

Container Weed Control

(Rev. 4-2012)

by

Mark Halcomb, UT Area Nursery Specialist, McMinnville, Tenn. and
Dr. Donna Fare, Research Horticulturist, U.S. National Arboretum, McMinnville, Tenn.

Weeds are introduced several ways in container production: seeds are blown in from adjacent areas, seeds cling to the inside of recycled containers, from the propagation area with the potted liners, soil in the media from storing media on the ground, and even up through the gravel. Sometimes pots blow over and spill media and weeds or seed. Occasionally, weeds in containers are allowed to produce seed. When things get bad, they can get real bad quickly.

Difficult to control container weeds include prostrate spurge, woodsorrel (oxalis), nutsedge, bittercress and eclipta. Nutsedge (nutgrass), all perennial weeds such as bermudagrass, bittercress and eclipta must be dealt with correctly and timely.

Gallery (Isoxaben), granular Broadstar or liquid SureGuard (flumioxazin) and FreeHand 1.75G [Tower (dimethenamid-P) + Pendulum (pendimethalin)] provide effective preemergence defense against most broadleaf weeds.

Barricade (prodiamine) and Gallery (Isoxaben) are the most water insoluble preemergence herbicides available.

Prodiamine is sold as Barricade <http://www.cdms.net/LDat/ld1TF003.pdf> , RegalKade G and is an ingredient in RegalStar II and Biathlon.

Isoxaben is sold as Gallery <http://www.cdms.net/LDat/ld638001.pdf> and is an ingredient in Showcase and Snapshot 2.5 TG.

The Floor

The floor of container production areas can vary from several inches of gravel, gravel over weed barrier, weed barrier alone or weed barrier over plastic to catch the maximum amount of water for reuse.

As an annual gravel treatment before containers are placed each spring:

Use a drag to level the gravel and to encourage spilled bark to filter down and for leaves to blow away. The previous standard treatment was to broadcast spray as much as 10 qts (2.5 gal) Simazine or Princep per acre but the label no longer supports non-crop use. It is very water soluble and will leach out of the soil due to the amount of irrigation water applied to container crops. It is suspected that 10 qts Princep would only provide about 60 days of weed control because of its solubility.

Princep 4L label: <http://www.cdms.net/LDat/ld6MH025.pdf>

Because the gravel area can be considered a non-crop area Flumioxazin can be applied as (SureGuard, Valor or Payload). All three are 51% formulations and have a bare ground non-crop area label. Choose the most economical product. The highest rate allowed is 12 oz/acre. Flumioxazin is not volatile.

Payload label <http://www.cdms.net/LDat/ld6FD011.pdf>

Valor label <http://www.cdms.net/LDat/ld3LL041.pdf>

SureGuard label <http://www.cdms.net/LDat/ld48L013.pdf>

Supplemental Label to SureGuard <http://www.cdms.net/LDat/ld48L012.pdf>

Application of a Preemergence Herbicide during Potting

A granular preemergence herbicide applied with a shaker can on the potting line cannot be calibrated. A herbicide is not recommended until after a good watering to settle the media.

Application of a Preemergence Herbicide after Spacing on the Container Bed

On or about March 15: Broadcast a granular preemergence container herbicide over all of the containers after they are spaced out. (Note: If the floor is fabric, consider broadcasting a granular product while the containers are bunched together somewhere; immediately after being potted and watered thoroughly on the wagon if the applicator can be provided a safe raised walkway.)

Schedule reapplication for about 60-90 days later; on or about June 1: Broadcast a granular preemergence container herbicide over the containers regardless of the floor. Schedule reapplication for about 60-90 days later; on or about August 15: Broadcast a granular preemergence container herbicide over the containers again. Broadstar or Freehand is the best choice at this application if eclipta is a problem weed.

These applications will help prevent weeds in the containers, as well as between them. Granular preemergence container herbicides to choose from are listed later and should be selected for plant safety and their ability to control weeds, especially the tough ones.

