



# INDUSTRY NEWS FROM PARK CITY, UTAH

I recently attended a two-day work-shop on ornamental "medicines" sponsored by Valent USA in Park City, Utah. A group of 18 research and extension workers from Universities across the US attended. Specialists in weed science, plant growth regulators, entomology and plant pathology were present. A few of the discussion topics included trends in new plants, genetically modified organisms (GMO), EPA regulations, new pests and what works and what does not. We had many lively and somewhat challenging discussions during the meeting.

This month I will report some of the discussion on the industry outlook, generic products and resistance management. Next month I will give an overview of the products that are working and those that are not including herbicides, insecticides and fungicides.

### Industry Outlook

Allan Hammer (Purdue University) started things off. He reported the overall industry is positive with East coast growers. On the other hand, margins are shrinking and the advent of the big box-stores is not really good for the industry. The perceived trend toward a few large nursery or greenhouse operations has not materialized. There are still lots of small guys and even many part-time businesses.

Many of the attendees expressed concern over supplier consolidation. This included chemical companies like the merger between Aventis and Bayer as well as plant suppliers like Ball with their recent purchase of some European suppliers. Marketing promotion additions like "Proven Winners" and "Simply Beautiful" have not benefited growers yet. Although new crops always sell, we do not know these new cultivars well and cannot expect our research efforts to keep pace

with their introduction. Growers will probably have to assume some research responsibility by working with breeding companies before new cultivars are released.

### Generics

One of the most familiar plant growth regulators, paclobutrazole (Bonzi), is being introduced in "generic formulations" that seem to perform well. The same thing is happening with glyphosate, although initial efficacy differences between Round-Up and these products were apparent they seem to have been eliminated. Generic formulations of oryzalin and oxyfluorfen are also available and mainly act the same as the original products.

We have seen many generics in fungicides including chlorothalonil, mancozeb, iprodione, phosphorous acid alternatives to Aliette and of course the many formulations of cupric hydroxide. In many cases, the active ingredient is supplied by a single source and the product formulation is all that differs in manufacturing.

Several attendees stressed that we can't assume generics are not as good as originals. Most University recommendations list active ingredients followed by a few trade names which might promote use of generics as they become available. We all agreed that other factors (re-entry interval and cost) are at least as important in choosing the product as brand names.

### Resistance Management

The topic of resistance remains

of critical interest to nearly all ornamentals workers. Labels are being written with resistance management in mind. In general, growers have been tank-mixing insecticides and miticides although University scientists have been trying to convince them to stop. Since new products are more specific (a few insects instead of broad-spectrum) growers might need tank-mixes for effective control. Further, resistant populations of insects are coming into greenhouses and nurseries from other crops as well as specialty propagators. Finally, growers must rotate because nothing works 100% on most insects and mites.

Herbicide resistance is now increasing at a high rate and alternating between chemical classes is more common. The benefits or necessity of using two different classes as opposed to three has usually not been researched.

Clyde Elmore (University of California weed scientist) suggested that researchers recommend EPA target multi-site products to improve resistance management. The herbicide, 2,4-D was introduced in 1945. As a multi-site herbicide, resistance has been very rare if it has occurred at all. The sulfoneal ureas are much newer and have a specific target site with the result that there is a widespread resistance problem for many of them.

Unfortunately, public opinion will probably govern the direction our pest control strategies take instead of science.

<i>Inside this issue:</i>	
Incidence of Phytotoxicity on Ornamentals	2-4
The Heat is On—Summer Diseases	5-6
From the Tradeshow Floor—Mike Zemke	6

## Incidence of Phytotoxicity on Ornamentals (1996-2003)

We have been working on the following compilation of phytotoxicity results from our trials. In some respects, the table shows which products we have been testing more than overall safety of fungicides on our ornamentals. It also indicates problem

plants (open bracts on poinsettias, pansy and impatiens) as much as products with phytotoxicity concerns. We have used rates and intervals in these tests that are not always on the final label. Read all labels to find out if the rates we report are legal..

Please use this information as intended. The table does not tell you the many times we used most products with excellent safety as well as efficacy. The majority of our products are very safe when used according to their labels.

