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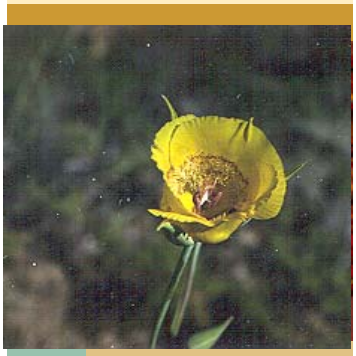


CHASE NEWS

CHASE RESEARCH GARDENS, INC.

BOTRYTIS IS BACK

It has been almost ten years since I left the warmth of Florida for the wet-cold land that is California in the winter. When I worked in Florida, I rarely saw Botrytis but it has become a familiar friend since returning to California. The best fungicides we have found for control of Botrytis blight on ornamentals are chlorothalonil (Daconil and Spectro), Fenhexamid (Decree), Fludioxinil (Medallion), and Iprodione (Chipco 26019 and 26GT).

Over the past year we have looked at Agri-50 (a combination of several active ingredients, Cal Agri Products), Endorse (polyoxin-D, Cleary Chemical), CX7001 (an experimental product), and BAS500 (a new strobilurin, BASF Corporation). We performed our trials on cyclamen flowers, pansy, *Ranunculus*, *Exacum* and geranium. In some cases, we performed trials on plants that were already infected with Botrytis blight (geranium) while in others we started treatments before Botrytis had infected the plants. Some products work better as preventatives than others.

Our greenhouses are only slightly under our control with minimum temperatures fixed at 50F. Fungicide applications were always made when temperatures exceeded 55F but were below 85F. Nearly all of our work on Botrytis was performed during the winter months since the fungus thrives on wet, cool, cloudy conditions.

Overall, the best fungicides remain unchallenged with Chipco 26GT, Decree and Medallion giving the best control. Some of the new products showed potential for very good control of Botrytis blight including Agri-50, BAS500, CX-7001 and Endorse. Agri-50 gave better control at lower rates since higher rates results in slight phytotoxicity and therefore more Botrytis. Of these, only Endorse is currently labeled for ornamentals at this time. The rates tested were 0.55, 1.1 and 2.2 lb/100gal. The low rate was not effective for Botrytis control in our trials but the other two rates were very good. For more complete discussion of our Botrytis (and Sclerotinia) trials see the January issue of **Greenhouse Product News**.

TRIAL SUMMARY—NOT ALL PRODUCTS TESTED ARE INLCUDED IN THIS TABLE.

	Efficacy	Residue	Phytotoxicity
Camelot	Some to excellent	Slight-some	Burning can occur if drying is too slow
Chipco 26019 or 26GT	Excellent	Some	Safe (except o petunias)
Cleary 3336 or Fungo	Poor to fair (resistance is known)	Non-slight	Safe
Compass O	Very good	None-slight	Safe
Daconil	Excellent	Moderate	Can damage open flowers
Decree	Excellent	Some	Safe
Dithane	Good to excellent	Moderate-heavy	Safe
Endorse	Very good to excellent	Slight-moderate	Safe
Heritage	Fair to good	None-slight	Safe
Medallion	Excellent	None-slight	Safe
MilStop	Poor	Some-heavy	Can burn tender plants
Phyton 27	Poor to good	None	Burning can occur if drying is too slow
Terraguard	Good to very good	None-slight	Safe

Inside this issue:

Basamid Control of Weeds and Nematodes in Cut Flowers

Over the past two years, we have been working with California researchers and growers on methyl bromide alternatives for control of pests in field-grown and greenhouse-grown cut flowers and bulbs like Ranunculus, Gladiolus, Liatris, Freesia, Delphinium and Calla lily. The primary problems all of these crops face is weed control. Although there are a number of effective herbicides they are not safe after the crop is planted and do nothing to reduce crop carry over typical of many bulb-corm-rhizome produced flowers. Pathogens like *Fusarium, Sclerotinia, Pythium* and *Xanthomonas* can also be problems when methyl bromide is not used. Although nematodes are considered key pests, few trials with field populations of nematodes like root knot or lesion have been conducted.