Refer to the label for the ornamental species that each product is labeled for or to Table A on this web site. [Link](#)

Granular products are broadcast with a spreader (belly grinder) carried around the neck. These spreaders can be very accurate when used correctly. Most of the herbicide companies and their dealers will provide a calibration tray free designed for their products. These are plastic trays, 1 square foot in size, with a dimple in each corner to measure the per acre rate. Accuracy will come with experience. Sprayable preemergence herbicides may be a good option with shrubs or trees grown in large containers to avoid herbicide waste between containers (see below).

Extra effort will be required when foliage interferes with the applications. Where possible, apply the herbicide from more than 1 direction. Reduce the rate and make several passes to apply the correct total amount. Lay several calibration trays among the containers. Avoid trying to apply granular products with even a slight breeze, because the particles will be blown off target, wasting product without achieving control.

Accuracy is important. Accuracy here is dependent upon walking speed, wind, plant foliage and obstructions. Obstructions include irrigation risers, building supports and the plant canopy. Placement of the product onto the media surface is critical. Over application can damage ornamentals and too little will allow weeds to grow. The hand pulling of grass and weeds from containers is far too expensive and it disturbs the herbicide barrier as well as any topdressed fertilizer.

Always read and follow label instructions. The information given herein is supplied with the understanding that no discrimination is intended and no endorsement by the University of Tennessee Extension is implied. Mention of any pesticide names is strictly for educational purposes.

All existing weeds must be pulled prior to each application of preemergence herbicides. It may be necessary to hold the media in place with one hand while pulling some weeds to keep the media and fertilizer prills in place. Some granular products will burn if applied to wet foliage. A chemical in some granular products will vaporize in extreme heat soon after application. Most herbicide products are not labeled for use in covered (enclosed) poly houses due to potential foliar burn and stem damage. A fall application is recommended 2-3 weeks prior to winter enclosure to avoid phytotoxicity. While this information is on the label, pertinent characteristics have been pulled together in several later pages of this handout for your convenience to compare products.

Sprayables are an Alternative to Granular Preemergence Herbicides:

Barricade 65WG or 4L, Devrinol 50DF, Gallery 75DF, Pendulum WDG, Pennant Magnum, Ronstar WP, SureGuard and Surflan AS are labeled for container grown ornamentals. Sprayables are as effective as granular herbicides and more economical. Use irrigation to wash the chemical from the foliage within 30 minutes of application to avoid problems with some of the products. Gallery can be tank mixed with one of the

other products mentioned to make a broader spectrum herbicide mixture. Devrinol, Ronstar and SureGuard can be used alone. Evaluate the success after the first couple of applications and adjust the rates accordingly. Sprayer calibration is essential. [Link to pg 3 of the Field Nursery Weed Control handout at the web site.](#)

A tall, long boom must be devised to apply these over the plants 1 to 3 times during the growing season. Bed width, irrigation riser location and plant height must be considered. Wind would be a factor. The boom must reach at least half of the bed from a roadway.

Consider creating a "Weed Patrol" to constantly remove and or spray escaped weeds. Weeds should be collected and removed from the area. Use care not to remove media and fertilizer when pulling weeds from containers. Instruct labor to pull with one hand and use the other hand to hold the media in place. Neatness here pays dividends in more than appearance for visiting customers. Spilled media offers a place for future weeds to grow. Media could be the source of the seeds but provides an environment for weed root growth.

Keep all vegetation in the area mowed frequently to reduce seed formation. Devise a plan for escaped weeds within the container yard to be spot sprayed every 2 weeks with the proper postemergence herbicide. Prevent as much seed formation as possible. Remember, "One year of seeds, 7 years of weeds." Roundup (glyphosate) is effective on most grass and weed species. Finale will kill mareetail.