Fungicide	Rate/100 gal	Problem	Plant(s)
Aliette 80WDG	16-32 oz	Slight to moderate leaf curling	Snapdragon
Aliette 80WDG	40 oz	Slight leaf yellowing	Vinca
Banol	15 oz	Moderate yellowing	Alyssum
Camelot	16-48 oz	Slight to moderate leaf burns	Alyssum, Stock, Pansy, Petunia
Camelot	80 oz	Slight burns on bracts	Poinsettia
Chipco 26GT	32 oz	Slight white speckles	Impatiens
Chipco 26GT	48 oz	Slight black leaf burns	Ranunculus
Chipco 26GT	32 oz	Moderate burns	Primula
Chipco 26GT	26 oz	Slight leaf tip burn	Vinca
Chipco 26GT	32-48 oz	Slight leaf curl to severe leaf burn	Petunia
Cinnamite	64 oz	Slight leaf edge burn	Snapdragon, Basil
Compass O	1-2 oz	Slight leaf burns	Alyssum, Impatiens, Pansy
Compass O	8 oz	Very slight leaf curl	Petunia
Compass O	2 and 8 oz drenches	Severe root loss – plant death	Pansy
Compass O	1 oz	Moderate flower burns	Petunia
Copper Count N	32 oz	Slight leaf burns	Stock
Cygnus	8 oz	Very slight leaf curl	Petunia
Daconil Ultrex	22.4 oz	High temperature meltdown (over 110F)	Impatiens
Daconil Ultrex	22.4 oz	Moderate leaf cupping	Pittosporum
Daconil Ultrex	22.4 oz	Moderate leaf yellowing	Pansy
Daconil Ultrex	22.4 oz	Severe flower burns	Cyclamen
Daconil Ultrex	22.4 oz	Slight leaf burn	Petunia
Daconil WeatherStik	22 oz	High temperature meltdown (over 110F)	Impatiens
Decree	16 oz	Very slight speckles	Geranium
Heritage	2 oz	Moderate leaf burn	Impatiens
Heritage	1-4 oz	Slight marginal burns	Alyssum, Pansy, Snapdragon
Heritage	2 oz	Moderate stunting	Alyssum seedlings
Heritage	4 oz	Very slight leaf puckering	Poinsettia
Heritage	4-8 oz	Slight flower damage	Marigold
Heritage	4-8 oz	Slight to moderate burns, small spots	Impatiens

## Phytotoxicity on Ornamentals (Continued)

Heritage	1-4 oz	Moderate to high flower damage	Petunia
Heritage	8 oz	Very slight leaf curl	Petunia
Heritage	4-8 oz	High temperature meltdown (over 110F)	New Guinea Impatiens
Junction	24-48 oz	Slight yellowing or tip burn	Alyssum, Impatiens, Vinca
Kocide	32 oz	Slight leaf burn or yellowing	Alyssum, Vinca
Medallion	1-4 oz drench	Severe root death	Impatiens and New Guinea Impatiens
Medallion	4 oz corm dip	Delayed emergence	Gladiolus
Milstop	40 oz	Slight crinkled leaves and burns	Pansy, Snapdragon
Milstop	80 oz	Moderate puckered leaves	Snapdragon
Nutriphite	128 oz	Slight burn	Pansy
Nutriphite	48 oz	Moderate leaf yellowing	Vinca
Nutriphite	32 oz	Slight to moderate burns	Vinca
Pathguard 6F	22 oz	High temperature meltdown (over 110F)	Impatiens
Pathguard 6F	20 oz	Severe burns	Impatiens
Pathguard 6F	22 oz	Slight leaf burn	Petunia
Pathguard 90DF	20 oz	High temperature meltdown (over 110F)	Impatiens
Phyton 27	15-30 oz	Slight burns	Alyssum, Gerber daisy, Pansy, Petunia, Snapdragon, Vinca
Phyton 27	25-50 oz	Slight leaf burns	Stock
Phyton 27	45 oz	Severe leaf burns	Geranium
Phyton 27	25 oz	Moderate yellowing and flower damage	Petunia
Pipron	8 oz	Very slight leaf burn	Miniature rose
Rubigan	4 oz	Slight stunting	Cyclamen
Rubigan	4 oz	Slight leaf burns and puckering	Poinsettia, Snapdragon
Spectro 90WDG	32 oz	Moderate flower burns	Cyclamen
Spectro 90WDG	32 oz	Moderate stunting	Gerbera
Stature MZ	38 oz	Slight leaf burn	Alyssum
Strike 25W	2 oz	Slight burns and yellowing	Alyssum
Strike 25W	2 oz	Slight leaf burns and puckering	Snapdragon
Sythane 2E	8 oz	Slight leaf tip or flower burn	Miniature rose, Snapdragon
Sythane 40WP	3 oz	Very slight leaf cupping	Gerbera
Terraguard 50W	4 oz	Slight black spots	Impatiens
Terraguard 50W	8 oz	Slight leaf curl and stunting	Gerbera
Triact 70EC	64-128 oz	Very slight to slight leaf burns	Fern, Miniature rose, Petunia, Snapdragon
Zerotol	128-256 oz	Slight burns	Gerber daisy, Petunia, Vinca

# THE HEAT IS ON—SUMMER DISEASES

Erwinia blight is one of the most common diseases during hot weather in the southern nursery. Even in such temperature climates as California we see Erwinia blight on some crops. Unfortunately, Calla lilies are very prone to this devastating disease.