An opportunity to test Basamid (dazomet) for nematode control occurred in the central coast area on a field of rice-flower infested with root knot nematode (*Meloidogyne* sp.). A small plot trial was designed to test efficacy of Basamid applied in two different methods, each sealed with either tarp or water.

Treatments

A. Untreated control

B. Basamid-450 lbs/acre incorporated, 100 top-dressed-water sealed

C. Basamid-450 lbs/acre incorporated, 100 top-dressed-tarp sealed

D. Basamid-550 lbs/acre incorporated, water sealed

E. Basamid-550 lbs/acre incorporated, tarp sealed

Basamid was applied by hand to 100 square foot plots and then roto-tilled to a depth of 8-12 inches. They were immediately sealed with either plastic tarp or water for a period of 7 days.

Soil samples were collected before treatment from each plot and again 3 weeks after treatment. All nematodes (parasitic and free-living) were evaluated but we have concentrated on root knot nematode counts since symptoms on the rice flower were typical of that pest. After treatment we also counted numbers of grassy, broadleaf and iceplant weed seedlings. Two-square foot sub-plots were counted in each replicate plot. Finally, the trial was planted with snapdragon plugs as a bioassay. Eight weeks after they were planted, their vigor was recorded to determine treatment effects.

We found that none of the Basamid treatments resulted in any decrease in population of juvenile root knot nematodes compared to the control. The nematodes were clustered around the original planting of rice flower. As they were planted on 5-ft centers and the plots were only 20 feet long it was possible for one plot to have a high concentration of nematodes while the next had a very low concentration. Soil samples were accumulated by massing 10 randomly selected cores in each plot. This trial really demonstrated the need to sample plots before and after treatment in natural infestations of nematodes.

Since nematode control did not occur it would be easy to assume that the Basamid was not effectively applied. However, the weeds data clearly shows that the Basamid was very effective in controlling all of the categories of weeds we evaluated. The water seal was slightly less effective than the plastic tarp but statistically they were equivalent. Finally, populations of *Pythium* spp. Were effectively reduced with all four of the Basamid treatments.

One of the Basamid split application water sealed plots is shown above (plot starts at the stakes). The green patch to the left shows part of one of the untreated control plots.

This trial shows the high degree of weed control of Basamid applied in two methods and sealed with water or plastic tarp. Pythium was also controlled but root knot nematodes were not in this trial. Further trials with Basamid may be needed to determine whether it can effectively control other nematodes in cut flower and bulb production in California.

Special thanks to All Season Flowers in Nipomo, CA for hosting the trial and of course BASF Corporation and the California Cut Flower Commission for funding. In addition, thanks to Dr. Jim Gerik (USDA-Fresno) for all of his technical and non-technical assistance.

Effect of Basamid treatments on grass and broad-leaf weeds, juvenile female root knot nematode and Pythium populations in a field-grown cut flower crop.

Treatment	Rate/acre-seal	# grass	# broad-leaf	Pre-trt # nemas per 500 cc soil	Post-trt # nemas per 500 cc soil	# Pythium colonies
Control	---	11.9 ab	10.4 b	57 a	87 a	11
Basamid	450/100 lbs-water	1.4 a	0.7 a	98 a	57 a	0
Basamid	450/100 lbs-tarp	0 a	0 a	65 a	70 a	1
Basamid	550 lbs-water	2.2 a	0.9 a	52 a	57 a	0
Basamid	550 lbs-tarp	0 a	0 a	22 a	44 a	0

Numbers in the same column followed by the same letter were not significantly different using ANOVA.

