

Container Nursery Weed Management at Monrovia Growers

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Monrovia Growers is a large, wholesale nursery company with six locations in California, Georgia, North Carolina, Ohio, and Oregon. Over 22 million containerized plants are produced annually on approximately 2,000 acres. The product line consists of over 2,200 varieties of trees, shrubs, vines, and perennials. The nursery environment presents an optimal environment for weed growth, with frequent irrigation and relatively high fertility. Consumers demand plants that are free of diseases, pests, and weeds. Therefore, weed control is an important aspect of nursery operations.

Monrovia uses an integrated approach to weed control, employing cultural and chemical controls. Cultural methods of weed control include the use of clean planting stock, use of clean planting media, hand weeding, and mulches and barriers.

Clean planting stock is the first line of defense against weed infestation. Starter plants, or liners, are grown at high density and are difficult to weed by hand. Most plants are propagated from cuttings in coarse rooting media, and therefore root-inhibiting herbicides are generally not used in the propagation stage. These clean liners must be planted into clean potting media. Media can become contaminated with seed from contaminated ingredients or from weeds growing on or near stored soil piles. Green waste, including weeds, is recycled at the nursery and used in the potting media. Weeds in this green waste are a potential source of seed. Therefore the green waste is composted, with the heat of composting providing the heat necessary to kill seed. We have conducted numerous trials to ensure that weed seeds are effectively killed during composting.

Monrovia makes extensive use of hand weeding. Each block of plants is weeded approximately once a month. Weeding teams track their progress through the nursery to ensure that all areas are routinely covered. Pulled weeds are bagged and removed from the area to eliminate sources of weed seed.

Mulches and barriers are widely used in landscapes for weed control, and in recent years we have used them at the nursery as well. Plastic and weed barrier cloth is used to cover the growing grounds and prevent weed growth underneath and between the containers. However, mulches are also applied directly to the containers. Mulches may consist of bulk products such as bark or nut shells that are spread on the surface of the container. Weed control disks are also available which are specifically designed for placement on nursery containers. These products

may be manufactured from natural or man-made materials. These disks are effective, but are labor-intensive to apply and can blow-off the container in windy conditions. Furthermore, they often have to be removed before plants are shipped to the customer.

Despite the use of cultural weed control methods, chemical control is a necessity. A combination of cultural and chemical control results in the lowest overall cost. Monrovia Growers uses most of the preemergent herbicide active ingredients currently labeled for nursery use. Sprayable formulations are used when practical, as this is the least expensive method of application in terms of the cost of product and labor. Large 50 ft. boom sprayers are used to apply these sprayable formulations in most cases. This is a very efficient application method when there are large blocks of plants that receive the same herbicide. However, in many cases there are small blocks of plants that require herbicide treatment. The large boom sprayer is not well suited for these situations, and therefore the nursery also uses granular herbicides. Granulars are also used under shade houses, as the support poles prevent the use of large booms. Granular herbicides are applied with hand-crank broadcast spreaders.

Many plant species grown at the nursery are not listed on product labels. It is even more unlikely that the specific cultivars produced would be listed. Therefore, Monrovia has had a phytotoxicity testing program in place for many years to test herbicide safety. To date, we have tested about 14,000 plant/herbicide combinations. Herbicides are typically tested at elevated rates, with multiple applications over one growing season.

Monrovia Growers recycles irrigation water at most of its nurseries. Herbicides may be recycled with the water and subsequently applied to sensitive crops. We have experienced plant damage from trace levels of herbicides in irrigation water on several occasions in the past. Therefore, care must be taken to avoid extensive use of herbicides with high water solubility, and to limit the use of certain active ingredients that have potential for damage.

Postemergent herbicides are also used at the nursery. The primary use is for spot-spraying weeds on gravel bed surfaces and in non-crop areas. Preemergent is usually tank mixed with postemergent herbicide. We have determined that weed seeds can splash from bed surfaces into the containers, and therefore weed control on the bed surface is an important part of the overall control strategy. Applicators track their progress through the nursery to make certain that all areas are spot-sprayed about once a month.

Control methods must be coordinated for most effective results. For example, plants should be hand-weeded and weeds on the ground should be sprayed before preemergent herbicide is applied. Weed infestations at the nursery can be kept to a minimum with the disciplined use of cultural and chemical control methods.