



By Erik Runkle



Maximizing PGR Spray Applications

Despite the availability of many different plant growth regulators, their spraying methods are generally similar. How can you get the most out of each application?

Plant growth regulators (PGRs) are commonly applied as sprays to inhibit extension growth and produce more compact floriculture crops. There are numerous commercial products available, some containing the same active ingredient, but their applications strategies are, for the most part, similar. Here's a look at some of the strategies and considerations to get the most out of your PGR spray applications.

Choose an active ingredient that is effective on the crop, cost competitive with other products and has a desirable period of efficacy. Products that

contain uniconazole or paclobutrazol typically have a relatively long-lasting effect; those that contain flurprimidol or ancymidol have moderate longevity; and those that contain chlormequat chloride or daminozide have the shortest residual effect (see

www.gpnmag.com/articles/abcsofpgrs2.pdf for a list of products and their active ingredients). Choose a concentration based on the crop, its size and the conditions of the growing environment. Generally, you should use higher rates as temperature and light increase, and as crops mature. All crops should receive a foliar spray application of 2 or 3 quarts per 100 square feet of space, and consistency is critical to achieve reliable results.


Apply PGRs once plants begin to rapidly elongate. Identifying an appropriate application time requires insight into and anticipation of how a crop develops. Applying a PGR too early can stunt root and shoot growth, and waiting too long can necessitate a higher rate and cause uneven extension growth. A late spray application can also delay flowering or

reduce flower size of some crops, especially when high rates are used.

Use fresh product and mix the solution well. PGRs typically have a long shelf life, although their activity can be reduced if exposed to extreme temperatures or their consistency has changed. Once a solution is made, ensure it is well mixed and used in a short period of time to achieve the most uniform response.

Apply PGRs during slow-drying conditions. The uptake and response of some PGRs can increase if the environmental conditions are favorable for slow drying. Applying PGRs when the humidity is high (such as early in the morning or during cloudy weather) can provide a stronger response than if applied early in the afternoon on a sunny day, when the humidity is usually lower and air movement is greater. This is especially true for products that contain daminozide, chlormequat chloride, or ethephon.

Focus on providing a uniform application. PGR response depends on the volume of the spray, so if part of a crop receives a lighter spray than another part, subsequent elongation will be variable. Adjust the sprayer so that the droplet size is a fine mist. For products that contain paclobutrazol or uniconazole, ensure that the spray pressure is high enough to penetrate the plant canopy and make contact with stems. Light spray pressure or allowing the solution to fall onto the canopy can have less of an effect when using these products.

Add a surfactant when applying products at a low rate or to crops with a waxy leaf surface. If spray droplets roll off of leaves, likely the effect of the PGR will be reduced. For more information on this and related PGR topics, visit flor.hrt.msu.edu/pgrs. As always, read PGR product labels for additional helpful information. 

Erik Runkle is associate professor and floriculture extension specialist in Michigan State University's department of horticulture. He can be reached at runkleer@msu.edu or (517) 355-5191 ext. 1350.

Applying a PGR too early can stunt root and shoot growth, and waiting too long can necessitate a higher rate and cause uneven extension growth.
