

HOW TO KEEP PLANTS IN SHAPE

BY USING PLANT GROWTH REGULATORS IN YOUR GREENHOUSE OPERATION

Incorporating a PGR in your operation helps ensure strong, attractive crops from the time they leave your greenhouse to when they reach customers.

BY NANCY REHCIGL

Plant growth regulators (PGRs) differ by their active ingredients, application methods and rates, and more, which means achieving the desired outcome can be complicated. Understanding how to select and use a PGR effectively in your operation is critical for the production of consistent, high-quality crops.

PGRs can be applied a variety of ways, including by foliar spray, drench or pre-plant bulb soak. Foliar spray and drench applications are the most common methods, and deciding which PGR and application method to use depends upon the crop and outcome you need.

While a foliar spray is used to achieve moderate height control for a shorter time period, drench applications are often used in the final weeks leading up to shipping to minimize stretch and keep plants in their desired shape for longer at retail. Drench applications can also be beneficial during periods of cold, rainy weather or abnormally warm night temperatures, as these conditions can cause plants to stretch.

HOW DOES A PGR REGULATE PLANT SIZE?

When applied as a spray, PGR active ingredients are absorbed by either the leaves and/or stems (depending upon the PGR being used) and

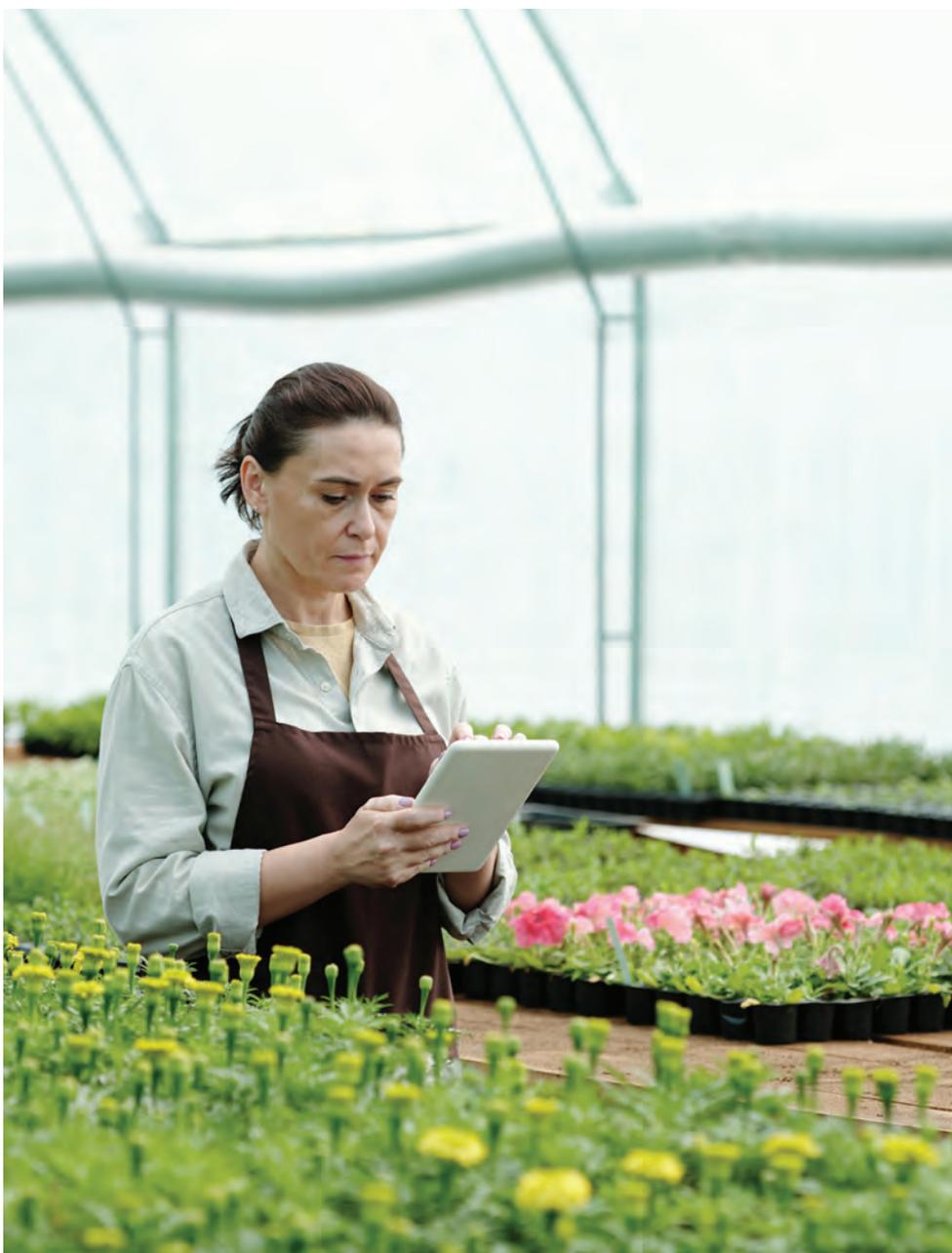
translocated within the plant where it reduces internode elongation. Spray applications are best done early in the morning or late in the day to allow the sprays to dry slowly for good absorption.

