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Agricultural Extension Service
The University of Tennessee

PB1728

Weed Management in Annuals, Perennials and Herbaceous Ground Covers:

Nursery Production and Professional Landscape Maintenance

Ornamentals Production and Weeds (PB1728)

Weed Management in Annuals, Perennials and Herbaceous Ground Covers:

Nursery Production and Professional Landscape Maintenance

Purpose of Manual

The intent of this manual is to assist commercial plant producers and professional landscape maintenance personnel with weed management strategies in the production and/or maintenance of annuals, perennials and herbaceous ground covers. This information is not intended for the home gardener. This publication provides information on herbicide options, including ornamental plant tolerance, control of weeds and conditions for optimum herbicidal performance.

A large portion of this manual is a summary of the herbicides currently labeled for use on the specific plants listed. This compilation provides the user a quick reference to compare and facilitate herbicide decisions. However, this manual is not intended to replace the actual herbicide product label(s). Before using any pesticide, read, understand and follow the actual pesticide product label directions. Herbicides in this manual were registered for the prescribed uses when this manual was printed. However, herbicide labels are constantly being reviewed and revised. Cancellation of the registration of a herbicide or the prescribed use of a herbicide will constitute the removal of the herbicide s recommendation from this manual.

Use of brand or trade names in this manual is for clarity and information only; it does not imply endorsement of the product to the exclusion of others that may be of similar, suitable composition. It does not guarantee nor warrant the standard of the product.

Weed Management in Annuals, Perennials and Herbaceous Ground Covers:

Nursery Production and Professional Landscape Maintenance

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Developing a Weed Management Program

Controlling weeds in production or landscape areas can be a burdensome task. The objective of an effective and efficient weed management program is to achieve the desired level of weed control at an acceptable expense *(cost)*. Labor is very expensive and sometimes unavailable, and may require training and supervision. Management must avoid the laborious task of physically removing weeds whenever possible.

This objective is best achieved by an integration of cultural practices focused on minimizing the introduction of weed seed, followed by preemergence and postemergence herbicides (refer to page 10, Herbicide Types) applied correctly at the optimum time to achieve the most benefit. The basic principle of this integrated approach is the same for both production and landscape areas; however, the steps to achieve the desired objective are different.

Weed Management in the Production Area

In commercial plant production, weed prevention begins with cultural practices. In and around the production areas, take steps to minimize the potential for weeds to produce and spread weed seed (and other vegetative propagules). Weed seed can be transported into the production areas by wind, animals, equipment, humans and infested soil or plant stock. For container-grown ornamentals, the production area may be covered with geo-textile, gravel or a combination to reduce weed establishment. Often it is necessary to treat these areas with a preemergence and/or postemergence herbicide during non-production periods to control escaped weeds.

In addition to the production area, roads, aisles, fence rows and ditches should be kept clean or mowed frequently to prevent weeds from producing seed. Neat and clean nurseries generally have fewer weed problems than nurseries with weed infestations close to the production area.

Container media such as pine bark and other amendments should be stored on a concrete pad on high ground, preferably with a wall on three sides. This reduces weed seed from being washed into the pile or blown in by wind. Prevent unnecessary vehicle traffic on the pad. Tires can carry particles of soil or mud, which will likely contain weed seed and pathogens. Never allow weeds to grow in the piles of pine bark. Keep the area surrounding the container media weed-free to prevent weed seed from contaminating the media.

Annuals are generally potted in a commercially prepared, bagged, sterile media and grown start-to-finish inside a greenhouse. In this production system, weeds are seldom a problem. Plants grown in containers larger than one quart in a pine bark media have a greater potential to encounter weeds during the growing season, primarily due to these plants being grown outdoors. Weed control is imperative in these growing conditions. After plants have been potted, watered in and placed in the growing area, a preemergence herbicide should be applied. Preemergence herbicides provide residual control for 60 to 90 days depending on the product(s) and application rate. Thus, timely retreatment is required to produce season-long control that prevents weeds from becoming established. In container-grown ornamentals, the re-treatment of preemergence herbicides is typically broadcast, which helps to prevent weeds in and between the containers.

Escaped weeds or those not controlled by any herbicide should be physically removed prior to seed formation and prior to each retreatment. Often, if a weed is left and seed are produced, the area surrounding the weed-infested container will become contaminated with weed seed and develop a large population that may be difficult to manage. Peak periods of weed seed germination are in the spring and fall.

Weed seed have been found in used containers, clinging to the container walls. After soaking the containers, remove the debris with a stiff brush. Then dip containers in a 10 percent bleach dip for sanitation. Weeds and seeds also enter a production area with potted liners. When repotting plants with a weed problem, remove the top half inch of media and any weeds present to reduce future weed populations.

Postemergence control of weeds in and around the growing area is limited due to the risk of injury to the ornamental crop. When the use of postemergence herbicides is not an option, then established weeds will need to be physically removed.

Weed Management in the Landscape

The best defense against weeds in the landscape is an effective mulch layer, 2 to 3 inches thick, that allows water to pass through to the underlying soil and plant roots. However, for better control and to minimize the physical removal of weeds, preemergence herbicides may need to be included in the weed control program. Two and sometimes three preemergence herbicide applications may be required during the growing season, beginning in late February or early March. Spring and fall are the peak periods for weed seed germination.

The physical removal of escaped weeds and weeds not controlled by preemergence herbicides is necessary prior to each re-treatment. These may be hand-pulled, removed with a hoe or spot-sprayed with a postemergence herbicide.

Perennial weeds should be eliminated prior to establishing an ornamental planting, because controlling these weeds is very difficult after ornamentals are planted. The physical removal of certain perennial weeds, such as wild violet and bermudagrass, is ineffective. Established perennial weeds are best controlled with a systemic herbicide such as Roundup® (glyphosate) or Finale® (glufosinate) applied to the weed foliage prior to planting ornamentals.

Avoid using a preemergence herbicide where grass or flower seed will be planted.

Weed Types and Life Cycles

Herbicide selection is dependent on the ornamental species, the stage of establishment, and weeds both present and anticipated. Weed identification is necessary to develop the best and most cost-effective weed management program. Generally, weeds are easiest to control early in their life cycle. Most weeds, depending on the desired plants being grown, are best controlled with preventive or preemergence herbicides. To achieve this, preemergence herbicides must be applied prior to seed germination. Thus, the timing of herbicide application is dependent on the life cycle of the target weeds.

For control purposes, weeds can be divided into three types: broadleaf weeds, grass weeds and sedges. Within each type, weeds may have one of three basic life cycles: summer annual, winter annual or perennial.

Types of Weeds

Broadleaf Weeds: Broadleaf weeds are generally easiest to identify. Weeds like dandelion and clover have a distinctive appearance. Their leaves are broad (hence the name), and are generally produced in pairs or multiples. Leaves are detached from the main stem by a sub-stem or petiole. Leaves may be simple (having one leaflet, like dandelion) or compound (having more than one leaflet, like clover). Veins within the leaf give a netted appearance in most cases.

Broadleaf weeds must be controlled prior to planting, either physically or with postemergence herbicides. If broadleaf weeds become established, postemergence herbicide control options may be limited or non-existent due to potential injury to the broadleaf ornamental crop.

Grass Weeds: In general, grass weeds (like crabgrass and bermudagrass) are distinctively different from broadleaf weeds. However, distinguishing one grass weed from another can be very difficult (especially in the seedling stage). Unlike broadleaf weeds, grass leaves are not detached from the main stem. Leaves of grasses are narrow with a blade-like appearance, and are produced one at a time in two vertical rows. Leaf veins run parallel with leaf margins. Stems are usually round or flat.

