e-GRO Alert
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PGRs for Growth Control and Reducing Shrinkage in a Late Spring Year

It has been a tough winter and it looks like there will be a late spring in many areas of the country. Take a look at using PGRs to take early control of growth so that you can better hold your annual and perennial bedding plants.

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Many growers think of plant growth regulators (PGRs) as a tool for height control later in the growing season. Last month we gave you an e-GRO Alert on using liner soaks for early control of vigorous crops. This month, let's talk about using PGRs to manage the rapid growth during the spring season (Figure 1).

Obviously scheduling is the first control point in having quality plants for spring sale. Where your market areas are still under piles of snow, it can help to delay plug delivery – if possible. Of course, that generates labor crunches as the spring market season will be compressed. So, understanding how to use PGRs to manage plant growth and quality without stunting can help with the season.

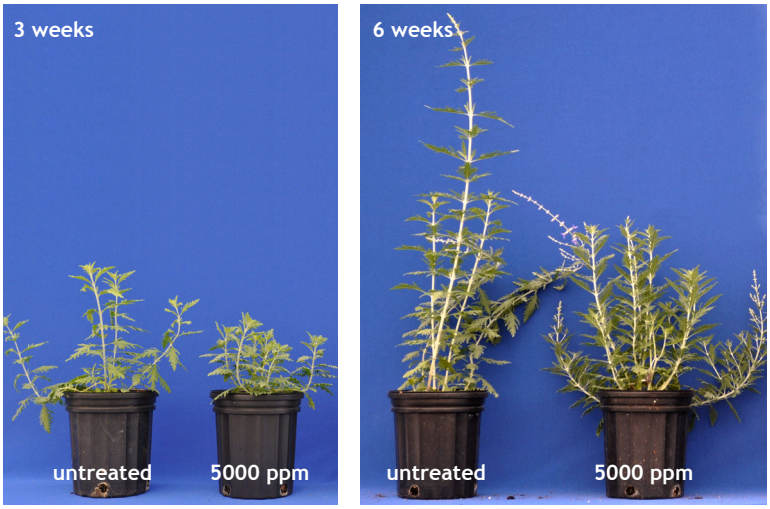

Figure 1. Use PGRs to control the explosive plant growth during the spring season. *Perovskia atriplicifolia* plants not treated with PGRs (left) or treated with a foliar spray of 5000 ppm Dazide (daminozide) at one and four weeks after potting. Left photo at three weeks after initial treatment. Right photo at six weeks after initial treatment.

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Early application methods

If you know that your market window will be delayed, begin your PGR applications earlier than normal. Consider the various methods of application as well. Liner soaks begin to affect growth very quickly (see http://e-gro.org/pdf/318.pdf). Root uptake is rapid and the PGRs are quickly transported to the meristem areas. Drenching the plug or liner flat with the PGR will have much the effect.

Making a drench application after potting may have a less immediate effect. Remember that drench applications should be made to moist media and applied to evenly distribute the PGR in the container. The major difference between the liner soak and the drench in the final container is the concentration of the PGR in the root zone. On the other hand, the benefit of the drench is the availability of the PGR throughout the root zone. This is one reason that drenches provide longer term control than do spray applications.

Obviously foliar or media sprays can be applied as early as desired. Adjusting rates will vary the amount of growth regulation as well as the length of time the control persists (Figure 2).

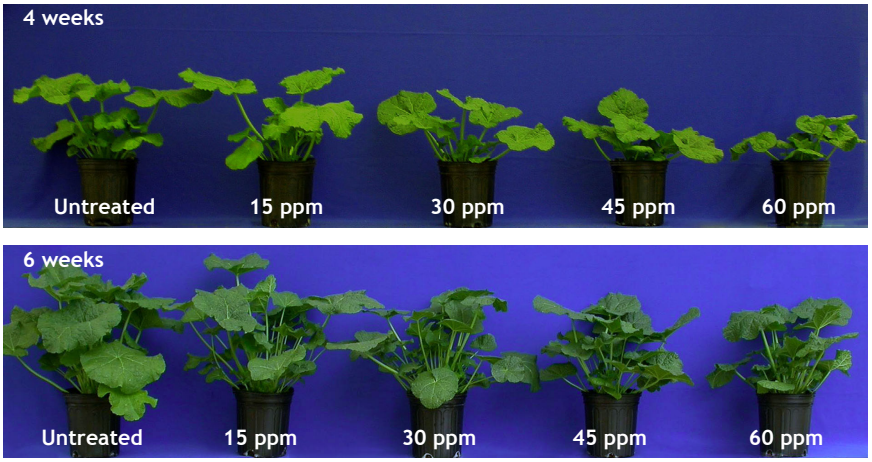

Figure 2. PGR rate selection affects the amount and persistence of the growth regulation. *Alcea rosea* 'The Watchman' (left to right) untreated or treated with a foliar spray of 15, 30, 45 or 60 ppm Sumagic (uniconazole) at about two weeks after potting. Top photo at four weeks after treatment. Bottom photo at six weeks after treatment.