Continuing this idea of a "Weed Patrol", they would require a small vehicle that can get into tight places and capable of hauling several backpack sprayers or 1-2 battery powered 15 or 25 gallon spray tanks. Longer hoses could be added to these tanks to extend the application area. Wind up reels would add convenience. This is more efficient than using a backpack that has to be refilled often and tires labor.

A small container yard might survive with 2 or 3 back-pack sprayers; but the emphasis here is the scheduled and timely application of the correct herbicide on the different difficult weeds on site. If nutsedge is present one tank should contain Gramoxone, Basagran T/O or Prosedge (halosulfuron) by NuFarm (Prosedge has replaced Manage by Monsanto and Sedgehammer by Gowan) and another for Pennant Magnum, (or consider a tank mix if allowed by the labels). Pennant provides preemergence control while the first three provide post activity.

If annual grasses or Bermudagrass is present in containers, another tank needs Envoy Plus, Fusilade or Segment. Roundup will probably require the largest sprayer; to spray all green weeds on the floor except nutsedge. The difficult to control weeds will be discussed with options. A handout on nutsedge can be found on the web site.

General Comments

Employees need to be trained to identify the difficult to control weeds and the best control measures. They must be in close contact with the irrigation controller, so that the

sprays are not washed off too quickly. Note: Postemergence herbicides are more effective when applied on to dry foliage. Moisture stressed weeds are harder for any postemergence herbicide to control.

Eclipta is difficult to control and if present, requires a 2% solution of glyphosate (Roundup). It is often found growing out of the drain holes of the containers and thrives in moist irrigated areas. A 2% glyphosate solution will kill everything green except nutsedge and marestalk. Glyphosate must be shielded when applying around ornamentals. Only Basagran T/O, Gramoxone, Diquat, Image, Prosege (formerly Sedgehammer & Manage), 5% glyphosate and Finale will kill green nutsedge and must be shielded. To be effective, the irrigation cannot be turned on for 0.5 to 8 hours, depending on the herbicide selected. (Refer to the Rainfast Table) [Link](#)

Nutgrass or Nutsedge

Refer to the web site for the handout

[Link](#)

Bermudagrass on the Floor

Spot spray repeatedly with a 2% solution of glyphosate (Roundup) where and when safe. Where spraying Roundup (glyphosate) might be dangerous to nursery plants and shielding would slow the process down considerably; consider Fusilade, Segment (formerly Vantage) or Envoy Plus. Fusilade, Segment and Envoy Plus are more effective on young tender grasses than glyphosate. Envoy Plus is considered slightly more effective than Fusilade or Segment on bermuda. Moisture or frost stressed bermudagrass will be harder to kill. Make the first application when 4 to 6 inches of new growth is present. Subsequent applications are justified when 4 to 8 inches of regrowth is present.

Envoy Plus is mixed at 2.0 - 4.3 fl oz plus 1 fl oz non-ionic surfactant per **3** gal water.

Envoy Plus is mixed at 10 - 21.5 fl oz plus 5 fl oz non-ionic surfactant per **15** gal.

Envoy Plus is mixed at 1-2 quarts plus 17 fluid ounces non-ionic surfactant per **50** gal.

Use the lower rate on small, young, tender grasses; and the higher rate on larger plants.

Bermudagrass in Containers

Select either Fusilade, Segment or Envoy Plus based on which ornamentals appear on the labels or in the postemergence Table B on the web site. Envoy Plus is considered slightly more effective than Fusilade or Segment on bermudagrass.

Woodsorrel or Oxalis: A rate of 200 lbs/acre Snapshot is effective in preventing regrowth of oxalis after hand pulling.¹

¹ Dr. James Atland, Oregon Ext. Weed Specialist, during his talk 1-06 in Ohio.

Dragging or **working the gravel** annually during the off season is normally a very good practice, but it might scatter nutsedge and bermudagrass and should be avoided until control can be achieved. Dragging the gravel helps to level, encourage spilled bark to filter down and for leaves to blow away while improving the overall appearance of the area. This should be planned before the preemergence is applied. Images of effective drags are available upon request.