Establishment of grass weeds can be prevented with preemergence herbicides. After grass weeds emerge, a selective postemergence herbicide can be sprayed without damage to labeled ornamental plants. To control small, actively growing grasses in herbaceous ornamentals, apply an over-the-top application of Envoy®, Fusilade® or Vantage® (all are herbicides with control activity that is selective for just grass weeds). Refer to **Table 5, Grass and Grass-like Weeds Controlled by Postemergence Herbicides,** for weeds

controlled by a particular grass-control herbicide. Refer to Table 2 and the product label for ornamental plant tolerance to a particular grass control herbicide.

Sedges: Sedges (like yellow nutsedge) are often the most difficult-to-manage weeds in ornamental plantings. Sedges are not grasses. However, sedges have leaves that are similar in appearance to grasses and are often misidentified. Herbicides used to control grass weeds are generally not effective on sedges. Thus, effective control of weed grasses and sedges is dependent on correct identification of these types of weeds.

Sedges have two key identifying characteristics: leaves are arranged in three vertical rows and stems are triangular. By contrast, stems of grasses are either round or flat, and leaves are present in two vertical rows. Herbicides to control sedges are usually applied as curative treatments. Herbicide selection is limited and control is difficult with the herbicides available.

Life Cycles of Weeds

Summer Annuals. Annuals complete their life cycle within one growing season. Summer annuals generally germinate in the spring, grow during the summer, produce seed and die by late fall.

Winter Annuals. Winter annuals complete their life cycle in 12 months, but generally overlap two calendar years. Winter annuals germinate in late summer to early fall and begin to develop. Winter annuals are dormant or semi-dormant through the winter, and flower the following spring. Winter annuals mature and die in late spring or early summer.

Summer and winter annuals reproduce and spread by prolific seed production. This seed bank serves as a ready source of infestation and establishment when conditions are favorable. Thus, in a normal year, there are two periods of intense weed seed germination: in the spring when summer annuals begin to germinate, and in the late summer or early fall when winter annuals start to germinate. Summer annuals will often continue to germinate throughout the summer, with the heaviest flush of germination in the spring to early summer especially following soil disturbance.

Perennials. Perennials live for more than two years and may regenerate indefinitely. A simple perennial, like dandelion, may germinate from seed, but produces a tap root that, when severed, can produce a new plant. A complex perennial can spread by seed and by vegetative structures above- or below-ground, such as stolons, rhizomes or nutlets.

Perennial weeds are often the most difficult to control. If they are well-established, repeat control measures may be required. Removal of the above-ground shoot growth does little towards long-term control. Long-term control usually requires herbicide treatments that act on the above- and below-ground structures.

Thus, an effective weed control program is dependent on knowing the weed type and life cycle.

Herbicide Types

Herbicides for use in ornamental plantings can be divided into two types: preemergence or postemergence.

Preemergence herbicides work on germinating weed seeds, preventing them from emerging. Thus, preemergence herbicides should be applied to weed-free soil or growing media prior to weed seed germination. Preemergence herbicides do not control established weeds.

Preemergence herbicides vary in the spectrum of weed control. Certain preemergence herbicides provide effective control predominantly of grasses, with limited control of broadleaf weeds, while others provide control predominantly of broadleaf weeds. Therefore, two or more herbicide active ingredients may be factory-mixed into a single herbicide product or tank-mixed by the user to provide control on a broad spectrum of weeds.

To activate a preemergence herbicide, irrigation or rainfall must be applied within a specific time period (See **Table 8, Carrier Volumes, Rain-fast Times and Re-entry Intervals for Preemergence and Postemergence Herbicides**). The water moves the herbicide into close contact with the soil and weed seeds and initiates the herbicide activity.

Preemergence herbicides generally provide residual control for 60 to 90 days**.** The length of control is dependent upon the product selected, the application rate, when activation occurs, weed species and weed pressure. Thus,

timely retreatment may be needed to extend the residual control and prevent weeds from becoming established.

Postemergence herbicides control weeds after they have emerged or become established. These herbicides may be selective or non-selective in the weeds controlled. Some selective herbicides control grass weeds with no activity towards broadleaf weeds. Examples are Envoy®, Fusilade® or Vantage®. Postemergence herbicides for control of established broadleaf weeds in ornamental plantings are very limited. Non-selective herbicides, such as Roundup® or Finale®, will kill both grass weeds and broadleaf weeds and may severely injure ornamentals. Thus, their use in ornamental plantings may be limited to spot treatment.

Herbicide Formulations

Herbicides are formulated to achieve ease of application and optimum performance. The active ingredient, which has the herbicidal or weed control activity, is not the only component contained in the herbicide product. The active ingredient is often mixed or formulated with inert ingredients that improve the herbicidal activity, ease of handling and application.

There are both liquid and dry herbicide formulations. Dry formulations are either applied as a dry granule or mixed with water and sprayed on the weed foliage or soil surface. The common herbicide formulations and the letter codes often used to designate the formulation are listed below.

Dry Formulations

Granules (G or GR). Granular herbicides are dry particles ready for application to soil, mulch or container media surface. The herbicide active ingredient is formulated onto a dry carrier such as clay. After application, the herbicide is activated by rain or irrigation, which creates a chemical herbicide barrier on the surface.

Wettable Powders (W or WP). Wettable powders are meant to be mixed with water as a carrier and applied as a liquid spray. The herbicide formulation is a dry, finely ground particle. Wettable powders form a suspension in water and frequent agitation is required to maintain a uniform suspension.

Water-Dispersible Granules (WDG or DG) and Dry Flowables (DF). These are improved wettable powders. They are easy to handle, as they produce little or no dust during mixing. After mixing with water as a carrier, frequent agitation is required to maintain a uniform suspension.

Soluble Powders (SP). Soluble powders are dry formulations that mix readily with water. After the initial mixing, they hold in solution readily.

Liquid Formulations

Liquids or Aqueous Solutions (L or AS). Certain active ingredients are finely ground and suspended in a liquid. The suspension is then mixed with water as a carrier for application. These formulations require frequent agitation to maintain a uniform mixture.

Emulsifiable Concentrates (E or EC). Emulsifiable concentrates are liquid formulations that are mixed with water as the carrier for application. Once mixed, emulsifiable concentrates readily stay in solution. Emulsifiable concentrates contain organic solvents to which certain plants may be sensitive. Look for precautions on the label warning of possible injury to ornamentals.

Solutions (S). Solutions are true solutions and mix readily with water with little to no agitation.

WEED IDENTIFICATION

Broadleaf Weeds

Summer Annuals

Bedstraw

Prostrate knotweed[1]

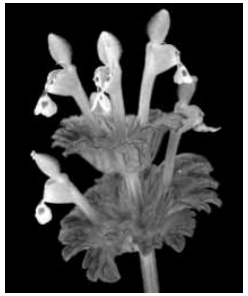
Prostrate spurge[1]

Spotted spurge[1]

Common groundsel

Winter Annuals

Buttercup


Henbit[1]

Deadnettle

Common chickweed[1]

Mouse-ear chickweed[1]

Carolina geranium

[1] Photo Credit: Arlyn W. Evans

Perennials

Dock, Curly

Dock, Broadleaf

Wild onion/Wild garlic[1]

Dandelion

White clover

Hop clover

Ground ivy

Plantain, Broadleaf

Oxalis[1]

Wild strawberry

Wild violet

Grass Weeds

Summer Annuals

Large crabgrass[1]

Smooth crabgrass[1]

Goosegrass

Yellow foxtail[1]

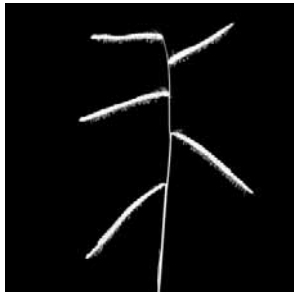
Green foxtail[1]

[1] Photo Credit: Arlyn W. Evans

Winter Annuals

Annual bluegrass

Perennials



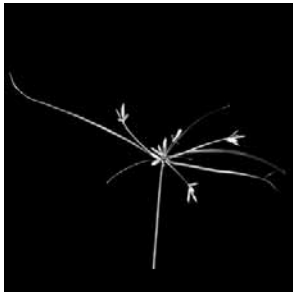
Dallisgrass[1]

Bermudagrass

Nimblewill[1]

Sedges

Summer Annuals



Annual sedge[1]

Perennials

Yellow nutsedge[2]

Purple nutsedge

Leaftips,
Far Left - Purple nutsedge,
Two Right - Yellow nutsedge

[1] Photo Credit: Arlyn W. Evans
[2] Photo Credit: Jimmy R. Summerlin

KEY TO PLANT SPECIES AND REGISTERED HERBICIDES

Table 1. Preemergence Herbicides Registered for Use on Annuals, Perennials and Herbaceous Ground Covers

(These recommendations are for ornamental crops only. Do not use on edible crops such as herbs.)

