26019	16 oz
D. Chipco 26GT	32 oz
E. Daconil Ultrex	22.4 oz
F. Compass O	2 oz
G. Heritage	2 oz
H. Insignia	5 oz

Chemical application dates: All treatments were applied as a foliar spray (to drip) on a 10 day interval as listed above on 2, 13 and 22 February, 2006.

Treatment	Rate/100 gal.	Disease Severity 2/24/06
Water Inoculated	-----	1.1 a
Medallion	2 oz	1.4 ab
Chipco 26019	16 oz	1.3 ab
Chipco 26GT	32 oz	1.8 b
Daconil Ultrex	22.4 oz	1.4 ab
Compass O	2 oz	1.2 a
Heritage	2 oz	1.4 ab
Insignia	5 oz	1.1 a

Disease severity was recorded using the following scale: 1 – no disease, 2 – slight, 3 – moderate, 4 – severe to 5 – extreme.

### Inside this issue:

<i>Pythium</i> trials on Ranunculus and Snapdragon	2
Post harvest Control of Botrytis on Flowers	3
Products in Review—Daconil Ultrex	4
Disease Watch for January—Botrytis	4

## Pythium Trials on Ranunculus and Snapdragon

We spend a lot of time working (or at least trying to work) on Pythium control on a variety of ornamentals. It is the most common disease on ornamentals but can be very hard to cause in an experiment. This is because many times, Pythium root rot starts but does not cause obvious symptoms unless the crop becomes stressed in some way. This can be due to over watering, use of poorly draining potting medium and over-use of fertilizer. It also happens when pots, potting media or flats are re-used without treatment. In other cases, the seedling, cutting or bulb is infected with Pythium when it is received.

The first trial we report this month was performed on snapdragon plugs. These plants appear to be very sensitive to Pythium in some potting media but not in others. *Antirrhinum majus* 'Cool Bronze' were planted in 3.5 inch pots containing Sunshine No. 1 mix. They were top-dressed with Osmocote Plus 15-9-12 (3-4 month release schedule) on 22 October, 2007. The plants were treated with various fungicides to prevent Pythium by applying them as drenches (about 1 pint/square foot of surface area) on a 7 or 21-day interval. Fungicides used on a 7-day interval were STBX-013 (similar to ZeroTol) and ZeroTol (1%). Fungicides used on a 21-day interval included: FenStop (a new product from OHP at 7 or 14 oz/100 gal), Terrazole 35WP (6 or 10 oz/100 gal) and Subdue MAXX (1 oz/100 gal.) Plant height and overall top grade responded dramatically to these treatments. Top grade was rated from 1 (dead), 2 (poor, unsalable), 3 (good, salable), 4 (very good, salable) and 5 (excellent, salable). This trial was very short (only 5 weeks) and the best ratings were only in the good range.

Both rates of Terrazole and the 7 oz rate of FenStop resulted in excellent prevention of Pythium root rot resulting in taller and better quality (top grade). Neither the ZeroTol nor the experimental product (STBX-013) gave any control of the Pythium as they were the same as the water treated control. The failure of the Subdue MAXX indicates that the Pythium that occurred

is resistant to this fungicide. We have seen this and confirmed it with lab tests in previous trials with snapdragon.

We also did another ranunculus trial for Pythium control. In this case we planted ranunculus bulbs in 3.5 inch pots containing Fafard Mix 3B and Osmocote Plus 15-9-12. These bulbs have tested positive for Pythium. Plants were drenched on a 30-day interval with the following fungicides: Heritage (2 /100 gal), Medallion (2 oz/100 gal), Subdue MAXX (2 oz/100 gal), Heritage and Subdue MAXX (1 oz each/100 gal), and Medallion and Subdue MAXX (1 oz each/100 gal).

### Pythium root rot on Ranunculus

Treatment	Rate/100 gal	Top grade	Root grade
Water	—	2.4 a	2.2 a
Heritage	2 oz	3.0 ab	2.9 b
Medallion	2 oz	2.8 ab	3.3 b
Subdue MAXX	2 oz	3.2 b	3.0 b
Heritage/Subdue MAXX	1 oz each	2.8 ab	3.2 b
Medallion/Subdue MAXX	1 oz each	2.7 ab	2.7 ab

Numbers in the same column followed by the same letter are not significantly different (Student-Newman-Keuls method)

Top grade was rated as follows: 1 (dead), 2 (poor, unsalable), 3 (good, salable), 4 (very good, salable) and 5 (excellent, salable) and root grade (same scale) were rated twice (about 30 and 60 days after test initiation). No differences were noted in emergence dates for these bulbs and neither top or root grade was significantly affected at the 30 day rating. However, at the 60 day rating, differences appeared. The best tops formed on the bulbs treated with Subdue MAXX (2 oz) while the best roots were found on those treated with Medallion (2 oz). It is clear that Pythium was not the only fungus affecting these bulbs since Medallion does not control this pathogen but is very good for Fusarium and excellent for Rhizoctonia. The two combination treatments were very good but slightly less effective than single treatments perhaps due to the decreased rates tested when in combination. In any event, there are quite a few fungicides that help with root rot control from standards Terrazole and Subdue MAXX to the newer FenStop.

