

Weed Management Strategies for Container Production

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INTRODUCTION

Weed control in the production of container-grown landscape crops is essential if the plants are to be successfully marketed. Container nurseries provide an optimal environment for weed growth with frequent overhead irrigation and fertilizer applications necessary for maximum growth of landscape plants. Weeds in container-grown plants are unsightly, reduce growth of the landscape plant, and contribute to the spread of weeds into the landscape. As a result, weed control strategies are an important component in the overall production of container nursery crops. In this paper, I will attempt to address some of the common questions related to weed control in containers.

COMMON QUESTIONS RELATED TO WEED CONTROL

Improving Weed Control. One of the first questions normally asked is, "How can I improve my weed control program?" There are numerous factors that influence weed control in containers. Most basic is an understanding of the weeds that must be controlled, including the weed species, the source of weed seed for that species, the weed life cycle, and control measures that adequately address the particular weed. Additional information concerning weed life cycles, seed production and a listing of common weeds was reported last year by Dr. Stu Warren (1995). Movement of weed seed into production areas may occur by wind, water, animals, humans, and infested crop seed. Major weed infestations in close proximity to a nursery generally result in greater weed problems and may explain why two nurseries with the same herbicide program have different levels of weed control. In addition to the adjacent areas near container production beds, roadways, aisles, and ditches in a nursery should be kept clean or mowed to prevent weeds from going to seed. Growers should give weed control in the immediate area around the container production blocks high priority. Another consideration is not allowing weeds to go to seed and germinating in containers. Many of the weed species common in container production are high seed producers and have specialized structures for dissemination. Once they get established and are allowed to seed, it is difficult to break the weed cycle. Finally, while research has shown that growing media are not a major source of weeds, growers should make an effort to keep media piles weed-free, as well as the immediate area around the media.

When to Apply Herbicides. Another question frequently asked is, "When should herbicides be applied?" For most growers, the weed control program begins at potting. A preemergence herbicide should be applied at potting after the plants have been watered and the medium has settled. Many growers water their plants as they are moved to the container block and the herbicide(s) is applied after the first watering in the field. For most of the herbicides used in container production, reapplication should occur about every 90 days. During periods of high temperature

and heavy rainfall, the reapplication interval may be shortened to 60 days. A survey of Alabama growers has shown that most container producers applied herbicides three times annually; however, some of the growers with excellent weed control programs made up to five applications annually. Preemergence herbicides should be applied 2 to 4 weeks prior to covering for winter protection or any other type of enclosure because of potential injury from volatilization. Most granular herbicide labels state that the herbicide should not be applied to wet foliage. Also, many of the herbicides containing oxyfluorfen (Goal) should not be applied when plants are breaking dormancy or when the growth flush is soft.

Which Herbicide to Use. Another basic question is, "Which herbicide should I use?" Growers should always read and follow the label of the herbicides used. For landscape crops, plant tolerance is the most important factor in selecting a herbicide. Each herbicide labels list the landscape crops that have been tested under actual growing conditions and found tolerant at the recommend application rate. Another major factor in selecting which herbicide to use is the weed species controlled. Again, each label lists the weed species controlled and the rate required. Thus, it is extremely important for the growers to identify the major weed species before selecting the appropriate herbicide; not all herbicides control all weeds. Formulation of a herbicide is also a consideration; however, most container producers apply granular herbicides. There is a growing trend for container growers to use spray-applied herbicides. In a survey of Alabama growers, about 99% of the growers were using granular herbicides. Spray-applied herbicides that can be applied over-the-top of labeled container-grown landscape crops include: Factor 65 WDG, Surflan 4AS, Pendulum 60 WG, Pennant 7.8E, and Gallery 75 DF. Finally, the cost of the herbicide should be considered. In cases where herbicides have similar activity and chemistry, herbicide cost may determine which herbicide a grower selects.