Date of reference label	2001	1/99	9/94	2/02	9/99	2002	11/00	4/01	2001	2001	4/98	1999	2000	3/2001	7/2001	2001	4/2001	9/00	9/00	12/00	2001	
Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Key to Codes: C = container production; F = field production; L = landscape; No = Label PROHIBITS use on this species; * = Check label for details; Blank space = not registered (either results in injury/loss or tolerance not known); **Please read the label before applying any pesticides.**																						
African Daisy				CFL	CFL															CFL		*Arctotis*
African Daisy (trailing)	CFL			CFL	CFL		FL		CFL	CFL	CFL		CFL			CFL			FL	CFL	FL	*Osteospermum*
African Lily (Lily-of-Nile)	CFL			CFL	CFL	L	CFL		CFL	CFL	CFL	FL	CFL			CFL		CFL	CFL	CFL	CFL	*Agapanthus*
African Violet																						*Saintpaulia*
Ageratum			FL	CFL	CFL			CFL*	CFL		CFL	FL					No			CFL		*Ageratum*
Ajuga		L	No	CFL	CFL	L	No		CFL	CFL	CFL	CFL				CFL		No	FL		FL	*Ajuga*
Allium	CFL											FL										*Allium*
Alyssum		L	FL						CFL		CFL	FL								CFL		*Alyssum*
Alyssum (Golddust)		L	FL									FL										*Aurinia*
Amaranthus																						*Amaranthus*
Amsonia																						*Amsonia*
Anemone	CFL								CFL		CFL											*Anemone*
Angel's Trumpet																						*Brugmansia*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Anise Hyssop																						*Agastache*
Archangel																						*Lamiastrum*
Artemesia									CFL		CFL	FL								CFL		*Artemisia*
Arum																						*Arum*
Asparagus Fern				CFL	CFL	L	CFL		CFL	CFL	CFL							CFL	CFL	CFL		*Asparagus*
Aster		L	FL	CFL	CFL	L			CFL		CFL	FL						CFL	CFL			*Callistephus*
Aster, Tatarian Daisy	CFL			CFL	CFL				CFL			CFL						CFL	CFL	CFL		*Aster*
Astilbe							CFL		CFL		CFL							CFL	CFL	CFL	CFL	*Astilbe*
Baby's Breath	CFL		FL				CFL		CFL		CFL					CFL	CFL		FL	CFL	FL	*Gypsophila*
Baby-Blue-Eyes																						*Nemophila*
Bachelor's Button		L				L																*Centaurea*
Balloonflower									CFL		CFL											*Platycodon*
Balsam																			FL	CFL	FL	*Impatiens*
Basil																						*Ocimum*
Beach Grass						L	CFL		CFL	CFL	CFL							CFL		CFL		*Ammophila*
Beardtongue								No	CFL		CFL						No					*Penstemon*
Bee Balm						L		CFL									CFL					*Monardo*
Begonia, fibrous	CFL					L			CFL		CFL								No		No	*Begonia*
Begonia, tuberous						L			CFL		CFL											
Bellflower	CFL	L	FL					CFL	CFL		CFL	FL				No			CFL	CFL	CFL	*Campanula*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Bird of Paradise				CFL	CFL				CFL		CFL								FL		FL	*Strelitzia*
Black-eyed Susan	CFL					L	CFL	No	CFL		CFL							CFL	CFL	CFL	FL	*Rudbeckia*
Blanket Flower	CFL					L			CFL		CFL	FL				CFL		CFL		CFL		*Gaillardia*
Bleeding Heart			FL						CFL	CFL	CFL								CFL		CFL	*Dicentra*
Bloody Dock																						*Rumex*
Blue Beard																						*Caryopteris*
Bluebells																						*Mertensia*
Boltonia	CFL																					*Boltonia*
Boston Fern									CFL		CFL											*Nephrolepis*
Bugleweed (Ajuga)		L	No	CFL	CFL	L	No		CFL	CFL	CFL	CFL				CFL		No	FL		FL	*Ajuga*
Burnet																						*Sanguisorba*
Butterflyweed (milkweed)									CFL		CFL	FL										*Asclepias*
Cabbage, Ornamental							No		CFL		CFL					CFL		No				*Brassica*
Cactus																						*Cactus*
Caladium									CFL		CFL								FL		FL	*Caladium*
Calamint																						*Calamentha*
Calendula		L																		CFL		*Calendula*
Calla Lily									CFL	CFL	CFL											*Zantedeschia*
Candytuft		L	FL			L	No									CFL	CFL	No	CFL			*Iberis*
Canna									CFL	CFL	CFL	FL										*Canna*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Cape Marigold																			FL	CFL	FL	*Dimorphotheca*
Carex						L	CFL		CFL		CFL	CFL						CFL		CFL		*Carex*
Carnation			No													CFL				CFL		*Dianthus*
Cassia	CFL						CFL		CFL		CFL		CFL					CFL	FL	CFL		*Cassia*
Cast-iron (Aspidistra)							CFL		CFL		CFL											*Aspidistra elatior*
Castor Bean																						*Ricinus*
Catchfly																						*Silene*
Catmint																						*Nepeta*
Celosia						L		No	CFL								No					*Celosia*
Chamomile																						*Matricaria*
Chives, ornamental																						*Allium*
Christmas Fern																						*Polysticum*
Chrysanthemum	CFL	L	FL	CFL			CFL	No	CFL		CFL	FL				CFL	No	CFL	CFL	CFL	FL	*Chrysanthemum*
Chrysanthemum																						*Dendranthema*
Chrysanthemum				CFL			CFL										No					*Leucanthemum*
Cinquefoil			FL				CFL	CFL*	CFL	CFL	CFL	FL		CFL		CFL	CFL	CFL	CFL	CFL	CFL	*Potentilla*
Cockscomb						L			CFL		CFL											*Celosia*
Coleus			FL			L													No		No	*Coleus*
Columbine	CFL		FL			L			CFL		CFL	FL										*Aquilegia*
Comfrey																						*Symphytum*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Coneflower	CFL		FL					No	CFL		CFL						No	CFL	CFL		FL	*Echinacea*
Coppertip	CFL								CFL		CFL											*Crocosmia*
Coralbells	CFL	L	FL				CFL											CFL	CFL			*Heuchera*
Coreopsis	CFL		FL			L	CFL	CFL	CFL		CFL	FL				CFL	CFL	CFL	FL	CFL	FL	*Coreopsis*
Cornflower						L														CFL		*Centaurea*
Cosmos			FL																	CFL		*Cosmos*
Cranesbill	CFL																					*Geranium*
Crocus									CFL		CFL	FL										*Crocus*
Crown Vetch									CFL		CFL											*Vicia*
Daffodil	FL	L		CFL	CFL	L	L		CFL		CFL	FL	F					L	FL	FL	FL	*Narcissus*
Dahlia		L	FL	CFL	CFL				CFL		CFL					CFL				CFL		*Dahlia*
Daisy		L	FL	CFL	CFL			No	CFL		CFL	FL							FL	CFL	FL	*Chrysanthemum*
Dames Rocket																						*Hesperis*
Daylily	CFL					L	CFL	CFL	CFL		CFL	FL					CFL*	CFL	CFL	CFL	CFL	*Hemerocallis*
Dianthus	CFL		No			L	CFL	CFL*	CFL		CFL	FL				CFL	CFL*		FL	CFL	FL	*Dianthus*
Dusty Miller																				CFL		*Centaurea*
Dusty Miller						L			CFL		CFL	FL						CFL	CFL			*Senecio*
Evening Primrose	CFL		FL									FL										*Oenothera*
Fairy Duster									CFL		CFL											*Calliandra*