Improvising a Hand-held Shield

Commercially made cones are available to fit over the nozzle of a back-pack sprayer to avoid damage of postemergence herbicides by drift. These can be made from plastic liter soda bottles, bleach or milk jugs, etc. Stick the nozzle thru the small opening and duct tape it in place. Cut the bottom from the bottle. Would cutting a few more inches from the bottom benefit matters? Don't allow drips to contact desirable plant parts. Replace the tip with an 8001 or 8002. Maintain little pressure. Drag the container about, so-to-speak. Let the shield hover just over the weed foliage.

A thin piece of paneling, fiberglass or roofing can be carried in one hand while spraying along the outside edge of a container bed. Cut a handle. Be cautious of drips from the board. Additional laborers could assist by moving a long panel along as spraying is done.

The **Enviromist** mounted on a small tractor, 4-wheeler or ATV (Gator or Mule type vehicle) is a safe way to apply glyphosate (Roundup) or Gramoxone close to plant foliage, along the edge of the overwintering house or in open areas when it would be too windy to spray normally. Enviromist hoods come in widths from 18 to 48 inches. The Enviromist requires less pesticide while achieving better control.

Granular Preemergence Container Herbicides

Here are brief summaries from each label

Biathlon

OHP

Caution

Mode of Action: Group 14 + 3

2% Oxyfluorfen (Goal) + 0.75% Prodiamine (Barricade)

100 lbs per acre; 2.3 lbs per 1000 sq ft. Do not exceed 200 lbs per acre per year.

Repeat applications at 3 month intervals during growing season.

Apply to dry foliage. Apply ½ inch irrigation or rainfall within 24 hours after application to wash residues off foliage & activate the herbicide.

May be applied to labeled newly transplanted & established ornamentals.

Avoid use on *Euonymus alatus* 'Compactus', *Hydrangea* spp., *Sarcococca hookerana humilis* and several annuals and perennials. Label states will control bittercress, eclipta, groundsel, marestail, oxalis, spurge, etc.

Do not treat pots less than 4 inches wide. Individual container rates are provided.

Do not apply while plants are producing a new flush of spring growth.

Do not apply within 2 weeks of enclosure.

24 hours REI <http://www.cdms.net/LDat/ldUE2000.pdf> 7-5-11 but then 2010

BroadStar

Valent

Caution

Mode of Action: Group 14

Flumioxazin

150 lbs per acre; 3.5 lbs per 1000 sq ft. No more than 300 lbs per acre per year.

Do not apply until settling has occurred.

Apply to dry foliage only. Irrigate immediately after applying with 0.75 to 1 inch.

Avoid tender foliage; avoid applying during a flush of new growth.

Avoid applying to plant types whose leaves funnel granules.

Severe injury can occur to a variety of bedding plants & herbaceous perennials (hosta, daylily), un-established young liners.

Avoid use on Cleyera, Crapemyrtle, Deutzia, Euonymus, Jap. Holly, Ligustrum, Nandina, Spirea and Hydrangea.

Do not apply in enclosed structures. Avoid use on pots less than 4 inches across.

12 hours REI

<http://www.cdms.net/LDat/ld6EU008.pdf> 12-06**Corral 2.68 G**

Scotts is now Everris

Caution

Pendimethalin

76 – 114 lbs per acre; 1.7– 2.6 lbs per 1000 sq ft

Will control spurge, woodsorrel, annual grasses and some broadleaves. Offers 3-5 months control. Can be applied during a growth flush. Avoid wet foliage; water in immediately with 0.5-1 inch irrigation to remove particles from foliage. Apply to newly potted plants after 2 regular irrigations and dry foliage before 1st application. Delay use 2-4 weeks if liners were bareroot. Do not use in an enclosed poly structure

24 hours REI

[Label not available 4-09](#)http://www.scottspro.com/products/plant_protection/**Freehand 1.75 G**

CFL

BASF

Caution

Mode of Action: Group 3 / 15 Herbicide

0.75% dimethenamid-P (Tower) + 1% pendimethalin (Pendulum)

100 to 200 lbs per acre; 2.3 to 4.6 lbs per 1000 sq ft. Calibration tray available.