Why Herbicides May Not Work. Growers frequently question, "Why do herbicides not work (sometimes)?" Correct timing of herbicide application is one of the most common reasons that herbicides do not work. It is important for growers to understand that we are dealing with preemergence-applied herbicides. With most of these herbicides, weed control is ineffective if the weed seed has already germinated. As previously mentioned, basic knowledge of the weed life cycle is critical in the total weed management strategy. Also, for applications during the growing season the container should be weed-free prior to herbicide application. A poor job of hand weeding cannot be overcome with an application of a preemergence-applied herbicide. Improper application rate also contributes to poor weed control. The person applying the herbicide should calibrate frequently to know the application rate. Calibration should occur under field conditions. Label instructions should be followed with respect to the rate required to control the problem weed at your nursery. Some herbicides (Snapshot 2.5 TG) have different rates for different weed species. Selecting the wrong herbicide also results in poor weed control. The herbicide label should list the weed species that is a problem in your nursery, otherwise a lack of control may occur.

Rotation of Herbicides. Another question frequently asked is, "Should I rotate herbicides during the production cycle?" Little research has been conducted in this area, but recent evidence suggests herbicide rotation could be beneficial. Most of the

herbicides registered for landscape crops contain a dinitroaniline (DNA) herbicide. Root inhibition is the mode of action of these herbicides. Some landscape crops are more sensitive to DNA herbicides than others, and some DNA herbicides have more activity than others. Growers should consider using nonDNA herbicides (Ronstar or Regal O-O) at potting and switching to DNA-containing herbicides with subsequent applications.

Control of Weeds Underneath and Around Containers. Weed control beneath containers is often a problem. In the past, this area was often treated with Princep at the noncropland rate of 10 to 20 lbs a.i. per acre. With a greater awareness of our environmental responsibility, this practice of applying high rates of Princep has generally been discontinued. Most growers use some type of ground cover, either landscape fabric or black plastic. In general, a good weed control program for the container crop combined with a ground cover will provide the desired weed control. If it is necessary to treat the ground beneath the containers with a preemergence-applied herbicide, the water solubility of the herbicides should be a strong factor in determining which herbicide to select.

Herbicides for Recycled Water Systems. Since many growers are now recycling their water, a question frequently asked is, "Will it matter which herbicide I use if I recycle my water?" The herbicide choice can make a difference if recycling of the irrigation runoff water occurs; however, with most herbicides registered for woody landscape plants the likelihood of injury is remote. Dr. Ted Whitwell at Clemson University has shown in greenhouse studies with three herbicides (Surflan, Gallery, and Goal) that herbicide residue levels detected in the irrigation water were 100 times lower than the level that would cause measurable landscape plant damage. While limited research has been conducted in this area, herbaceous plants are more likely to be injured from herbicides in the runoff irrigation water. Key considerations to avoiding problems with herbicide accumulation in recycled irrigation runoff water are using the correct rate of application, selecting herbicides based on water solubility (with less than 3 ppm being a ballpark guideline), developing grassed waterways and vegetated filter strips to filter the irrigation runoff before it enters the collection pond, staggering herbicide application over a period of time, and applying herbicides to jammed (can tight) containers when possible to avoid nontarget herbicide loss.

Nonchemical Options for Weed Control. Many growers are interested in nonchemical alternatives for weed control in containers. There are several options available that provide varying degrees of success. Geotextile disks are available and have been shown to provide good weed control. These disks are easy to install, U-V resistant, and permeable to solid fertilizers. One problem with these disks is that weeds occasionally emerge in the slit around the base of the plant or around the edge of the pot. Newer disks are designed to reduce this problem. Another nonchemical weed control alternative is mulch. A recycled newspaper product is now available that provides good weed control throughout the growing season. Recycled newspaper pellets are applied about one inch deep after potting, and in many areas of the country provide weed control and moisture conservation throughout the growing season. Other mulch materials are available locally throughout the country. Growers should test these materials on a limited basis prior to wide-scale use.

CONCLUSION

In summary, there are many components to developing a successful weed management program for container-grown landscape crops. Through proper management, container-grown crops can be produced and marketed weed-free.

LITERATURE CITED

Warren, S. 1995. Death, taxes, and weeds. *Comb. Proc. Intl. Plant Prop. Soc.* 45:598-604.