### Pythium root rot on Snapdragon

Treatment	Rate/100 gal	Final height (cm)	Final top grade
Water	—	8.1 a	2.4 a
ZeroTol	1% (weekly)	6.9 a	2.2 a
STBX-013	0.2 , then 0.04% (weekly)	6.7 a	2.2 a
Terrazole 35WP	6 oz (21-day)	13.8 c	3.2 c
Terrazole 35WP	10 oz (21-day)	12.7 c	3.1 c
FenStop	7 oz (21-day)	11.8 bc	3.0 c
FenStop	14 oz (21-day)	10.3 b	2.8 b
Subdue MAXX	1 oz (21-day)	7.6 a	2.3 a

Numbers in the same column followed by the same letter are not significantly different (Student-Newman-Keuls method)

## Post Harvest Control of Botrytis on Flowers

We have been working off and on over the past few months on controlling Botrytis blight on cut flowers after harvesting. Even when flowers are harvested, handled and stored using the best methods that maintain cold and minimize free moisture, some flowers still develop Botrytis. Sometimes growers dip especially sensitive flowers like roses, Liatris and gladiolus into fungicides for prevention of Botrytis in shipping boxes.

We performed a trial in San Diego County using freshly harvested Liatris. Bunches were harvested on day one, dipped on day 2, immediately placed in cold storage overnight and then shipped to our Mt. Aukum facility on day 3. We received them on day 4 and they were placed in buckets of water to test Botrytis development as well as vase life.

Botrytis Control on Liatris		
Treatment	Rate/100 gal	Botrytis severity
No dip	—	3.1 d
Water	—	2.9 cd
Decree	24 oz	1.5 a
Rhapsody	1%	2.2 b
Rhapsody	1.5%	2.5 bc
Rhapsody	2%	2.1 b

Numbers in the same column followed by the same letter are not significantly different (Student-Newman-Keuls method)

The treatments were: no dip, water, Decree (24 oz/100 gal), and three rates of Rhapsody (1, 1.5 and 2%). The dipping process was simply that and not a soak. Excess solution was shaken off and bunches placed in buckets with water overnight at 34-36 F. We did not see any Botrytis on the flowers when they were received and they were subsequently inoculated with spores of the pathogen. We rated Botrytis severity 10 days after receipt. The results are shown in the table below.

Botrytis was rated using the following scale: 1 (none), 2 (slight), 3 (moderate) and 4 (severe).

This test showed that Decree gave excellent prevention of Botrytis. It was also very interesting to note that all rates of Rhapsody gave significant control as well. We will be continuing with this work later in January. This time we are testing Pageant and Insignia. Look for results in the February issue of **Chase News**.

One of the most interesting trials we completed last year was with Dr. George Staby of Perishables Research Organization. He and I tested some experimental formulations of paper impregnated with chlorine dioxide a couple of years ago. Since then improvements occurred in the paper and we decided to test it again. This time, roses were received from South America. We placed

Botrytis Control on Roses	
Treatment	Botrytis colonies
No paper 24 hours	43.1 c
No paper 48 hours	17.5 b
Paper A 24 hours	0.7 a
Paper B 24 hours	0.8 a
Paper A 48 hours	11.4 ab
Paper B 48 hours	6.6 ab

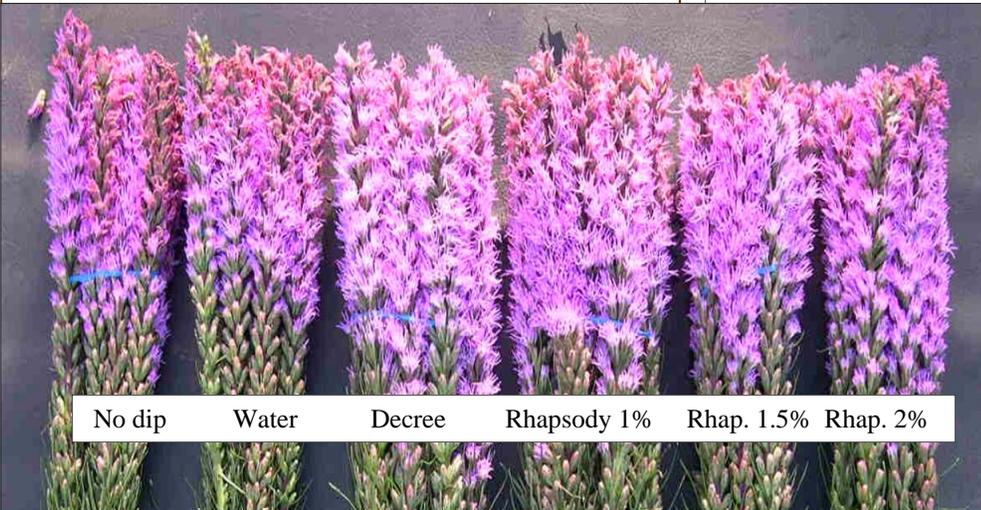
Numbers in the same column followed by the same letter are not significantly different (Student-Newman-Keuls method)