Label suggests safe around and over top of labeled plants.

Delay 1st application to containers for 2-4 weeks if liners were bareroot.

24 hour REI

<http://www.cdms.net/LDat/ld8LE000.pdf> 2008**Harrell's Granular Herbicide 75**

CFL

Harrell's'

Caution

2% Oxyfluorfen (Goal) + 3% Trifluralin (Treflan)

100 lbs per acre; 2.3 lbs per 1000 sq ft. Apply half at right angle to increase coverage.

Optimum control obtained when followed with ½ to 1" irrigation or rainfall within 3 to 4 days to remove particles from foliage and activate. Repeat no sooner than 60 days.

Avoid pots less than 4" wide. Avoid wet foliage, but should it occur, irrigate ASAP. Avoid applying to plant types whose leaves funnel granules. Do not apply 2 weeks prior to or 2 weeks following leaf bud break or during flush of growth. Do not apply within 2 weeks of enclosure. Will control bittercress, woodsorrel, and spurge. 24 hours REI

<http://harrells.com/wp-content/harrells-products/label-images/300515.pdf>

Jewel CFL Scotts is now Everris
Caution Mode of Action: Group 3 / 14 Herbicide
2% Oxadiazon (Ronstar) + 1.25% pendimethalin (Pendulum)
100 lbs per acre; 2.3 lbs per 1000 sq ft. Allow 2-4 months between applications.
Avoid wet foliage; apply after 2 regular irrigations.
Irrigate ASAP with ½ to 1" to remove granules from foliage and activate.
12 hours REI
http://www.scottspro.com/documents/tech_sheets/jewel_specLabel.pdf

OH2 Scotts is now Everris
Caution Mode of Action: Group 3 + 14
2% Goal + 1% Pendulum Oxyfluorfen + Pendimethalin
100 lbs per acre; 2.3 lbs per 1000 sq ft
Will control bittercress, eclipta, woodsorrel, and spurge
Avoid wet foliage; water in immediately with 0.5-1 inch irrigation to remove particles from foliage. Repeat at 3 month intervals.
Avoid tender foliage; avoid applying during a flush of new growth. Apply to newly potted plants after 2 regular irrigations and dry foliage before 1st application.
Avoid use on burning bush, several Rhodo, Annabelle hydrangea, flowering almond, Vinca minor & several other perennials & less common ornamentals.
Do not apply within 2 weeks of enclosure.
Avoid applying to plant types whose leaves funnel granules. 24 hours REI
http://everris.us.com/sites/default/files/oh2_specimen_label.pdf 7-10-09

Pendulum 2G BASF
Caution Pendimethalin
100 lbs per acre; 2.3 lbs per 1000 sq ft
Will control spurge, woodsorrel
Delay use 2-4 weeks if liners were bareroot. Delay use until liners have become well rooted. Media should be well settled, with no cracks.
12 hours REI <http://www.cdms.net/LDat/ld0BG008.pdf> 2008

RegalKade G Regal
Caution
0.5% Prodiamine
132-300 lbs per acre; 3 - 6.8 lbs per 1000 sq ft 300 lbs is annual maximum
Will control spurge, woodsorrel
Avoid wet foliage
Safe after transplanting when media has settled. Apply before budding/grafting or after buds/grafts have taken to avoid any inhibition of the union
Apply 30 days prior to enclosure
12 hours REI <http://www.regalchem.com/prdhrb3.html>