Symptoms can start as soon as bulbs are planted in the late winter and continue to appear until the time of sale. The problem seems to be a complex of Erwinia and Pythium with little to differentiate one from the other.

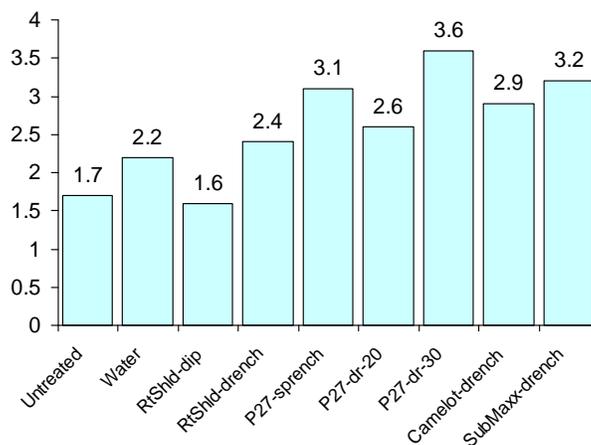
We started a trial in late March with bulbs we knew had both Erwinia and Pythium infections. The trial used a combination of approaches to managing the disease with a pre-planting dip, and post-planting sprays or drenches. Although we should have been satisfied with natural infection, we compounded the difficulty of the trial by inoculating the plants after five days with a slurry made of roots and bulbs from other infected callas.

A RootShield dip (5 minutes) was compared to drenches or sprays every 30 days. These included RootShield (4 oz/100 gal), Phyton 27 (20 or 30 oz), Camelot (16 oz) and Subdue Maxx (1 oz). We also used a single spray with Phyton 27 at 25 oz/100 gal.

After 3 months, we evaluated the growth of the Callas as well as disease severity. The graph shows severity of disease rated on a scale from 1 (healthy—no disease) to 5 (dead). Most of the mean ratings are showing slight to moderate disease. Worst symptoms (poorest control) were found on plants drenched with 30 oz/100 gal Phyton 27, Subdue Maxx, or the Phyton 27 spray. Both of these products are used extensively in the culture of Callas and perhaps this result indicates their overuse (resistance development??).

Best plants were found in the treatments receiving the RootShield dip and the untreated bulbs (disease obviously can spread in a water solution).

## ERWINIA /PYTHIUM BLIGHT ON CALLAS



These results explain some of the problems potted Calla producers have with this crop. Using the wrong dip solution (one that is ineffective) can actually magnify the problem. If the strain of Pythium is resistant to mefenoxam (Subdue Maxx) and the strain of Erwinia is resistant to copper then these prime candidates for a dip tank would be ineffective.

On a more positive note the use of the biological control agent *Trichoderma harzianum* (active ingredient in RootShield) is promising. We will be doing another trial soon with some of these same treatments as well as a few others. Any ideas?

## Powdery Mildew Control on Ranunculus

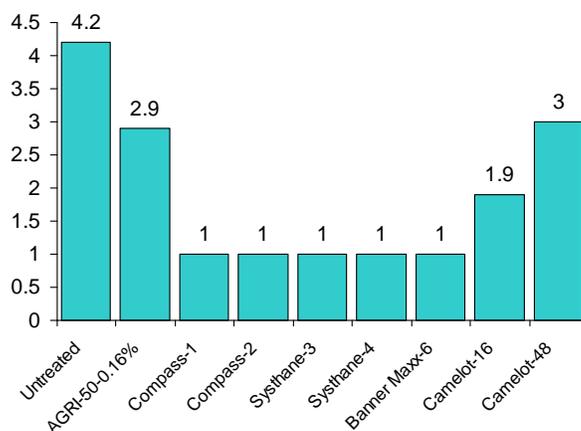
Since spring we have been doing some trials in cooperation with Buzz Uber and Mellano and Company in San Diego County. Buzz is a private scout and PCA who has been able to set up and perform some trials at Mellanos when a special opportunity arises. Since Mellano and Company produces cut foliage and flowers the diseases have been on Limonium, Ranunculus and Hypericum.

In the spring it is not uncommon to find powdery mildew on the Ranunculus crops in Carlsbad. So when an area opened up we went ahead and started a preventative trial. We chose products and rates that had either performed well in the field or had been effective in our research trials here in Mt. Aukum. The treatments were applied

weekly a total of four times in April. Ratings were made at the end of the trial on a scale from 1 (no powdery mildew) to 5 (severe powdery mildew). We also rated phytotoxicity and plant height

The graph shows the disease data. Impressive control was seen when Compass O (1 or 2 oz/100 gal), Systhane (3 or 4 oz), or Banner Maxx (6 oz) were applied. No symptoms of powdery mildew were present in any of these plots. Camelot and Agri-50 each reduced disease development but they were not as effective as the other materials in the trial.