sheets of the paper in each box (as well as some without) and also placed plates of Botrytis cinerea in the boxes as well. The moisture in the roses activates the chlorine dioxide and results in a type of fumigation of the box contents. The flowers did not show differences in Botrytis blight but the spread from plates with Botrytis spores to new culture plates showed dramatic effects.

Plates that were exposed for 24 hours actually showed more Botrytis spread than those exposed for 48 hours.

However, if either paper A or B were used in the boxes significantly fewer viable spores were able to move from the source plates to the test plates. When exposed for 48 hours the numbers were higher but still significantly lower than in boxes without any paper.

These results show two means of preventing losses due to Botrytis on cut flowers. I am looking forward to seeing the new paper products fully developed and labeled for this use.



No dip      Water      Decree      Rhapsody 1%      Rhap. 1.5%      Rhap. 2%

## Products in Review—Daconil Ultrex

We are starting our review of specific products again in this issue of Chase News. This month, we have summarized our trials over the past 12 years for Daconil Ultrex. The target pathogen, plants used in the trial(s) and the overall results are given. Those target pathogens where the fungicide gave excellent results at least part of the time are shaded in blue for quick reference. We tested Daconil Ultrex at 1.4 lb/100 gal and usually applied it as a spray.

As you can see from the table, Daconil Ultrex (chlorothalonil) has a very wide spectrum of activity and offers a high level of control for many of them. It is especially effective on foliar diseases with the notable exceptions of powdery mildew, rust and downy mildew (usually). It also should never be drenched onto plants in containers since some plants are sensitive and show root damage. As always—check the product label for legal uses and sites.

Disease	Plants Tested	Effect
<i>Alternaria</i>	Impatiens, lobelia, pansy, zinnia	Very good to excellent
<i>Botrytis</i>	Cyclamen, exacum, fuschia, geranium, gerber daisy, lisianthus, pansy, rose	Very good to excellent
<i>Cercospora</i>	Moluccella, myrtle	Very good to excellent
<i>Colletotrichum</i>	Cyclamen, hydrangea	Some
<i>Coniothyrium</i>	rose	Very good
<b>Downy mildew</b>	snapdragon	Some
<i>Fusarium</i>	Dracaena (leaf spot), lisianthus	Very good to excellent
<i>Gliocladium</i>	Palm	Good to very good
<i>Heterosporium</i>	Dianthus	Very good to excellent
<i>Myrothecium</i>	Dieffenbachia, New Guinea impatiens	Very good to excellent
<i>Phyllosticta</i>	Ficus, vinca	Some
<i>Rhizoctonia</i>	Fern, impatiens, poinsettia	Excellent
<i>Sclerotinia</i>	Petunia, primula, stock	Excellent

## Disease Watch for January—Botrytis

This month we also start a new feature and that is a quick review of a specific disease to watch for. These will be chosen to match peak times of the year when that disease is expected to occur. For January we are covering Botrytis blight. The cool, wet days of winter are optimal for development of Botrytis blight on ornamentals. Check the most susceptible plants first including geranium, cyclamen and primrose.

Recognizing the disease is the first key. All parts of a plant may be attacked including flowers, cuttings, stems and of course leaves. When Botrytis is sporulating it forms gray to brown dusty masses that are easily spread if jostled. Watering, spacing and even spraying fungicides have been shown to spread these highly mobile Botrytis spores.

The best fungicides in our trials are listed in the table. They are in separate fungicide classes and must be rotated (at least two) to make sure resistance to them does not develop. Remember that even the best fungicides work better if you adopt some cultural control methods as well. For Botrytis this includes keeping the humidity as low as possible, watering early in the day to promote rapid drying, using fans and spacing plants and venting and heating at dusk if possible. It is critical as well to keep Botrytis out of your greenhouse by examining plants carefully when they are received. If you find signs of Botrytis you can either dump the plants or remove affected parts such as flowers or a few leaves. Be sure to take them out of the greenhouse since Botrytis spores form very readily on dead leaves in trash cans and spread easily onto the crop.



Fungicide	Active ingredient	Rate/100 gal
Chipco 26019	iprodione	16 oz
Daconil Ultrex	chlorothalonil	1.4 lb
Decree	fenhexamid	16-24 oz
Medallion	fludioxinil	2-4 oz