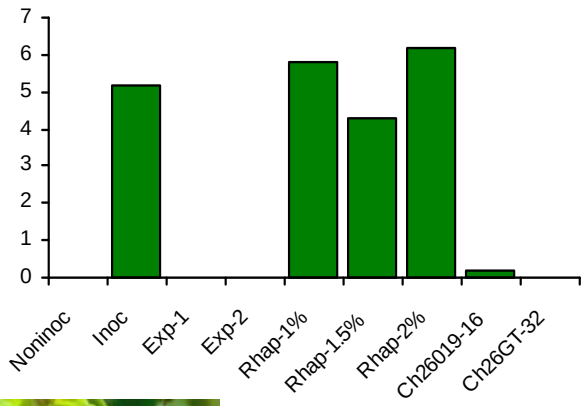
ALTERNARIA LEAF SPOT ON IMPATIENS

We have been struggling to complete a trial on Alternaria for the past year with little success. Finally, last month, we obtained some new isolates of *Alternaria* sp. from impatiens and started a trial immediately. The plants were treated with the fungicides once before inoculation and then twice more on a weekly schedule afterward. Spots started to appear about 1 week after inoculation.

Treatments included two experimental formulations of chlorothalonil (Exp-1 and Exp-2), three rates of the bio-fungicide, Rhapsody (1, 1.5 and 2%), and formulations of iprodione (Chipco 26019 50W-16 oz/100 gal and Chipco 26GT-32 oz/100 gal). The graph below to the left shows the number of spots on leaves and flowers on December 1.

The chlorothalonil formulations caused phytotoxicity and had a very slight residue. Rhapdosy was safe and had no visible residue at the rates tested. Finally, the iprodione products were safe in this test but the 50W form left a sight-moderate residue while the 26GT left no visible residue.

Efficacy was excellent with both experimental forms of chlorothalonil as we expected from previous experiences with Daconil. Iprodione forms were also excellent at preventing Alternaria leaf and flower spot in this trial. Rhapsody was ineffective in controlling Alternaria on impatiens at the rates tested here.



NUMBER OF SPOTS ON LEAVES AND FLOWERS ON IMPATIENS (ABOVE)

TYPICAL ALTERNARIA LEAF SPOT ON IMPATIENS

PYTHIUM ROOT ROT ON PANSY

Pythium remains one of the most common ornamental diseases occurring on most bedding plants, nursery crops and foliage plants. The disease often escapes notice until nearing crop completion. The symptoms cab be as simple as stunting, but root and stem rot and even blighting of foliage can occur. On pansies I have seen a severe and rapid blight occur but most recently we have been working with a slow decline related only to root rot.

In September, we started a new trial on control of Pythium root rot on pansy. 'Crown Blue' plugs were established in 3.5 inch pots containing Sunshine Mix No. 1 and top-dressed with Osmocote Plus 15-9-12. They were drenched on 26 September and again 4 weeks later. Treatments included Ranman (an experimental fungicide) at 0.75, 1.5 and 3 oz/100 gal, Terrazole 35W (6 oz/100 gal), PlantShield HC (4 oz/100 gal), Subdue Maxx (1 oz/100 gal) and Aliette 80WDG (16 oz/100 gal). Plants were inoculated with the pathogen three days after the first drench.

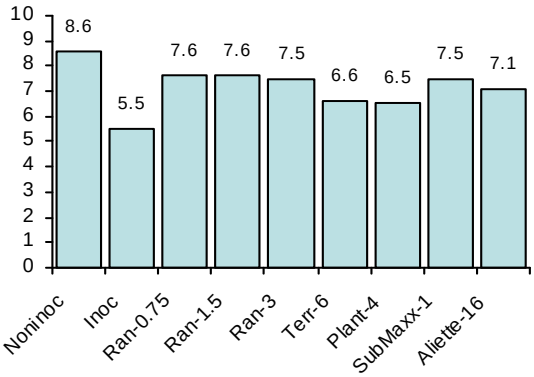
Symptoms of wilt and stunting started to appear about a month after inoculation. Top grade was best on plants treated with the 3 oz rate of Ranman (equal to the noninoculated control) and Subdue Maxx. Only lantShield failed to give a good top grade at this time.

We completed the trial on 7 November when we rated healthy roots on each plant and recorded the fresh weight of plant tops. It was interesting that only Subdue Maxx treated plants had roots of the same quality as the noninoculated controls. In contrast, top growth was good on all Ranman treatments, Subdue Maxx and Aliette (graph to the right). Terrazole and PlantShield gave some increase in top growth compared to the inoculated control but they were not as good as the Ranman, Subdue Maxx or Aliette treatments.

