

## **Post-Patent Fungicides**

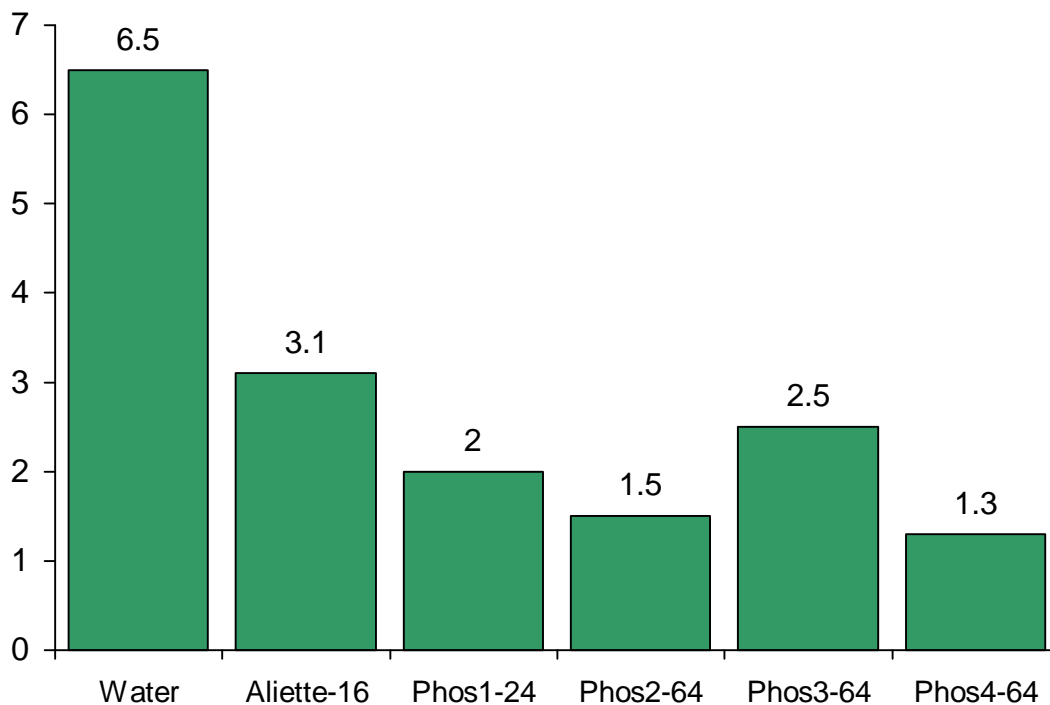
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Over the past few years we have seen post-patent fungicides enter the ornamental market place. They are sometimes less costly and usually have a very similar label to the brand name fungicides we are familiar with. We have also started seeing products with similar active ingredients (such as phosphonates and Aliette) marketed as the same or superior. The companies that sell post-patent fungicides do not routinely trial their product against the better known trade name fungicide. At Chase Horticultural Research, Inc., each year we compare fungicides with the same or very similar active ingredients in side-by-side trials. These comparisons can result in one of three conclusions: 1) the post-patent and brand name products give the same level of control, 2) the trade name product gives better control than the post-patent product and 3) the post-patent product gives better control than the brand name product. For obvious reasons the companies do not want to gamble on the outcome. I present a following review of some of our trials for the enlightenment of growers at least.

### **Phosphonates and Aliette**

We compared four phosphonates (phos acid alternatives) to Aliette 80WP as a weekly spray (three applications) on rosemary plants with powdery mildew infection. We used the products at the labeled rates (generally) or followed advice from the manufacturer. The numbers in the graph are the mean number of powdery mildew colonies per plant one week after the first, second and final application, respectively. (Figure 1).

Figure 1. Eradication of Rosemary Powdery Mildew with Phosphonates and Aliette



The trial indicated that phosphonate 1 (24 o/100 gal), phosphonate 2 (64 oz/100 gal) and phosphonate 4 (64 oz/100 gal) gave a little better control than Aliette (16 oz/100 gal) and phosphonate 3 (64 oz/100 gal). In another powdery mildew trial, we saw similar results. Since the use rates were not identical, some analysis of efficacy vs. cost must be made before deciding which product gives the best value.