With a drench application, the active ingredient is absorbed by plant roots and transported to all areas of the plant. The desired effects of a drench application typically last longer because the PGR is retained by the growing media and available to the plant over a longer period.

ACTIVE INGREDIENTS

PGRs used to limit shoot growth and maintain compact plants grown in containers contain active ingredients such as ancymidol, daminozide, flurprimidol, uniconazole and paclobutrazol. PGRs containing these active ingredients target and inhibit gibberellin production, which is responsible for stem elongation.

Some PGRs contain active ingredients that are plant hormones, including gibberellins and benzyladenine. These can affect growth and development, such as plant flowering or branching. Without a proper understanding of the active ingredient in your PGR, you may not achieve the desired outcome. Additionally, active ingredients come with a host



of unique requirements and limitations, such as which crops you can safely use them on. This can add to the challenge of determining the best product to use for your operation.

TIMING

Determining the appropriate time to apply a PGR can be tricky. It's important to know the typical development of your crop so you can time the application appropriately. This will help you avoid too early of an application, which may shut down plant growth, or too late of an application that results in leggy plants. Optimal timing is just before plants rapidly grow.

If you wait too long, you may need additional product or miss the window for the product to be effective. PGRs reduce the growth rate of plants; they cannot reduce the plant size once they have grown too large.

PGRs can be applied early in the growth stage of plants or prior to shipping to help plants hold their shape at retail.

During the later stages of production, PGRs can also be drenched several times at lower concentrations. These "toning" drenches are typically one half to one quarter the concentration of the holding drench and should be applied when growers want to manage growth week by week, rather than one strong dose to hold the crop. A toning drench is just enough to slow growth and cause slightly darker foliage.

It's important to not only study your crops' growth timeline but also to read the PGR label to know if it's the right choice for your operation and crop.

SHOULD ALL PLANTS RECEIVE THE SAME RATE?

It can be difficult to balance the different factors that affect the PGR application rate, such as growing location, plant species and age. Plant vigor can differ significantly between the region and climate zone of your operation. Crops grown in moderate-to-warm climates typically require lower rates than those grown in hot and humid climates. There can also be significant differences in plant vigor within a species. The taller, more vigorous varieties typically require a higher rate than the naturally short, less vigorous varieties. Lastly, younger, smaller plants of the same species will respond differently than older, larger plants even though volume and pot size may remain the same.

It is best to treat a small subset of a specific crop before treating the entire plot. Adjust the rate of your PGR to achieve the desired height and length of control.

ADDITIONAL APPLICATION TIPS

PGRs should only be applied to plants that are not under stress. Be sure to evaluate root conditions prior to application. The root system should be healthy with active roots for proper absorption. It is important to water plants the day before application, so drench applications are absorbed evenly, and spray applications are not rinsed off with additional irrigation. Additionally, the growing medium should be moist before application, and moisture levels should be similar from pot to pot within the crop block.

Uniform application is also critical for achieving consistent results. The amount of active ingredient per pot is based on the concentration (ppm) and the final volume of solution applied. If more solution is applied to some pots but not others, the result will be stronger growth regulation in those pots receiving more of the active ingredient, even if the concentration in the solution is the same.

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Untreated (left) and a Bonzi drench at 0.25 ppm (right) on Tophat begonia. Tophat plants were treated at week three of a five-week production program. (Photo: Syngenta)

If you are new to PGR applications, don't be discouraged; accurate application technique requires practice.

PROLONG THE PEAK

In addition to ensuring that plants stay compact, PGRs can help bring out the full beauty of ornamentals in not only shape, but color and endurance as well.

In the weeks prior to shipping, make PGR applications for:

- Deeper green foliage
- Brighter flowers
- Better water-use efficiency
- Greater heat tolerance
- Extended shelf life

Bonzi ornamental growth regulator helps ensure plants stay compact and beautiful by keeping them at their peak longer. Labeled for multiple application methods, Bonzi helps maintain the plant-to-pot size ratio, keeps plants looking their best, and helps produce stronger stems for less breakage during transportation.

PGRs are an essential resource in ornamental crop production. By incorporating this tool and understanding how to use them effectively, you can take control of your crops' size, appearance and endurance so that they remain high quality. [gpn](#)

Author's note: Always read and follow label instructions. Some products may not be registered for sale or use in all states or counties and/or may have state-specific use requirements. Please check with your local extension service to ensure registration and proper use.

Nancy Rechcigl is technical services manager for ornamentals at Syngenta. She can be reached at nancy.rechcigl@syngenta.com. To learn more about the benefits of Bonzi visit GreenCastOnline.com/Bonzi.

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