This is the first times I have seen a good response in top growth without good root growth. Usually the reverse happens with no apparent damage to tops but poor roots hiding below ground. This shows the difficulty of determining crop health without checking roots as well as tops. Don't wait for a customer to notice problems. Check roots on your crops often.

PYTHIUM BLIGHT ON PANSY

FRESH WEIGHT OF PLANT TOPS (GRAMS).



INDUSTRY NEWS

Biological Control of Fusarium

In a recent article in **Plant Disease** (87:1462-1470), Rose et al. reported on Fusarium stem and root rot on greenhouse-grown cucumbers. RootShield drench, Mycostop and Prestop WP (*Gliocladium catenulatum)* each reduced disease severity in two of three trials conducted. Seed treatment with ether *Pseudomonas chloraphis* (63-28) or thiram (a vegetable industry standard for seed treatment) both reduced disease. Greenhouse conditions significantly effected efficacy of these biological control agents.

We reported on two Fusarium wilt trials on cyclamen earlier this year including PlantShield HC (previously called RootShield drench) with excellent results. Finally, several east coast researchers have found similar results with PlantShield HC for Fusarium wilt control on cyclamen.

Phytophthora in Recycled Irrigation Water

A study conducted in a Virginia perennial nursery was reported by Bush et al. (Plant Disease 67:1500-1506). The researchers collected spores of water molds from recycled water to determine what species were present and the efficacy of various methods. Only *Phytophthora cryptogea* and *P. drechsleri* were recovered using baits at the water surface. At depths of 1-2 yards, *P. cactorum, P. capsici, P. citricola* and *P. citophthora* were also recovered. The authors stressed the need for development of sampling and monitoring techniques as more nurseries use recycled irrigation water.

Daylily Rust Resistance

Since daylily rust was discovered in the US in 200, research in control has been conducted. Mueller et al. at the University of Georgia have tested 84 daylily cultivars for resistance to this rust. The table to the right lists some of their results. It is clear that there is a wide range of resistance levels. There were many more susceptible cultivars identified in their studies than resistant ones. Unfortunately, the speed with which daylily breeders produce new cultivars makes this information somewhat limited.

If you are interested in a copy of their paper contact me at MTAUKUM@aol.com. Over the years I have collected many articles on cultivar resistance in important ornamentals to their key diseases. Please let me know if you are interested in a particular disease on a crop and I will forward the information.

INTRODUCING OUR 2004 GUIDE TO ORNAMENTAL FUNGICIDES

This new wall chart is a compilation of the past ten years of trials at Chase Research Gardens. Originally published in Greenhouse Product News, we now offer the updated version in a 17 x 22 inch sturdy chart. Color photos around the table depict many of he diseases we research each year. Use the chart to choose the best products for each disease (highlighted in pink).

Order your chart today for only $10 each (plus $6 shipping and handling). You can reach us at (530)620-1624 or www.chaseresearchgardens.com.

DAYLILY RESISTANCE TO RUST

Most Resistant Cultivars	Most Susceptible Cultivars	
Prairie Blue Eyes	Little Maggie	Pardon Me
Carolyn Criswell	Judith	Christmas Carol
Mardi Gras Parade	Red Rum	Little Grapette
Woodside Ruby	Leebea Orange Crush	Rocket City
Hush Little Baby	Cranberry Baby	Bright Sunset
Follow Your Heart	Always Afternoon	Love Those Eyes
Green Flutter	Here Comes Sallyann	Hyperion
Plum Perfect	Chorus Line	Barbara Mitchell
Frankly Scarlet	David Kirchoff	Raspberry Candy
Mama Cha Cha	Elegant Cady	Benchmark
Chinese Scholar	Apollodorus	Creative rt
Charlie Pierce Memorial	Custard Candy	Seductor
Buttered Popcorn	Night Beacon	Tickled Pink
Chicago Apache	Lavender Blush	Ancient Glow