GROWERTALKS

Features

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Exploring Liner Soak Options

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Plant growth regulator preplant liner soaks offer a quick and easy method of treating a large number of plants. This technique is especially suitable for vigorous vegetative annuals. It also works well for plants being transplanted into combination baskets. If one particular cultivar grows too much, it can be treated to moderate its growth.

Currently, only a few PGRs are labeled for liner soaks. Supplemental labels have been developed for two paclobutrazols: Paczol and Piccolo. Recommended concentrations vary by species, vigor and greenhouse location (Figure 1). Higher rates are suggested for more vigorous species grown in the South.

Researchers have also reported suitable concentrations of flurprimidol (Topflor) and uniconzale (Concise and Sumagic) that provided ample control for vigorous growers (Figure 1). In many cases, these PGRs provided suitable control options, but as of yet neither chemical has been registered for liner soak use.

Other options?

With preplant liner soaks being a suitable treatment option, we wondered how well some of the other PGRs would work as liner soaks. Therefore, we conducted a series of experiments at North Carolina State University to determine the suitability of other PGRs as a liner soak treatment.

Augeo | Augeo is an excellent PGR for promoting branching. We wanted to know if Augeo would also work as a preplant liner soak. In one experiment conducted at NC State, we looked at preplant liner soaks of Augeo at 0, 400, 800 or 1,600 ppm. This was a two-minute soak of slightly dry liners (at the point of requiring irrigation). The plants were held for one hour and then transplanted into 5-in. pots.

With Pretty Much Picasso Petunia, we found that soaks of 400 to 800 ppm were suitable for growth control (Figure 2). Concentrations of 400 ppm controlled growth of Sweet Caroline Light Green Ipomoea. With Lifelime ColorBlaze Coleus, soaks of 400 to 800 ppm enhanced branching, but didn't control overall plant growth.

For vinca, phytotoxicity occurred with >400 ppm and growth wasn't controlled. We observed no advantage of using preplant liner soaks of Augeo on seed impatiens or Snow Princess Lobularia (severe phytotoxicity) (Figure 3). As with most PGR treatments, there are species in which the application provides advantages,

while for other species it can be detrimental. Extensive trialing will have to be done to determine optimal rates before this option can be registered.

Ethephon | Florel has been used extensively as a foliar spray to increase branching and control growth. Recently, substrate drenches were found to be effective, too, so we pondered if liner soaks would also work. We used Keystone Kopper Coleus and provided a two-minute soak time for slightly dry liners (at the point of requiring irrigation). The concentrations used were 0, 125, 250 or 500 ppm Florel (ethephon). The plants were held for one hour and then transplanted into 5-in. pots. [Note: Because of REI label recommendations, it's strongly suggested that the plants be treated and held for 48 hours in advance of transplanting.]

Ethephon at >125 ppm provided growth control (Figure 4). Recommended trial concentrations for liner soaks is between 125 to 250 ppm. As a general principle, soak concentrations of 25% to 50% of the spray rates should be tested with other species. Note this work reports on university trial results and at this time no ethephon product is currently labeled for liner soaks.

Daminozide | Daminozide is an excellent, low-impact PGR used on bedding plants. Daminozide is primarily taken up by the plant via the leaves when applied as a foliar spray. Daminozide isn't registered for use as a substrate drench because it's inactivated by the root medium. A conversation with a grower indicated that daminozide did have activity in hydroponic systems. This made us wonder—could daminozide be used as a preplant liner soak treatment where it has direct contact with the roots?

We mixed Dazide (daminozide) preplant liner soaks at 0, 5,000, 10,000, 15,000 or 20,000 ppm. We used Potunia Plus Pinkalious Petunias and a two-minute soak time of the root system for slightly dry liners (at the point of requiring irrigation). The plants were held for one hour and then transplanted into 5-in. pots.

Dazide controlled petunia growth very well. The 5,000 to 10,000 ppm treatments provide ample control (Figure 5). Only slight control occurred with marigold plugs at 10,000 ppm (Figure 6).

So daminozide will provide growth control if root contact occurs. This application method may be suitable for northern growers who desire a limited amount of control, but the label doesn't allow for it at the current time. For southern growers, it would be more economically feasible to use one of the registered paclo products.

Summary

Preplant liner soaks offer an economical method to treat a large number of plugs at one time. This treatment option works very well for vigorous vegetative annual species. Currently, only paclobutrazol is registered for this use. Expansion of use labels for Augeo, ethephon and daminozide would have to occur before these experimental rates could be used in commercial greenhouses.

> **Preplant Liner Soak Steps**
> 1. The day before, irrigate the plugs so they're evenly moist.
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> 2. Allow them to dry down to the point of requiring irrigation on the next day.
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> 3. Place the plug tray in the PGR solution so that the water is deep enough to come halfway up

the plug cell. (The plants should be sufficiently rooted; stunting can occur if the plugs are poorly rooted.)

4. Soak the plug for one to two minutes. (Most uptake occurs within the first minute. Slightly longer soak times will provide similar results.)

5. Remove the tray and allow it to sit for at least one hour before transplanting. The preferred method would be to hold the plugs until the REI period had occurred before transplanting. **GT**

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