False Dragonhead	CFL								CFL			FL										*Physostegia*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
False Indigo																						*Baptisia*
Fan Flower																						*Scaevola*
Feather Reed Grass																						*Calemogratis*
Fescue, Blue						L	CFL		CFL	CFL	CFL							CFL	FL	CFL	FL	*Festuca*
Feverfew			FL																			*Tanacetum*
Fiveleaf Akebia	CFL																					*Akebia*
Flowering Maple							CFL									CFL		CFL	FL	CFL	FL	*Abutilon*
Foam Flower																						*Tiarella*
Forget-Me-Not			FL																	CFL		*Myosotis*
Fortnight Lily									CFL		CFL	FL						CFL	CFL			*Moraea*
Fountain Grass, Green	FL					L	CFL		CFL	CFL	CFL							CFL	CFL	CFL		*Pennisetum*
Fountain Grass, Red	FL					L	CFL		CFL	CFL	CFL							CFL	CFL	CFL		*Pennisetum*
Four O'Clock			FL																	CFL		*Mirabilis*
Foxglove			FL					No	CFL		CFL						No		CFL			*Digitalis*
Freesia		L							CFL	CFL	CFL											*Freesia*
Gaillardia (Blanketflower)	CFL		FL			L			CFL		CFL	FL				CFL		CFL		CFL		*Gaillardia*
Garden Mum								No	CFL		CFL							CFL				*Chrysanthemum*
Garlic, Society																						*Tulbaghia*
Gaura	CFL																					*Gaura*
Gayfeather (Liatris)									CFL		CFL					CFL			CFL		CFL	*Liatris*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Gazania		L		CFL	CFL		CFL		CFL	CFL	CFL	FL				CFL		CFL	FL	CFL	FL	*Gazania*
Geranium			FL	CFL	CFL	L		No				FL					No		FL		FL	*Pelargonium*
Geranium, True				CFL	CFL	L			CFL													*Geranium*
Gerbera Daisy																						*Gerbera*
Germander	CFL		No				CFL													CFL		*Teucrium*
Geum (Avens)			No				CFL		CFL		CFL	FL							FL	CFL	FL	*Geum*
Giant Reedgrass									CFL	CFL	CFL											*Arundo*
Giant Thistle																						*Onopordum*
Gilia																						*Gilia*
Gladiolus	FL	L	FL	CFL			L		CFL		CFL	FL	F			CFL			FL	CFL	FL	*Gladiolus*
Globe Amaranth																						*Gomphrena*
Godetia																						*Clarkia*
Goldenrod																						*Solidago*
Goldenstar,Green & Gold																						*Chrysogomum*
Hair Grass, Tufted						L	CFL		CFL	CFL	CFL							CFL		CFL		*Deschampsia*
Hardy Zinnia																						*Heliopsis*
Heartleaf Bergenia	CFL																					*Bergenia*
Heath			FL			L	CFL									CFL		CFL		CFL		*Erica*
Heather	CFL			CFL	CFL	L	CFL	✳	CFL	CFL	CFL		CFL			CFL	No	CFL		CFL		*Calluna*
Heather, False			FL				CFL											CFL				*Cuphea*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Hebes							CFL															*Hebes*
Heliotropium							CFL									CFL						*Heliotropium*
Hens and Chickens																						*Sempervivum*
Hibiscus	FL			CFL		L	CFL					CF	CFL			CFL	CFL	CFL	FL	CFL	CFL	*Hibiscus rosa-sinensis*
Hollyhock																						*Alcea*
Hosta (Plantain-Lily)	CFL			CFL	CFL	L	CFL		CFL	CFL	CFL	CFL						CFL	CFL	CFL	CFL	*Hosta*
Hummingbird Vine																						*Ipomoea*
Hyacinth							L					FL						L	FL	FL	FL	*Hyacinthus*
Hyacinth Bean Vine																						*Lablab*
Hyacinth, Grape							L					FL								FL		*Muscari*
Hyacinth, Wood												FL										*Endymion*
Iceplant	CFL												CFL									*Maleophora*
Iceplant	CFL	L		CFL	CFL	L	FL		CFL	CFL	CFL		CFL			CFL		FL	FL	CFL	FL	*Carpobrotus*
Iceplant	CFL	L		CFL	CFL		FL						CFL			CFL		FL	FL	CFL	FL	*Delasperma*
Impatiens						L			CFL			FL							FL	CFL	FL	*Impatiens*
Indian Grass																						*Sorghastrum*
Iris, Bulbous	FL		FL			L	L					FL	F					L	FL	FL	FL	*Iris*
Iris, Rhizomatous	FL		FL			L						FL	F					L	FL		FL	*Iris*
Ivy	CFL	L	FL	CFL	CFL	L	CFL		CFL	CFL	CFL	CFL	CFL			CFL		CFL	FL	CFL	FL	*Hedera spp*
Jack-in-the-Pulpit																						*Arisaema*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Jasmine, Asian	CFL					L	CFL	CFL	CFL	CFL	CFL		CFL			CFL	CFL*	CFL	FL	CFL	FL	*Trachelospermum*
Joe-Pye Weed																						*Eupatorium*
Johnny-Jump-Up																						*Viola*
Joseph's Coat																						*Alternanthera*
Jupiter's Beard																						*Centranthus*
Kale, Ornamental							No		CFL		CFL					CFL		No				*Brassica*
Lamb's Ear (Stachys)												FL				CFL				CFL		*Stachys*
Lantana	CFL		FL	CFL	CFL	L	CFL	No	CFL		CFL					CFL	CFL*	CFL		CFL		*Lantana*
Larkspur (Delphinium)	CFL		FL			L						FL										*Delphinium*
Lavender	CFL								CFL	CFL	CFL							CFL	CFL			*Lavendula*
Lavendercotton (Santolina)	CFL		FL					CFL					CFL	CFL	CFL							*Santolina*
Leatherleaf Fern	CFL								CFL	CFL	CFL	FL	CFL									*Rumohra*
Lemon Balm																						*Melissa*
Lemon Grass																						*Cymbopogon*
Leopard Plant																						*Ligularia*
Leopards-Bane									CFL		CFL	CF				CFL			CFL			*Doronicum*
Lily	CFL		FL				L	No	CFL	CFL	CFL	FL					No					*Lilium*
Lily-of-the-Valley									CFL	CFL	CFL											*Convallaria*
Lion's Ear																						*Leonotis*
Liriope				CFL	CFL		CFL					FL						CFL	FL	CFL	FL	*Liriope giganteum*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Liriope	CFL			CFL	CFL	L	CFL		CFL	CFL	CFL	CFL	CFL					CFL	CFL	CFL	CFL	*Liriope muscari*
Liriope	CFL			CFL	CFL	L	CFL		CFL	CFL	CFL	CFL						CFL		CFL		*Liriope spicata*
Lobelia																			CFL	CFL		*Lobelia*
Loosestrife	CFL								CFL		CFL	FL										*Lythrum*
Lupine			FL					CFL	CFL		CFL	FL					No			CFL		*Lupinus*
Maltese Cross																						*Lychnis*
Marguerite, Golden			FL																			*Anthemis*
Marigold		L	FL			L		No	CFL		CFL	FL					No		FL	CFL	FL	*Tagetes*
Melampodium																						*Melampodium*
Mexican Sunflower																						*Tithonia*
Miscanthus	FL					L	CFL		CFL		CFL							CFL		CFL		*Miscanthus*
Monarda						L		CFL									CFL					*Monarda*
Mondo Grass	FL					L	CFL		CFL	CFL	CFL	CFL	CFL					CFL	FL	CFL	FL	*Ophiopogon*
Moneywort							CFL											CFL				*Lysimachia*
Morning Glory			FL				CFL		CFL		CFL									CFL		*Convolvulus*
Moss Rose			FL			L			CFL		CFL								FL	CFL	FL	*Portulaca*
Mother of Thyme			FL																			*Thymus*