Regal O-O Herbicide

Regal

Caution

2% Goal + 1% Ronstar Oxyfluorfen + Oxadiazon

No root pruning

100 lbs per acre; 2.3 lbs per 1000 sq ft

Will control bittercress, woodsorrel, and spurge

Avoid use on wet foliage Avoid use on tender foliage

Avoid applying to plant types whose leaves funnel granules

12 hours REI <http://www.regalchem.com/prdhrb3.html>**Ronstar 2%**

Oxadiazon

Rhone-Poulenc & others

Warning

No root pruning

100-200 lbs per acre; 2.25 - 4.5 lbs per 1000 square feet

Will control bittercress & woodsorrel

Avoid wet foliage Safe on tender foliage

Safe on newly transplanted liners

<http://www.cdms.net/LDat/ld4FG001.pdf>**Rout**

Scotts is now Everris

Caution

Mode of Action: Group 3 / 14 Herbicide

2% Goal + 1% Surflan Oxyfluorfen + Oryzalin

100 lbs per acre; 2.3 lbs per 1000 sq ft

Will control bittercress, woodsorrel, and spurge

Safe on wet foliage Tender foliage is sensitive.

Do not apply 2 weeks prior to or 2 weeks following leaf bud break or during a flush of growth. Not recommended for use in liner production beds. Safe on newly transplanted liners after the first irrigation, or wait 3 weeks if liners were bareroot.

Avoid applying to plant types whose leaves funnel granules.

Irrigate immediately to completely remove particles from leaf surface.

Apply 14 days prior to enclosure. Do not use in enclosed structures.

24 hours REI

http://everris.us.com/sites/default/files/rout_specimen_label.pdf 2008 5-26-09**Showcase**

Dow AgroSciences

Caution

2% Treflan + 0.25% Gallery + 0.25% Goal Trifluralin + Isoxaben + Oxyfluorfen

100-200 lbs per acre; 2.3 - 4.6 lbs per 1000 sq ft

Avoid use on newly transplanted liners until the media has been settled by irrigation or rainfall. Avoid use in seedbeds & on pots less than 4 inches across. Avoid use on ajuga, *Euonymus alatus* 'Compacta', several daylilies, *Hydrangea* spp., *Juniperus horizontalis* 'Prince of Wales', Silver Dragon lirioppe, *Rhodo. carolinianum*, *Rhodo. catawbiense* 'Roseum elegans', *Vinca minor* 'Atropurpurea' & asst. perennials.

24 hr REI

<http://www.cdms.net/LDat/ld6TK006.pdf> 7-17-08

Snapshot 2.5 TG

Dow AgroSciences

Caution

2% Treflan + 0.5% Gallery Trifluralin + Isoxaben

100-200 lbs per acre; 2.3 - 4.6 lbs per 1000 sq ft

Will control bittercress, woodsorrel, prostrate spurge, & eclipta. Do not apply more than 600 lbs per 12 month period. Avoid use on newly transplanted liners. Avoid use on pots less than 4 inches across. Avoid use on ajuga, *Euonymus alatus* 'Compacta', *Hydrangea* spp., *Juniperus horizontalis* 'Prince of Wales', *Rhodo. carolinianum*, *Rhodo. catawbiense* 'Roseum elegans'.

Apply 21 days prior to enclosure; do not use in enclosed structures.

12 hours REI

<http://www.cdms.net/LDat/Id0B6010.pdf> 12-3-10

Treflan 5 G

Dow AgroSciences, Knox Fertilizer

Caution

5% trifluralin Treflan

80 lbs per acre; 1.8 lbs per 1000 sq ft

May root prune. Do not apply to unrooted liners or cuttings. Irrigate to settle prior to first application after potting. Avoid use on pots less than 4 inches across and groundcovers until established and well-rooted. Do not use in enclosed structures.

