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Nursery Series

Weed Control in Container Nurseries

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Presence of weeds in containers has a significant negative impact on the finished quality and growth of ornamental crops. Controlling weeds in a container nursery can be a major expense. In 2001 North Carolina State University reported that hand weeding costs averaged $420/1,000 three-gallon pots over four months.

Traditionally, weeds have been controlled by hand weeding, which is labor-intensive; however, cost effective alternatives are now available.

Physical Barriers

An alternative to chemical weed control or hand weeding is to use a physical barrier to weed germination. Barriers typically fall into two broad categories: mulches or disks.

Disks cover the media surface and form a physical barrier through which weeds cannot penetrate, but they still allow water, air and nutrients to penetrate into the container media. Examples include geotextile disks (e.g., Tex-R-Geodisc™), coco fiber and plastic. Concerns with these materials include cost and the ability to keep these products on the media surface during windy conditions. These products often leave a gap around the container edge or near the stem that weeds often exploit.

Coco fiber weed disk

Loose-fill mulches form a layer over the media surface that reduces germination of weed seeds and minimizes water evaporation. Mulch materials can be easily added at the canning process. Ideal mulch materials should be cost effective, be easy to apply, resist decomposition, not introduce any toxic substances (e.g., zinc, lead) and be commercially available.

Chemical Control

Chemicals are the most popular method for controlling weeds in nurseries. While use of sterilized media might be an option in greenhouse or liner operations, the volume of media used in a typical container operation means this approach is not cost effective. The most effective method of weed control in a container nursery is the use of an appropriate preemergence herbicide.

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Preemergence (Woody Plants)

While preemergence herbicides are an integral part of an effective weed management program, users should remember that most products are not labeled for use inside enclosed structures such as greenhouses and covered hoop houses. Preemergence herbicides are applied to the media before weed seed germination. After being activated by rainfall or irrigation, these herbicides form a barrier at or just below the media surface. When the roots or shoots of germinating seeds come in contact with the herbicide barrier, their growth is inhibited. Most preemergence herbicides are cell division inhibitors affecting the emerging root and shoot, which are sites of rapid cell division. Weeds that have already emerged (visible) are not consistently controlled because their growing point has escaped contact with the herbicide. The primary target of preemergence herbicides is annual grass, but many small-seeded annual broadleaves will be controlled.

When selecting the proper herbicide, a grower must consider the weeds to be controlled (e.g., grassy weeds versus broadleaf weeds) and the crop tolerance to the herbicide. Proper weed identification is critical to a successful management program. Images of common weeds found in Arkansas nurseries can be found at *http://www.aragriculture.org/horticulture/ornamentals/weed_id/default.htm*. Once proper weed identification has been completed, growers can match selected weeds with the appropriate herbicide (*http://ohioline.osu.edu/b867*). Read and follow the label directions for the specific herbicide used.

In general, granular formulations are used more frequently than sprayable formulations in Arkansas. While granular formulations tend to be more expensive than sprayable formulations, they tend to be better suited for small container growers in Arkansas. The most common granular herbicides used in container woody plant production are OH2 and Rout (see the table below). Repeated use of the same herbicide or herbicide in the same chemical family will lead to a shift in weed populations. Manufacturers of the granular herbicide BroadStar claim this as an advantage of this herbicide, since the active ingredient is in a different class than currently registered herbicides.

Herbicides for Container Ornamentals

Trade Name	Product Rate lb/1,000 sq ft	Active Ingredient	Weeds Controlled	Site of Action (Group[1])
OH2	2.3	Oxyfluorfen + pendimethalin	Grasses and broadleaves	Cell membrane disrupter (14) + microtubule assembly inhibitor (3)
Broadstar	3.5	Flumioxazin	Grasses and broadleaves	Protox inhibitor (14)
Rout	2.3	Oxyfluorfen + oryzalin	Grasses and broadleaves	Cell membrane disrupter (14) + microtubule assembly inhibitor (3)
Snapshot	2.3 to 4.6	Trifluralin + isoxaben	Grasses and broadleaves	Microtubule assembly inhibitor (3) + cell wall synthesis inhibitor (21)
Showcase	2.3 to 4.6	Trifluralin + isoxaben + oxyfluorfen	Grasses and broadleaves	Microtubule assembly inhibitor (3) + cell wall synthesis inhibitor (21) + cell membrane disrupter (14)
Freehand	2.3	Dimethenamid-P + pendimethalin	Grasses and broadleaves	Cell growth inhibitor (15) + microtubule assembly inhibitor (3)
Jewel	2.3	Oxadiazon + pendimethalin	Grasses and broadleaves	Protox inhibitor (14) + microtubule assembly inhibitor (3)
Pendulum	2.3 to 4.6	Pendimethalin	Grasses	Microtubule assembly inhibitor (3)
Harrell's Granular Herbicide 63	0.3 to 2.3	Oxyfluorfen	Broadleaves	Cell membrane disrupter (14)
Harrell's Granular Herbicide 75	2.3	Oxyfluorfen + trifluralin	Grasses and broadleaves	Cell membrane disrupter (14) + microtubule assembly inhibitor (3)

[1]Herbicide classification according to chemical group. Read and follow all manufacturer's label directions.

To be most effective, preemergence herbicides should be applied to a media surface that is free of weeds. Read and follow label directions carefully, as some products may recommend a waiting period before applying the chemical following canning or transplanting. In Arkansas, two to three applications are required during a growing season.

Typical belly-grinder applicator for granular herbicides

Preemergence (Herbaceous Perennials)

In general, herbaceous plants tend to be more sensitive to herbicides than woody plants, and for this reason, the number of chemical weed control options for herbaceous plants is limited. The most common choice is to use Pendulum 2G or Corral 2.68G or other granular pendimethalin formulations labeled for container ornamentals.

Postemergence Herbicides

There are no good herbicide choices for postemergence, over-the-top broadleaf weed control in container ornamentals. However, there is potential for use of grass-specific herbicides to remove small grass weeds from non-grass crops. Postemergence grass herbicides that may be considered include Fusilade II (fluazifop), Envoy Plus (clethodim) and Segment (sethoxydim). Although these are grass-only herbicides, the spray should be directed as much as possible. It is possible to get foliar burn on some non-grass species when using these products. Use nonionic surfactant and avoid over applying. Read the label for a list of sensitive non-grass plants. Read and follow label instructions. Species that are not true grasses, Monkey grass (*Ophiopogo*n) and nutgrass (*Cyperus)*, will not be affected by the grass-specific herbicides.

Weed Control Under Containers

Containers should be placed in an area where the ground is covered with gravel, black plastic sheeting or woven weed-fabric. Covered ground will make for a cleaner production area and minimize weed establishment. The easiest time to deal with existing weeds in a container production area is between crop cycles. Prior to placing container crops on covered ground, herbicides containing prodiamine can be applied to provide up to eight months of weed control. Once containers are placed on the covered ground, herbicides that fall between containers will serve to provide varying degrees of weed control.

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