We saw no obvious signs of any phytotoxicity with the exception of the Systhane and Banner Maxx. Both of these products caused sig-



nificant stunting on Ranunculus when applied four times on a weekly interval under these field conditions. The Systhane treatments resulted in about a 1 inch decrease in height while the Banner Maxx resulted in 3 inches decrease.

The best product in this trial was Compass O since it provided 100% preventative control with no signs of any phytotoxic response in the crop.

## WHAT TO EXPECT NEXT

The diseases that are most common in the summer are those that like hot weather—naturally. These will include some leaf spots like rust. In coastal environments or anywhere the humidity is high (Southeastern States) rust can be a big problem in the spring through fall. In Mt. Aukum, we have an ongoing problem with Hypericum rust (*Uromyces*) as well as snapdragon rust (*Puccinia*) and rose rust (*Phragmidium*). The coastal cut rose growers will probably be fighting this problem all summer. In the Southeastern states we can expect to see daylily rust. In a recent trial with Hypericum rust we found the best curative action with Compass, Systhane and Banner Maxx. While Dithane T/O prevented disease in the field it did not cure it in our greenhouse trial.

Another summer pathogen is *Rhizoctonia*. This fungus causes leaf spot, aerial blight, stem rot and even root rot on many plants across the US. The aerial forms are usually confined to those places where rainfall occurs with heat. Anybody growing

poinsettias should watch out for *Rhizoctonia* causing cutting rot during the rooting process. This disease can kill cuttings in as little as two days and must be preventatively managed. You can use a variety of products containing thiophanate methyl, iprodione or fludioxinil for excellent prevention of *Rhizoctonia*.

More bacterial leaf spots will appear. Zinnia producers across the country will see a wide array of diseases from *Xanthomonas* leaf spot to *Alternaria* leaf spot and powdery mildew. We also expect to see many reports of *Pseudomonas* and *Xanthomonas* on other perennials and bedding crops.

We have been working with *Rhizoctonia* on vinca and *Phytophthora* aerial blight on vinca and petunia. Other new trials include rust on snapdragon and a series of *Alternaria* leaf spots (zinnia, lobelia and impatiens if all goes well). Look for results in the next two months.

## FROM THE TRADESHOW FLOOR—MIKE ZEMKE

The Southeast Greenhouse Conference (SGC) this year was another good show. I heard that attendance was up something like 50% from last year.

SGC coordinators have been looking at the possibility of a 3 day show vs. the 2 day show, and changing the days. I think they should keep a Saturday as one of the days. We'll see what comes out of the survey for this next year.

I am happy to report, that I finally got the "Spanish Bedding Plant Problems" flashcard set off to the printer. We should have that in inventory by mid-August. For those of you who would like to order this set, we have a pre-printing special price of \$14.99 until August 1<sup>st</sup>. After that the regular price will be \$19.99.

It won't be long before our next flashcard set is out too. We are currently finagling one on Perennials. We have the same kind of price offer going on for this set, entitled "Perennial Problems." The cut off date for this set is September 1<sup>st</sup>. Look for a "More Perennial Problems" by the end of 2004 to cover less common and newly emerging perennials and maybe the herbs that so often double as perennials in our gardens.

Next it's off to Ohio, for the Short Course. Stop by and see me at our booth (2447). MIKE

## WHAT IS WRONG WITH THIS EUONYMUS?



TAKE THE TIME TO TEST YOUR SKILL AT RECOGNITION—SEND YOUR ANSWER TO ANN AT [MTAUKUM@AOL.COM](mailto:MTAUKUM@AOL.COM).

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](mailto:MTAUKUM@DIRECTCON.NET)



## UPCOMING EVENTS

OHIO FLORIST ASSN. SHORT COURSE

JULY 12-16—COLUMBUS, OH  
[WWW.OFA.ORG](http://WWW.OFA.ORG)

PERENNIAL PLANT ASSN. SYMPOSIUM AND TRADESHOW

JULY 27 TO AUGUST 3—  
SACRAMENTO/SAN FRANCISCO, CA (ANN TALKS ON PERENNIAL DISEASES-DIAGNOSIS AND CONTROL ON JULY 31)

[WWW.PERENNIALPLANT.ORG](http://WWW.PERENNIALPLANT.ORG)

2003 FARWEST SHOW

AUGUST 21-23—PORTLAND, OR  
[WWW.FARWESTSHOW.COM](http://WWW.FARWESTSHOW.COM)