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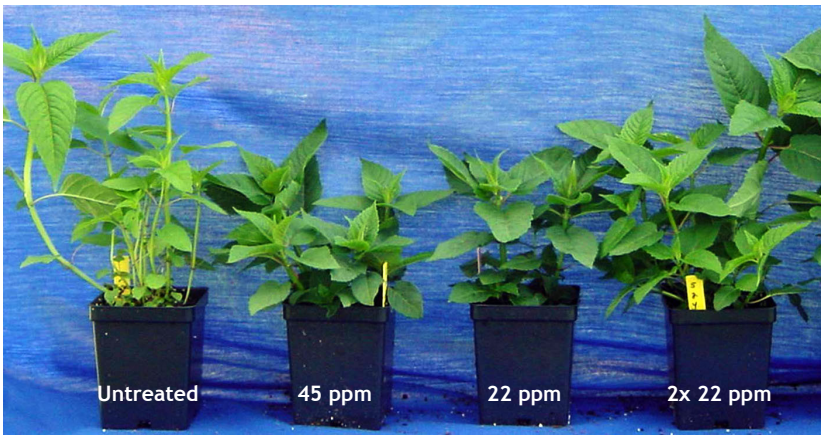

Figure 3. *Monarda didyma* 'Jacob Cline' (left to right): untreated or treated with a foliar spray of Sumagic (uniconazole) about two weeks after potting at 45 ppm, 22 ppm or 22 ppm applied twice (second treatment two weeks after first). Photo at four weeks after initial treatment.

Multiple applications

Planning for multiple PGR spray applications allows for more control if environmental or market conditions change from that expected. These can be applied frequently at very low rates or, apply about one-half the rate you would normally apply and apply it a little earlier than normal. Then make the second application if and when it is needed (Figure 3). Consistent scouting by the grower who "knows" the crop is critical to producing quality plants with multiple applications of PGRs. You want to provide consistent growth regulation, not alternating stunting and stretching.

Other Benefits of PGRs

Growth regulation is an important part of reducing shrink and plant losses in a late spring season. But, these PGRs have other effects on plants that also improve the quality and shelf-life of these plants. We call that "toning" the plant. These effects are typically seen with PGR use even if there is little growth regulation.

First, these anti-GA PGRs enhance the color of the plants by increasing the amount of chlorophyll in the leaves. Darker green leaves are more attractive to consumers. Some of these PGRs also improve disease resistance, especially to fungal pathogens (Figure 4). They are not fungicides but under low disease pressure, you will typically see some protection from foliar diseases. The plants are just a bit tougher.

In fact, these PGRs also increase the amount of abscisic acid (ABA) in the plants which improves drought and chilling resistance. Again, they are making plants a bit tougher. Add increased stem strength which results in less stem and petiole breakage and you have fewer losses to shipping and handling damage and better shelf-life in the greenhouse or retail setting.

One word of warning – this increased toughness due to increased ABA content also reduces water use by the plant. So be more attentive to irrigation frequency to avoid root disease problems.

Figure 4. Powdery mildew on *Rudbeckia hirta* 'Indian Summer' plant on left was untreated and the plant on the right was treated with a foliar spray of 160 ppm Bonzi (paclobutrazol) about 2 weeks after potting. Photo at seven weeks after treatment.

Summary of Benefits of PGRs

In summary, using PGRs for growth regulation and toning provides many benefits:

- Growth regulation reduces bench space required during production, allows more plants per cart and therefore, more plants per truckload,
- PGRs enhance plant color, reduce plant disease, improve tolerance to drought and chilling stresses, strengthen stems and petioles and reduces water use,
- PGRs improve plant marketability and reduce plant damage, which in turn reduces shrinkage and improves profitability.

Learn to use PGRs in your operation.