Mourning Bride	CFL		FL					CFL*									CFL*			CFL		*Scabiosa*
Narcissus	FL	L		CFL	CFL	L	L		CFL		CFL	FL	F					L	FL	FL	FL	*Narcissus*
Nasturtium			FL																	CFL		*Nasturtium*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
New Guinea Impatiens																						*Impatiens*
Nicotiana																				CFL		*Nicotiana*
Nightshade									CFL		CFL											*Solanum*
Northern Sea Oats																						*Chasmanthium*
Oregano, Cuban																						*Plectranthus*
Oregano, Greek																						*Origamum*
Ox-eye Daisy									CFL		CFL											*Chrysanthemum*
Pachysandra		L	FL	CFL	CFL	L	CFL	CFL	CFL	CFL	CFL	CFL		CFL	CFL			CFL	FL	CFL	FL	*Pachysandra*
Painted Fern	CFL						CFL											CFL	CFL	CFL		*Athyrium*
Pampas Grass	CFL					L	CFL	CFL	CFL	CFL	CFL	FL	CFL	CFL	CFL			CFL	FL	CFL	FL	*Cortaderia*
Pansy		L	No			L			CFL		CFL	FL							FL		FL	*Viola*
Parsley																						*Petroselinum*
Partridge-berry																						*Mitchella*
Patrinia																						*Patrinia*
Pentas							CFL															*Pentas*
Peony	CFL		FL						CFL	CFL	CFL					CFL						*Paeonia*
Pepper, Ornamental																						*Capsicum*
Periwinkle (ground cover)	CFL	L		CFL	CFL	L	FL	CFL*	CFL		CFL	FL	CFL	CFL	CFL	CFL	No	FL	FL	CFL	FL	*Vinca minor*
Periwinkle (bedding)									CFL		CFL											*Catharanthus*
Petunia			FL	CFL	CFL	L	CFL	No	CFL		CFL	FL					No	CFL	CFL	CFL	FL	*Petunia*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Phlox			No				CFL					FL								CFL		*Phlox*
Pimpernel																						*Anagallis*
Pink Clover																						*Polygonum*
Pinks			No				CFL	CFL*				FL					CFL*			CFL	FL	*Dianthus*
Plumbago	CFL						CFL													CFL		*Ceratostigma*
Plume Poppy																						*Macleaya*
Poker Plant			FL																			*Kniphofia*
Polk-a-dot Plant																						*Hypoestes*
Poppy								No									No			CFL		*Papaver*
Poppy, California									CFL		CFL											*Eschscholzia*
Prairie Coneflower																						*Ratibida*
Prickly Pear																						*Opuntia*
Primrose		L																				*Primula*
Queen Anne's Lace												FL										*Daucus*
Queen-of-the-Meadow																						*Filipendula*
Ranunculus (Buttercup)		L																	FL		FL	*Ranunculus*
Raspberry, creeping																						*Rubus*
Rattlesnake Master																						*Erygium*
Ravenna Grass																						*Erianthus*
Ribbon Grass						L	CFL		CFL	CFL	CFL							CFL		CFL		*Phalaris*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Rose			FL	CFL	CFL		CFL											CFL	FL	CFL	FL	*Rosa rugosa*
Rose				CFL	CFL				CFL		CFL	FL				CFL			FL	CFL	FL	*Rosa spp.*
Rose Champion																						*Lychnis*
Rosemary	CFL					L	FL		CFL		CFL		CFL					FL	FL	CFL	FL	*Rosmarinus*
Rupturewort																				CFL		*Herniaria*
Rush, Soft																						*Juncus*
Russian Sage	CFL								CFL													*Perovskia*
Sage, Sweet or Texas			FL														CFL		FL		FL	*Salvia*
Salvia						L		CFL	CFL		CFL						No			CFL		*Salvia*
Sandwort																						*Arenaria*
Scarlet Flax																						*Linum*
Scotch Broom						L	CFL	CFL				FL		CFL		CFL		CFL	FL	CFL	FL	*Cytisus*
Sea Pink																				CFL		*Armeria*
Seashore Mallow																						*Kosteletskya*
Sedum (Stonecrop)	CFL	L	FL	CFL	CFL	L	No	No	CFL		CFL	FL	CFL			CFL	No	No	CFL	CFL	FL	*Sedum*
Shasta Daisy							CFL		CFL		CFL								CFL	CFL	FL	*Chrysanthemum*
Shasta Daisy							CFL	No	CFL		CFL						✳		CFL			*Leucanthemum*
Shrimp Plant	CFL												CFL			CFL			CFL		CFL	*Justicia*
Snapdragon			FL			L			CFL		CFL	FL							FL	CFL	FL	*Antirrhinum*
Snapdragon Vine																						*Asarina*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Sneezeweed																						*Helenium*
Snow Drops																						*Galanthus*
Snow-in-Summer							CFL											CFL				*Cerastium*
Snow-on-Mountain							No											No		CFL		*Euphorbia*
Soapwort																						*Saponaria*
Solomon's Seal																						*Polygonatum*
Southern Reed Grass																						*Calemogratis*
Spanish Flag																						*Mina*
Spearmint																						*Mentha*
Speedwell (Veronica)												FL							CFL	CFL		*Veronica*
Spiderwort			FL																			*Tradescantia*
Squill (scilla)												FL										*Scilla*
St. Johnswort		L		CFL	CFL		CFL	CFL	CFL		CFL	FL		CFL		CFL	CFL	CFL	CFL	CFL	FL	*Hypericum*
Starflower																						*Trientalis*
Star-of-Bethlehem									CFL		CFL	FL										*Ornithogalum*
Statice							CFL		CFL		CFL	FL				CFL		CFL	CFL	CFL		*Limonium*
Stock		L																		CFL		*Matthiola*
Stokes Aster									CFL		CFL								FL	CFL	FL	*Stokesia*
Strawberry Begonia	CFL																					*Saxifraga*
Strawberry, Ornamental		L							CFL		CFL						CFL			CFL		*Fragaria*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Strawflower			FL																			*Helichrysum*
Sundrops			FL									FL										*Oenothera*
Sunflower	CFL		FL																	CFL		*Helianthus*
Sweet Alyssum		L																		CFL		*Lobularia*
Sweet Flag						L			CFL		CFL											*Acorus*
Sweet Pea		L	FL																	CFL		*Lathyrus*
Sweetpotato Vine																						*Ipomoea*
Sweet William			No			L			CFL		CFL	FL				CFL			FL	CFL	FL	*Dianthus*
Switchgrass																						*Panicum*
Sword Fern																						*Nephrolepis*
Tansy																						*Tanacetum*
Tidy Tips																						*Layia*
Trillium																						*Trillium*
Tulip	CFL	L				L	L		CFL		CFL	FL	CFL					L	FL	FL	FL	*Tulipa*
Verbena						L	CFL		CFL		CFL						CFL		CFL	CFL		*Verbena*
Vinca (ground cover)	CFL	L		CFL	CFL		CFL	CFL	CFL		CFL	FL	CFL	CFL	CFL	CFL		CFL	FL	CFL	FL	*Vinca major*
Wallflower		L																				*Cheiranthus*
Weeping Love Grass																						*Eragrostis*
Wild Thyme																						*Thymus*
Wintercreeper	CFL			CFL	CFL		CFL	CFL	CFL	CFL	CFL	CFL	CFL	CFL	CFL	CFL	CFL	CFL	CFL	CFL	CFL	*Euonymus fortunei*