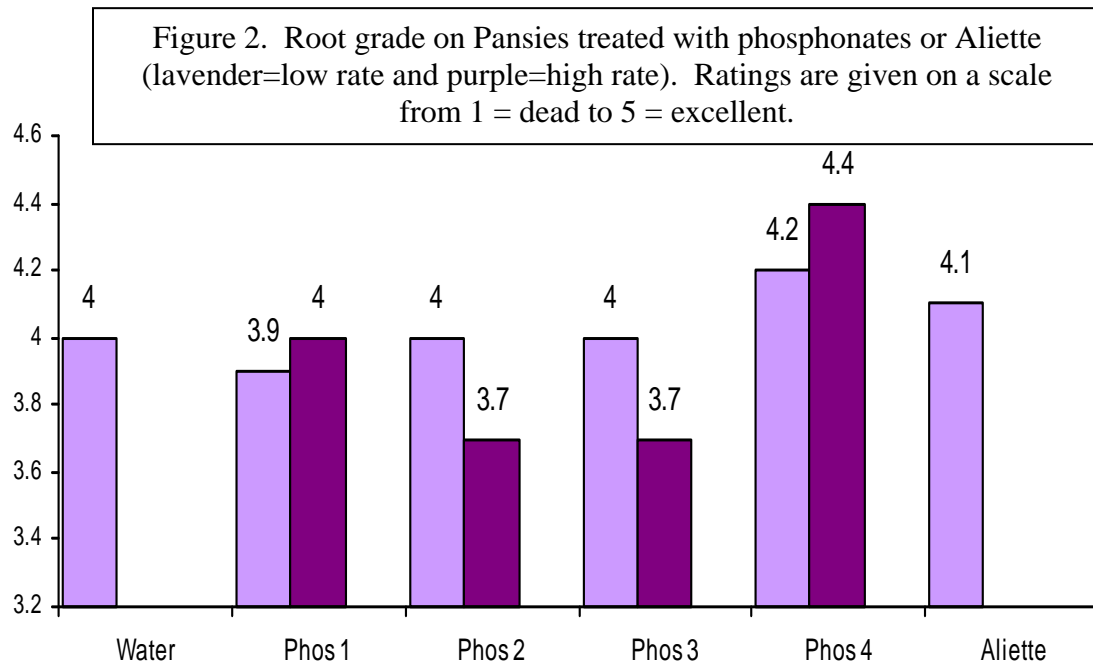
In another trial including two phosphonates and Aliette we compared drench and spray applications for prevention of Phytophthora aerial blight on annual vinca. Top grade reflected disease severity (1=dead to 5=excellent, no disease). Both Aliette treatments provided excellent control of Phytophthora as did all application methods of the two phosphonates (numbers in the same column followed the same letter are not significantly different using Student-Newman-Kuels test). In this case, the phosphonates were as effective as Aliette but again the rate-cost comparison must be made to determine actual value.

Table 1. Phosphonates for Phytophthora aerial blight control on vinca

Product	Rate/100 gal	Top grade
Noninoculated	-----	3.5 b
Inoculated	-----	2.9 a
Aliette 80WDG	12.8 oz drench	3.5 b
Aliette 80WDG	16 oz spray	3.5 b
Phosphonate 1	20 oz	3.4 ab

Phosphonate 1	96 oz	3.4 ab
Phosphonate 2	32 oz	3.4 ab
Phosphonate 2	64 oz	3.4 ab

The final comparison I present is a summary of safety of phosphonates compared to Aliette (Figure 2). A few years ago, I heard claims that certain phosphonates were safer than Aliette since they did not contain aluminum. After testing them in over 20 trials (*Phytophthora*, downy mildew and *Pythium* especially), I believe the opposite is actually true.



Aliette was used at 16 oz/100 gal while most of the other products were used at rates of 32 to 64 oz/100 gal. The roots were negatively affected by the high rates of phosphonate 2 and 3 while phosphonate 4 actually had the highest root quality. Be sure to compare all factors when considering a post-patent fungicide. The cost per unit of the product is not the only thing to compare.

### Comparisons of iprodione and thiophanate methyl

We have also been able to make some comparisons of different fungicides with the same active ingredient. In the first instance we were primarily comparing the wettable powder formulation of iprodione known as Chipco 26109 to a newer flowable formulation Chipco 26GT. We also had another flowable formulation to compare in the *Alternaria* leaf spot trial on Impatiens. We found that in general, the products performed to the same degree of safety as well as efficacy in the same trial for *Alternaria* leaf spot on Impatiens, *Botrytis* blight on primrose and *Rhizoctonia* cutting rot on poinsettias or damping-off on annual vinca. Control in the two *Rhizoctonia* trials was not impressive for either formulation.

Table 2. Efficacy of iprodione on various diseases (percent control).

Product	Disease (crop)				
	Alternaria leaf spot (Impatiens) Test 1 and Test 2		Botrytis blight (Primrose flowers)	Rhizoctonia (poinsettia/vinca) Test 1 and Test 2	
Chipco 26019	NT	96%	80%	20%	0% (safe)
Chipco 26GT	100% (safe)	100%	73%	45%	0% (safe)
Iprodione 1	100% (safe)	NT	NT	NT	NT

We finally compared high and low rates of several thiophanate methyl fungicides to 3336 for control of *Thielaviopsis basicola*, the cause of black root rot (BRR) on pansy. The exact rates of each thiophanate methyl (TM) are given in the table. The data are given as the fresh weight of tops in grams and higher weights indicate control of the disease. In this case, even the 4 oz rate of 3336 gave excellent control of BRR while the lower rates of TM1 and TM2 were not as effective. The higher rate chosen for each of the thiophanate methyl fungicides each gave excellent results.

Table 3. Comparison of thiophanate methyl fungicides for control of black root rot on pansy.

Product	Rate/100 gal	Top weight (g)
Noninoculated	-----	3.3
Inoculated	-----	2.6
3336 50WP	4 oz	3.3
3336 50WP	16 oz	3.7
TM1	10 oz	2.8
TM1	20 oz	3.5
TM2	8 oz	2.8
TM2	16 oz	3.7

## Conclusions

The most important message I can send at this point is that if you opt to choose post-patent products simply based on their cost per unit you may be successful or you may not. In some cases, you will have effective and safe control while in others the brand name fungicide will be more effective or safer and actually result in a better value. The question of post-patent fungicides vs. brand name fungicides is yet another example of having to know more than perhaps you would like. Unfortunately, there are few things in life that are simple.