12 hours REI Knox Fert label is not on line, but I have it at Mark/Weed/Labels

XL 2G

Setre Chemical Co. & perhaps others

Caution

1% Benefin + 1% Surflan Benefin + Oryzalin

200-300 lbs per acre; 4.5 - 7 lbs per 1000 sq ft

May root prune. Do not apply to unrooted liners or cuttings. Will control bittercress, spurge, and woodsorrel. Avoid use on pots less than 4 inches across. Do not apply to *Thuja occidentalis* 'Techny' (arborvitae) or *Tsuga canadensis* (Canadian or eastern Hemlock)

Do not use in enclosed structures.

12 hours REI

A Summary

Weed control in containers is always important. The hand pulling of weeds from containers is expensive, but it also can allow the ornamental roots to dry out, while also removing some of the controlled-release fertilizer granules.

OH2, Regal 0-0, Ronstar, Rout and Snapshot 2.5 TG are the commonly used granular preemergence herbicides for conventional container production. They are recommended at 100-200 pounds per acre. Most of their labels recommend that they not be applied over wet foliage or while plants are producing a new flush of tender new growth.

Generally they should not be applied immediately following being potted, but this varies with the product. The Biathlon label suggests it may be applied to labeled newly transplanted ornamentals; OH2 recommends 2 regular irrigations after potting container grown liners before application, but waiting 3-4 weeks after potting bareroot liners before treating.

Some product labels specify to not treat containers less than 4 inches wide. Most of these products should not be applied over plants whose leaves would channel the granules to the leaf base, like yucca.

All the labels suggest avoiding applying their granular products when windy; to apply the granules in more than one pass and at right angles if possible; to not incorporate the herbicide; and to immediately irrigate with 1/2 inch water to wash the particles off the plant foliage and to activate the herbicide. The reentry interval is generally 12 or 24 hours.

These are good products, and like everything else, they must be used correctly to work right with no injury. Take the time to read the label, PLEASE.

The Rainfast Table (for lack of a better title) **contains the following information about the commonly used granular, pre and postemergence herbicides in commercial nurseries:**

The Rainfast Table is on the web site

[Link](#)

Rainfast – The period of time required for a sprayable product to dry or be absorbed on to foliage, so that rainfall or irrigation does not affect the effectiveness.

Number of Days Active – The period of time that the pre-emergence manufacturer states on the label that the product will remain active, waiting on activation by rainfall or incorporation.

Inches of Water to Activate – The amount of rain or irrigation (in inches) required to activate the pre-emergence herbicide according to the label.

Spray pressure (psi) – The pressure recommended by the label for application. More important for the post-emergence herbicides if applied over tall or dense foliage, in order to obtain coverage.

Gallons of Water per Acre Recommended – The recommended volume of spray water to use when applying the product, according to the manufacturer's label.

REI (in hours) – The number of hours that legally must pass before labor is allowed to return to the area sprayed. REI stands for restricted entry interval.

This information was correct when compiled. Labels change periodically. Always READ and follow label directions.

Fall Management of Granular Container Herbicides

Several of the granular preemergence herbicides for containers contain a volatile component. The fumes will kill the tender foliage in an enclosed structure. Leaving the doors open may not be adequate ventilation according to the pesticide companies. These cannot be used inside an enclosed overwintering house or greenhouse.

Labels specify 2, 3 or 4 weeks between application and enclosure in order to safely protect the plants and the manufacturer's liability. The Rout & Biathlon label recommends waiting 14 days between application and enclosure, 21 days for Snapshot 2.5 TG. Refer to the label or the pesticide label briefs above.

These products prevent weed seed germination for 60-90 days usually. A container producer must really pay attention to when the applications are made, in order to come into the fall with the proper timing for safe enclosure.

One grower makes granular preemergence herbicide applications March 1, May 1, July 1, and Sept 1; with enclosure around Thanksgiving. Another likes March 1, May 15, August 1, and October 15. Timing will vary with the management, the herbicide selected and the rate used.