Common Name	Barricade 65 WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50DF	Dimension EC Dimension Ultra WSP	Gallery 75DF	OH-2	Pendulum 2G	Pendulum 3.3EC	Pendulum 60 WDG	Pennant Magnum	Regal Kade 0.5G	Regal O-O	Regal Star G	Ronstar G	Rout 3G	Snapshot 2.5TG	Surflan AS	Treflan 5G	XL 2G	Genus
Wishbone Flower																						*Torenia*
Wood Poppy																						*Stylophorum*
Wormwood	CFL		FL																			*Artemisia*
Yarrow	CFL		FL			L	CFL	CFL*	CFL		CFL	FL					No	CFL	CFL	CFL	FL	*Achillea*
Yucca	CFL						CFL		CFL	CFL	CFL	CFL	CFL					CFL	FL	CFL		*Yucca*
Zinnia		L	FL	CFL				No	CFL			FL					No		FL	CFL	FL	*Zinnia*
Zinnia, Creeping																						*Sanvitalia*

Table 2. Postemergence Herbicides Registered for Use on Annuals, Perennials and Herbaceous Ground Covers

(These recommendations are for ornamental crops only. Do not use on edible crops such as herbs.)

Date of reference label	4/00	3/98	1/02	2001	1/00	2000	2/99	
Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Key to codes: C = container production; F = field production; L = landscape; No = Label PROHIBITS use on this species; * = check label for details. Blank space = not registered (either results in injury/loss or tolerance not known). **Please read the label before applying any pesticides**.								
African Daisy								*Arctotis*
African Daisy (trailing)	FL		CFL	CFL			CFL	*Osteospermum*
African Lily (Lily-of-Nile)				CFL			CFL	*Agapanthus*
African Violet								*Saintpaulia*
Ageratum			CFL	CFL				*Ageratum*
Ajuga (Bugleweed)	FL	FL	CFL	CFL*			CFL	*Ajuga*
Allium								*Allium*
Alyssum				CFL			CFL	*Alyssum*
Alyssum (Golddust)								*Aurinia*
Amaranthus								*Amaranthus*
Amsonia								*Amsonia*
Anemone								*Anemone*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Angel's Trumpet								*Brugmansia*
Anise Hyssop								*Agastache*
Archangel								*Lamiastrum*
Artemesia								*Artemesia*
Arum								*Arum*
Asparagus Fern			CFL	CFL			CFL	*Asparagus*
Aster								*Callistephus*
Aster, Tatarian Daisy		FL					CFL	*Aster*
Astilbe	FL			CFL				*Astilbe*
Baby's Breath	FL						CFL	*Gypsophila*
Baby-Blue-Eyes	FL						CFL	*Nemophila*
Bachelor's Button	FL						CFL	*Centaurea*
Balloonflower								*Platycodon*
Balsam								*Impatiens*
Basil								*Ocimum*
Beach Grass								*Ammophila*
Beardtongue	FL							*Penstemon*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Bee Balm								*Monardo*
Begonia, fibrous	FL			CFL			CFL	*Begonia*
Begonia, tuberous								*Begonia*
Bellflower	FL			CFL			CFL	*Campanula*
Bird of Paradise				CFL				*Strelitzia*
Black-eyed Susan	FL						CFL	*Rudbeckia*
Blanket Flower							CFL	*Gaillardia*
Bleeding Heart	FL		CFL	CFL*			CFL	*Dicentra*
Bloody Dock								*Rumex*
Blue Beard								*Caryopteris*
Bluebells	FL							*Mertensia*
Boltonia								*Boltonia*
Boston Fern								*Nephrolepis*
Bugleweed (Ajuga)	FL	FL	CFL	CFL*			CFL	*Ajuga*
Burnet	FL							*Sanguisorba*
Butterflyweed (milkweed)							CFL	*Asclepias*
Cabbage, Ornamental		FL						*Brassica*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Cactus								*Cactus*
Caladium								*Caladium*
Calamint								*Calamentha*
Calendula				CFL			CFL	*Calendula*
Calla Lily								*Zantedeschia*
Candytuft	FL		CFL	CFL			CFL	*Iberis*
Canna							CFL	*Canna*
Cape Marigold								*Dimorphotheca*
Carex								*Carex*
Carnation	FL		CFL	CFL			CFL	*Dianthus*
Cassia				CFL*			CFL	*Cassia*
Cast-iron (Aspidistra)			CFL					*Aspidistra*
Castor Bean								*Ricinus*
Catchfly	FL						CFL	*Silene*
Catmint								*Nepeta*
Celosia							CFL	*Celosia*
Chamomile	FL							*Matricaria*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Chives, ornamental				CFL				*Allium*
Christmas Fern								*Polysticum*
Chrysanthemum	FL		CFL				CFL	*Chrysanthemum*
Chrysanthemum								*Dendranthema*
Chrysanthemum	FL		CFL				CFL	*Leucanthemum*
Cinquefoil			CFL	CFL*			CFL	*Potentilla*
Cockscomb							CFL	*Celosia*
Coleus	FL		CFL	CFL			CFL	*Coleus*
Columbine	FL			CFL*			CFL	*Aquilegia*
Comfrey								*Symphytum*
Coneflower	FL						CFL	*Echinacea*
Coppertip								*Crocosmia*
Coralbells			CFL				CFL	*Heuchera*
Coreopsis	FL		CFL	CFL			CFL	*Coreopsis*
Cornflower	FL						CFL	*Centaurea*
Cosmos	FL						CFL	*Cosmos*
Cranesbill			CFL	CFL				*Geranium*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Crocus								*Crocus*
Crown Vetch				CFL			CFL	*Vicia*
Daffodil							CFL	*Narcissus*
Dahlia			CFL				CFL	*Dahlia*
Daisy	FL		CFL				CFL	*Chrysanthemum*
Dames Rocket	FL						CFL	*Hesperis*
Daylily	FL		CFL	CFL			CFL	*Hemerocallis*
Dianthus	FL		CFL	CFL			CFL	*Dianthus*
Dusty Miller		FL		CFL			CFL	*Centaurea*
Dusty Miller			CFL					*Senecio*
Evening Primrose	FL			CFL*			CFL	*Oenothera*
Fairy Duster							CFL	*Calliandra*
False Dragonhead							CFL	*Physostegia*
False Indigo								*Baptisia*
Fan Flower								*Scaevola*
Feather Reed Grass								*Calemogratis*
Fescue, Blue							CFL	*Festuca*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Feverfew								*Tanacetum*
Fiveleaf Akebia								*Akebia*
Flowering Maple								*Abutilon*
Foam Flower								*Tiarella*
Forget-Me-Not	FL							*Myosotis*
Fortnight Lily								*Moraea*
Fountain Grass, Green				CFL*				*Pennisetum*
Fountain Grass, Red				CFL			CFL	*Pennisetum*
Four O'Clock								*Mirabilis*
Foxglove							CFL	*Digitalis*
Freesia								*Freesia*
Gaillardia (Blanketflower)	FL						CFL	*Gaillardia*
Garden Mum	FL							*Chrysanthemum*
Garlic, Society					L			*Tulbaghia*
Gaura								*Gaura*
Gayfeather (Liatris)	FL			CFL			CFL	*Liatris*
Gazania	FL		CFL	CFL*			CFL	*Gazania*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Geranium	FL		CFL	CFL			CFL	*Pelargonium*
Geranium, True							CFL	*Geranium*
Gerbera Daisy							CFL	*Gerbera*
Germander								*Teucrium*
Geum (Avens)							CFL	*Geum*
Giant Reedgrass								*Arundo*
Giant Thistle								*Onopordum*
Gilia	FL							*Gilia*
Gladiolus				CFL*			CFL	*Gladiolus*
Globe Amaranth								*Gomphrena*
Godetia	FL						CFL	*Clarkia*
Goldenrod								*Solidago*
Goldenstar, Green & Gold								*Chrysogomum*
Hair Grass, Tufted								*Deschampsia*
Hardy Zinnia								*Heliopsis*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Heartleaf Bergenia								*Bergenia*
Heath								*Erica*
