

# Paul's PGR Primer



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### COMING UP THIS WEEK:

Keys to Using PGRs  
Using the Proper Rates  
Frequency of Application  
Application Timing  
Application Volume  
Final Thoughts

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## Keys to Using PGRs

I had a great opportunity to share what I've learned about using plant growth regulators (PGRs) with a group of growers the other day during the **Perennial Plant Association's** Lunch and Learn Virtual series. This presentation was timely, as I've just begun applying PGRs to some of our recently planted perennials and annual hanging baskets.

I can't emphasize enough how beneficial PGRs can be to help growers maintain plant size, allowing them to grow at high plant densities while improving plant quality and increasing shipping efficiencies. PGRs aren't just a tool in the toolbox I can use on occasion—they've become instrumental to how I grow perennials.



Here are the effects of various PGRs on Penstemon Pikes Peak Purple. Left to right: Untreated, 2,500 ppm B-Nine, 5 ppm Sumagic, 2,000 ppm B-Nine + 3 ppm Sumagic, and 2,500 ppm B-Nine + 5 ppm B-Nine. Three applications at seven-day intervals were applied. Image taken four days following the last application.

Granted, I have nearly 30 years of experience trialing and using PGRs, but my comfort level using them is very high. Believe me, I've learned the dos and the do nots of using these powerful and useful tools.

Over the years when I worked with growers as a consultant, I typically observed growers fell into three categories. First, there are the growers that have PGRs well dialed in and could probably teach me a thing or two about using them. Second, there are many growers who don't get enough efficacy or height reduction after their PGR applications. Lastly, there are a small number of growers who seem to habitually over-PGR their crops and have abandoned using PGRs altogether.

I've worked with several growers to get them into the first category of growers who use PGRs proficiently and successfully. If you'd like to get there, too, read on for my guidelines on improving the effectiveness of PGR spray applications.



## Using the Proper Rates

For this conversation, I'm going to assume that you've already chosen a PGR that's either labeled for or has been shown to be effective on the perennials you intend to treat. There are a few considerations to keep in mind when determining the optimum rate.

First is seasonality. Rates that are effective during the cooler months of the year aren't nearly as effective during the warmer months of the year. Therefore, it's necessary to apply higher PGR rates to maintain the same level of height control in the summer as you used in the early spring. I typically refer to the rates I apply now in the later winter through early spring as my beginning or baseline rates for the PGRs I'm applying.

As spring progresses and growing conditions improve, it's usually necessary to increase the application rates by 25% to 50%. As summer approaches, the rates will need to be increased further, perhaps 50% to 100% higher than the late winter/early spring application rates.

### Paul's Favorite PGRs for Spray Applications on Perennials

PGR	Northern - Spring Rate	Northern – Summer Rate
Daminozide (B-Nine, Dazide)	2,500 ppm	3,750 ppm
Uniconazole (Concise, Sumagic)	5 ppm	7.5 ppm
Paclobutrazol (Bonzi, Piccolo, Pac O)	30 ppm	45 ppm
Daminozide + Uniconazole	2,000 ppm 3 ppm	2,500 ppm 5 ppm

These would be considered northern rates—growers in warmer climates will have to take their location and seasonality into consideration when determining what rates they should apply.

A grower's geographic location will also influence how much they have to adjust their rates as the season progresses. Northern growers will have to increase the rates less (using a lower increase percentage for the spring and summer I just mentioned) than Southern growers (who will have to use the higher percentage). Southern rates can be as much as twice as high as the rates used in northern locations to obtain the same results.

Growers should recognize that greater results can be obtained when lower, but effective rates are applied multiple times compared to when a single higher rate application is applied.

For example, better efficacy can be obtained when applying two applications of paclobutrazol of 30 ppm than would be observed following a single application of 60 ppm. Applying lower rates more often allows you to better regulate the growth and build a more toned plant while greatly reducing the risk of over-regulating that often occurs with higher rate applications.



## Frequency of Application

Growers should keep in mind that PGRs are most effective on young, actively growing plant tissues and they're much less effective on plants that are maturing or developing flowers. I aim to use PGRs to regulate a plant's growth and appearance throughout the production cycle rather than cross my fingers and hope it'll slow stem elongation down after it's already full sized.

This statement above implies that I prefer to make multiple applications and I can confirm that that's my preference. The need for the initial and subsequent PGR applications is evaluated every week. To get the full advantage of multiple applications, it's important to space the application intervals out accordingly. Making the applications too close to one another can lead to over-regulation, whereas spacing them too far apart can lead to under-control, not taking advantage of the cumulative effect from over-lapping applications.

For the perennials that require or benefit from PGR applications, I typically apply them two or three times per crop cycle at seven- to 10-day intervals.