Stagger Applications of Granular Herbicides over Containers

Most conventional container production is on gravel or Geo-textile fabric covered beds. Preemergence herbicides are broadcast or sprayed over the containers to provide weed control. With normal spacing, about 60% of the herbicide falls between the containers. The first 3 irrigation events move a high percentage of the herbicide into the runoff water away from the production area.

If the irrigation runoff water is caught in collection ponds and recycled, a potential problem exists, if several acres of containers are treated with Oxyfluorfen (Goal) on the same day or so. Even if this water is pumped to a primary reservoir and mixed with fresh water, there is a strong potential for tender foliage of some species to be burned. Biathlon, Regal O-O, Harrell's Granular Herbicide 75, Showcase, OH2 and Rout contain oxyfluorfen and are very effective herbicides. Oxyfluorfen (Goal) should not be used if the water is recycled unless applications are staggered as explained below.

A better solution is to divide the production area that drains into the same collection pond into sections. Stagger the herbicide application in one section at a time with at least 6 irrigation events between sections. This reduces the likelihood of foliar burn (phytotoxicity) or long term stunted growth by decreasing the amount of herbicide in the collection ponds.

In research at an Alabama nursery, herbicide levels in the collection pond peaked following the first irrigation after herbicides were applied. Following the 6th irrigation, herbicide levels were declining and following the 12th irrigation (about 10 days after application) herbicides were only detectable at very low levels.

In South Carolina research, about 10% of the Gallery (Isoxaben) (a component of Snapshot 2.5 TG & Showcase) applied was in the runoff water with the first two irrigations. Fortunately, this chemical does not accumulate in the holding pond.

The floor – gravel, fabric or plastic; can play a vital role in reducing the amount of herbicide that moves with the runoff water. In several reports, a gravel floor had less measurable herbicide in the runoff than plastic or fabric; because gravel impeded the movement of the herbicide granules. But herbicides were detected in all runoff water from all floor surfaces.

Another way to reduce the amount of herbicide in the runoff water is to treat the containers while they are jammed. But even when containers are jammed, about 25 percent of the herbicide granules still falls between the containers and ends up on the floor.

If the preemergence herbicides are applied after the containers have been spaced, then there is greater risk of more herbicides in the runoff water. When plants are spaced 8 inches, the non-target loss is about 51 percent and increases to 80 percent when containers are spaced 12 inches apart.

Definitions

Herbicide - A chemical that kills plants, not necessarily just weeds.

Pesticide - The catch-all term for all of the chemicals that kill plants, insects, mites, fungi, bacteria, nematodes, etc, etc.

Pesticide Signal Words -- Caution, Warning, or Danger – tell you how likely the pesticide is to make you sick. It appears in large bold print on every pesticide label.

Caution - The least poisonous. Considered safe when used according to directions.

Warning - More poisonous or irritating.

Danger - Very poisonous. Considered dangerous even when used according to the directions. These products also have a skull and crossbones in addition to the word 'Danger'.

Phytotoxicity or Phyto - "Anything that alters the appearance or growth (rate) of a plant." Dr. Chuck Powell in McMinnville, May 2, 2002

Postemergence herbicide - A chemical that kills a plant after (post) it has emerged out of the ground, such as Roundup.

Preemergence herbicide - A chemical that kills a germinating seedling before (pre) it emerges out of the ground, such as Surflan.

For additional information, contact: Mark Halcomb, UT Area Nursery Specialist,
mhalcomb@utk.edu (931) 473-8484 Comm/Container Prod/Container Weed Control 8-09, 4-12

Disclaimer: This handout is intended to provide general information about the use of preemergence herbicides in nursery settings. The mentioning of product names is merely for informational purposes and is not intended to endorse or discourage the use of any product. This list of products may not be comprehensive and other products may exist. This handout is not intended to supersede or replace the label. Always refer to a current label before making the application, which may contain updated or additional information not provided in this handout.

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development.
University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating.
UT Extension provides equal opportunities in programs and employment.