Heather				CFL				*Calluna*
Heather, False			CFL				CFL	*Cuphea*
Hebes								*Hebes*
Heliotropium								*Heliotropium*
Hens and Chickens				CFL				*Sempervivum*
Hibiscus				CFL				*Hibiscus rosa- sinensis*
Hollyhock				CFL				*Alcea*
Hosta (Plantain-Lily)	FL		CFL	CFL	L		CFL	*Hosta*
Hummingbird Vine								*Ipomoea*
Hyacinth								*Hyacinthus*
Hyacinth Bean Vine								*Lablab*
Hyacinth, Grape								*Muscari*
Hyacinth, Wood								*Endymion*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Iceplant								*Maleophora*
Iceplant								*Carpobrotus*
Iceplant								*Delasperma*
Impatiens		FL					CFL	*Impatiens*
Indian Grass								*Sorghastrum*
Iris, Bulbous	FL		CFL	CFL			CFL	*Iris*
Iris, Rhizomatous	FL		CFL	CFL			CFL	*Iris*
Ivy	FL	FL	CFL	CFL			CFL*	*Hedera spp*
Jack-in-the-Pulpit							CFL	*Arisaema*
Jasmine, Asian			CFL	CFL	L		CFL	*Trachelospermum*
Joe-Pye Weed								*Eupatorium*
Johnny-Jump-Up							CFL	*Viola*
Joseph's Coat								*Alternanthera*
Jupiter's Beard								*Centranthus*
Kale, Ornamental		FL						*Brassica*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Lamb's Ear (Stachys)							CFL	*Stachys*
Lantana			CFL	CFL*			CFL	*Lantana*
Larkspur (Delphinium)	FL							*Delphinium*
Lavender							CFL	*Lavendula*
Lavendercotton				CFL			CFL	*Santolina*
Leatherleaf Fern				CFL				*Rumohra*
Lemon Balm								*Melissa*
Lemon Grass								*Cymbopogon*
Leopard Plant								*Ligularia*
Leopards-Bane	FL							*Doronicum*
Lily								*Lilium*
Lily-of-the-Valley							CFL	*Convallaria*
Lion's Ear								*Leonotis*
Liriope	FL							*Liriope giganteum*
Liriope	FL	FL	CFL	CFL	L		CFL	*Liriope muscari*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Liriope	FL	FL		CFL				*Liriope spicata*
Lobelia							CFL	*Lobelia*
Loosestrife			CFL				CFL	*Lythrum*
Lupine							CFL	*Lupinus*
Maltese Cross								*Lychnis*
Marguerite, Golden								*Anthemis*
Marigold		FL	CFL	CFL			CFL	*Tagetes*
Melampodium								*Melampodium*
Mexican Sunflower								*Tithonia*
Miscanthus								*Miscanthus*
Monarda, Bee Balm								*Monarda*
Mondo Grass			CFL	CFL*	L		CFL	*Ophiopogon*
Moneywort			CFL	CFL			CFL	*Lysimachia*
Morning Glory				CFL				*Convolvulus*
Moss Rose			CFL	CFL			CFL	*Portulaca*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Mother of Thyme								*Thymus*
Mourning Bride								*Scabiosa*
Narcissus							CFL	*Narcissus*
Nasturtium								*Nasturtium*
New Guinea Impatiens								*Impatiens*
Nicotiana			CFL				CFL	*Nicotiana*
Nightshade								*Solanum*
Northern Sea Oats								*Chasmanthium*
Oregano, Cuban								*Plectranthus*
Oregano, Greek								*Origamum*
Ox-eye Daisy							CFL	*Chrysanthemum*
Pachysandra		FL	CFL	CFL	L		CFL	*Pachysandra*
Painted Fern								*Athyrium*
Pampas Grass				CFL*			CFL	*Cortaderia*
Pansy			CFL				CFL	*Viola*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Parsley								*Petroselinum*
Partridge-berry			CFL					*Mitchella*
Patrinia								*Patrinia*
Pentas								*Pentas*
Peony	FL							*Paeonia*
Pepper, Ornamental							CFL	*Capsicum*
Periwinkle (ground cover)	FL		CFL	CFL			CFL	*Vinca minor*
Periwinkle (bedding)				CFL*			CFL	*Catharanthus*
Petunia	FL	FL	CFL	CFL			CFL	*Petunia*
Phlox			CFL				CFL	*Phlox*
Pimpernel	FL							*Anagallis*
Pink Clover				CFL				*Polygonum*
Pinks	FL		CFL	CFL			CFL	*Dianthus*
Plumbago							CFL	*Ceratostigma*
Plume Poppy								*Macleaya*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Poker Plant								*Kniphofia*
Polk-a-dot Plant								*Hypoestes*
Poppy	FL						CFL	*Papaver*
Poppy, California	FL						CFL	*Eschscholzia*
Prairie Coneflower	FL							*Ratibida*
Prickly Pear				CFL				*Opuntia*
Primrose								*Primula*
Queen Anne's Lace							CFL	*Daucus*
Queen-of-the-Meadow								*Filipendula*
Ranunculus (Buttercup)								*Ranunculus*
Raspberry, Creeping								*Rubus*
Rattlesnake Master								*Erygium*
Ravenna Grass								*Erianthus*
Ribbon Grass								*Phalaris*
Rose				CFL				*Rosa rugosa*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Rose	FL		CFL	CFL				*Rosa spp.*
Rose Champion								*Lychnis*
Rosemary				CFL			CFL	*Rosmarinus*
Rupturewort							CFL	*Herniaria*
Rush, Soft								*Juncus*
Russian Sage								*Perovskia*
Sage, Sweet or Texas			CFL	CFL			CFL	*Salvia*
Salvia	No		CFL	CFL*				*Salvia*
Sandwort				CFL			CFL	*Arenaria*
Scarlet Flax	FL						CFL	*Linum*
Scotch Broom								*Cytisus*
Sea Pink							CFL	*Armeria*
Seashore Mallow								*Kosteletskya*
Sedum (Stonecrop)			CFL	CFL			CFL	*Sedum*
Shasta Daisy	FL			CFL			CFL	*Chrysanthemum*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Shasta Daisy	FL			CFL			CFL	*Leucanthemum*
Shrimp Plant				CFL*			CFL	*Justicia*
Snapdragon	FL	FL	CFL	CFL			CFL	*Antirrhinum*
Snapdragon Vine								*Asarina*
Sneezeweed								*Helenium*
Snow Drops								*Galanthus*
Snow-in-Summer	FL			CFL			No	*Cerastium*
Snow-on-Mountain								*Euphorbia*
Soapwort	FL							*Saponaria*
Solomon's Seal								*Polygonatum*
Southern Reed Grass								*Calemogratis*
Spanish Flag								*Mina*
Spearmint								*Mentha*
Speedwell (Veronica)							CFL	*Veronica*
Spiderwort								*Tradescantia*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Squill (scilla)								*Scilla*
St. Johnswort							CFL	*Hypericum*
Starflower	FL							*Trientalis*
Star-of-Bethlehem								*Ornithogalum*
Statice	FL			CFL			CFL	*Limonium*
Stock							CFL	*Matthiola*
Stokes Aster							CFL	*Stokesia*
Strawberry Begonia								*Saxifraga*
Strawberry (ornamental)				CFL				*Fragaria*
Strawflower								*Helichrysum*
Sundrops							CFL	*Oenothera*
Sunflower								*Helianthus*
Sweet Alyssum	FL		CFL				CFL	*Lobularia*
Sweet Flag			CFL				CFL	*Acorus*
Sweet Pea								*Lathyrus*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Sweetpotato Vine								*Ipomoea*
Sweet William	FL		CFL	CFL			CFL	*Dianthus*
Switchgrass								*Panicum*
Sword Fern				CFL				*Nephrolepis*
Tansy								*Tanacetum*
Tidy Tips	FL						CFL	*Layia*
Trillium								*Trillium*
Tulip							CFL	*Tulipa*
Verbena			CFL				CFL	*Verbena*
Vinca (ground cover)	FL			CFL			CFL	*Vinca major*
Wallflower							CFL	*Cheiranthus*
Weeping Love Grass								*Eragrostis*
Wild Thyme	FL							*Thymus*
Wintercreeper	FL		CFL	CFL				*Euonymus fortunei*
Wishbone Flower								*Torenia*