## Application Timing

Although every perennial plant is different, I find that timing the initial and additional applications based on the crops' appearance generally gives me the type of results I'm looking for. I begin to evaluate the need for PGRs of each perennial in production beginning about seven to 10 days after it was planted and then again each week thereafter.

Below are visual examples of the typical appearance of various crops at the times when I typically make the first, second and third PGR applications. This strategy is particularly effective when plants are grown at high plant densities, such as pot-to-pot configurations.

Remember, PGRs have the greatest effect on young, actively growing plant tissue and my approach involves applying two to three applications while the plant is growing rather than waiting for the plant to reach full size to apply them.



This is too early to make the initial PGR application.



I typically make the first application on most crops when they're about three-fourths of the pot full.

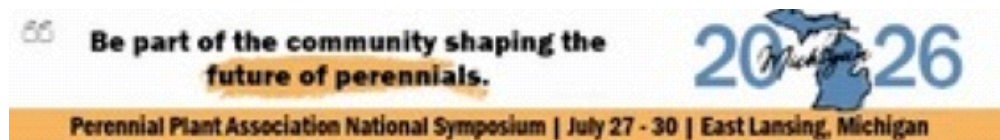
The best results are obtained when the need for PGRs is evaluated weekly and the second or third applications are made in a timely manner (usually seven to 10 days following the previous application).



Apply the second application when the leaves reach the outside edge or just beyond the pot.

The third application is made when the leaves are beginning to overlap with one another, but before the canopy forms.

Applying PGRs in this manner will allow you to better regulate plant growth and development, it allows for optimal coverage on plant leaves and stems, helps to prevent over-applications, and builds high-quality crops from start to finish. Multiple applications also gives growers the flexibility of determining if additional applications are necessary and if rate adjustments are necessary.



## Application Volume

It all comes down to volume. This really is the most valuable information I can teach you about using PGRs. ***The volume of the PGR solution applied over a given area has a greater effect on the amount of height reduction obtained than the concentration or rate of the solution being applied.***

Before I explain why, please allow me to run this concept by you. Unlike other products, such as fungicides and insecticides we apply to plants, PGRs affect the crops' growth and appearance. An over- or under-application of pesticides usually doesn't result in an undesirable plant response, whereas the effects of improper application of PGRs can easily be observed.

Every PGR used to manage plant height recommends on its product label that spray applications be made using 2 quarts of spray solution per 100 square feet of area being treated. This is equivalent to 5 gallons of solution per 1,000 square feet or 50 gallons of spray solution per 10,000 square feet or 218 gallons being sprayed over an acre. Are you applying this spray volume?

An application of 2 quarts of spray solution per 100 square feet applies a specific amount of active ingredient over that area. When less spray volume is applied, poor coverage likely occurs and unsatisfactory levels of height reduction will often result. Even a modest 10% reduction in volume can result in inadequate height control. Conversely, if more than 2 quarts of spray volume is applied over 100 square feet, over-regulation (possibly stunting) is likely. Even small increases in spray volume can lead to excessive height reduction—more is definitely not better when it comes to using PGRs.

Proper coverage using the correct spray volume is an especially important aspect of using PGRs successfully. Many growers find it challenging or don't take the time to apply the recommended spray volumes.



To improve coverage, I find it helpful to apply PGRs from two opposing directions using what I call bi-directional spray applications. Applying PGRs from two different directions not only helps growers to effectively apply the right spray volumes, it increases the likelihood the PGRs will properly cover the parts most effectively taken in by the plant (i.e. plant stems for several of the PGRs).

## Final Thoughts

My confidence and success using PGRs has evolved over the years and I've certainly had my share of failures to learn from. The guidelines I've shared above have been the main reasons I continually get the results I'm looking for and keeps me from over- or under-applying PGRs.

The last message I'd like to leave you with is to have realistic expectations for what you hope to get out of your PGR applications. I typically aim to reduce plant size by 20% to 35%. More height reduction above this range usually results in too much height control, stunting or too much residual activity. The plants still have to perform and grow, whether it's a treated liner being transplanted into a container or a finished product being planted into the landscape. I expect plants to grow out of the PGR effect in two or three weeks following the last application. Treated plants will still likely be smaller than untreated ones, but I'm looking for them to resume more normal growth within weeks of the last treatment. Any longer control than this is too much control.

Thanks for reading this edition of *Perennial Pulse*. My email is [paul@opelgrowers.com](mailto:paul@opelgrowers.com) if you have any comments, article suggestions or if you'd just like to say hello.

Best regards,

Paul

Paul Pilon

Editor-at-Large—*Perennial Pulse*

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