Common Name	Acclaim Extra	Basagran T/O	Envoy 1L	Fusilade II	Image 70 DG	Manage	Vantage	Genus
Wood Poppy								*Stylophorum*
Wormwood								*Artemisia*
Xylosma								*Xylosma*
Yarrow	FL		CFL	CFL			CFL	*Achillea*
Yucca				CFL				*Yucca*
Zinnia	FL		CFL	CFL			CFL	*Zinnia*
Zinnia, Creeping	FL							*Sanvitalia*

WEED SUSCEPTIBILITY TO HERBICIDES

Table 3. Broadleaf Weeds Controlled by Preemergence Herbicides

Date of reference label	2001	1/99	9/94	2/02	9/99	2002	11/00	4/01	2001	2001	4/98	1999	2000	3/2001	7/2001	2001	4/01	9/00	9/00	12/00	2001
Broadleaf Weeds	Barricade 65WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50 DF	Dimension EC Dimension Ultra WSP	Gallery 75 DF	OH-2	Pendulum 2G	Pendulum 3.3 EC	Pendulum 60 WDG	Pennant Magnum	RegalKade 0.5G	Regal O-O	RegalStar G	Ronstar G	Rout 3G	Snapshot 2.5 TG	Surflan AS	Treflan 5G	XL 2G
Key to text codes for anticipated levels of control: * = listed on product label as providing control; the following control codes are based on in-state research: G = good control; F = fair control; P = poor control; T = tolerant or no control. **Key to number codes**: 1/ Annual; 2/ Applications for this weed should be made in the late summer, fall or winter prior to germination; 3/ Persian speedwell; 4/ Corn speedwell; 5/ And annual; 6/ Suppression only; 7/ Split application, 60-90 days apart; 8/ Use low rate; 9/ Use medium rate; 10/ Use high rate; 11/ Seedling stage only; 12/ And giant; 13/ From seed; 14/ Repeat application if regrowth occurs.																					
Bittercress, Hairy						*	*9G	*						*		*G	*	*9G	*		*
Buttercup (Ranunculus)																					
Carpetweed	*G		G	*G	*	*	*6F		*	*	*G	*G	*			*G		*6	*G	*6G	*G
Carrot, Wild							*9G											*9G			*
Chickweed, Common	*G		G	*G	*	*	*8G	*	*	*	*G		*	*	*		*G	*8G	*G	*G	*G
Chickweed, Mouseear	*					*	*9G		*	*	*G		*13					*9G			
Clover, Hop									*	*	*										
Clover, White							*8G								*		*	*8G			
Cocklebur, Common																					
Cudweed					*		*8	*	*	*	*G			*				*8G			
Dandelion (seedling)							*9G	*						*			*G	*9G			
Deadnettle		*	F																		

Broadleaf Weeds	Barricade 65WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50 DF	Dimension EC Dimension Ultra WSP	Gallery 75 DF	OH-2	Pendulum 2G	Pendulum 3.3 EC	Pendulum 60 WDG	Pennant Magnum	RegalKade 0.5G	Regal O-O	RegalStar G	Ronstar G	Rout 3G	Snapshot 2.5 TG	Surflan AS	Treflan 5G	XL 2G
Dock, Curly			P				*6											*6			
Dodder			F																		
Dogfennel							*10G											*10G			
Eclipta							*9	*										*9			
Evening Primrose							*10		*	*	*					*10G	*G	*10G			
Filaree, Redstem				*G	*		*8G		*	*	*G							*8, 10G	*		*G
Fleabane							*8G	*						*				*8G			
Galinsoga, Hairy							*9G					*G				*10G		*9G			
Geranium, Carolina						*	*9G											*9G			
Groundsel, Common				*G	*		*9G	*				*6		*		*G	*G	*9G	*		*G
Henbit	*G	*G	P			*	*8G		*	*	*G		*					*8G	*G		*G
Horseweed (marestail)						*	*8, 9G	*						*			*G	*8, 9G	*6		*6
Jimsonweed							*10G											*10G			
Knotweed, Prostrate	*G		F	*G	*	*	*8, 10G		*	*	*G		*		*			*8, 10G	*G	*G	*G
Lambsquarters	*G	*F	G	*G	*		*8G		*	*	*G		*			*G	*G	*8G	*G	*G	*G
Lettuce, Prickly				*G	*		*9G											*9G	*6		*6
Liverwort																*10G					
Mallow				*F	*													*6, 8, 9	*6		*6
Morningglory, Annual							*6, 9											*6,9	*6		*6

Broadleaf Weeds	Barricade 65WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50 DF	Dimension EC Dimension Ultra WSP	Gallery 75 DF	OH-2	Pendulum 2G	Pendulum 3.3 EC	Pendulum 60 WDG	Pennant Magnum	RegalKade 0.5G	Regal O-O	RegalStar G	Ronstar G	Rout 3G	Snapshot 2.5 TG	Surflan AS	Treflan 5G	XL 2G
Moss																	*				
Mugwort																					
Mustard, Wild						*	*8G											*8G	*6		*6
Nightshade, Black			F				*8G					*G						*8G	*6		*6
Oxalis (yellow woodsorrel)	*G					*	*9G	*	*	*	*G		*	*	*	*G	*G	*9G	*G		*
Pearlwort								*						*	*		*G				
Pepperweed, Virginia							*8G	*						*				*8G			
Pigweed spp.	*G	*G	F	*G	*	*	*8G	*	*	*	*G	*G	*	*		*G	*G	*8G	*G	*G	*G
Pineappleweed				*G	*	*	*8G											*8G			
Plantain							*8, 9G											*8, 9G			
Pokeweed, Common							*9											*9			
Purslane, Common	*G		G	*G	*	*	*8		*	*	*G	*6	*			*G	*G	*8G	*G	*G	*G
Pusley, Florida	*		G				*6F		*	*	*G	*G	*					*6	*G	*6	*G
Ragweed, Common				*6 F	* 6		*8G											*8G	*6		*6
Shepherdspurse	*2 G	*G	P			*	*8G	*	*	*	*G		*2	*		*G	*G	*8G	*G		*G

Broadleaf Weeds	Barricade 65WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50 DF	Dimension EC Dimension Ultra WSP	Gallery 75 DF	OH-2	Pendulum 2G	Pendulum 3.3 EC	Pendulum 60 WDG	Pennant Magnum	RegalKade 0.5G	Regal O-O	RegalStar G	Ronstar G	Rout 3G	Snapshot 2.5 TG	Surflan AS	Treflan 5G	XL 2G
Sida, Prickly							*9G											*9G	*6		*6
Smartweed							*8G		*	*	*G					*G		*8G	*6		*6
Sorrel, Red							*9G											*9G			
Sowthistle, Annual			P	*G	*		*8G	*						*		*G	*G	*8G	*6		*6
Sowthistle, Spiny							*10											*10			
Speedwell spp.	*3					*4	*8, 9G		*4	*4	*4		*3			*G		*8, 9G			
Spiny Amaranth																*					
Spurge, Garden						*		*						*		*	*				
Spurge, Prostrate	*G		F			*	*10G	*	*5	*5	*5G		*	*		*10	*G	*10G	*G		*G
Spurge, Spotted			F			*	*8G	*	*	*	*			*	*		*G	*9G	*6		*6
Spurry, Corn																					
Thistle, Canada																					
Velvetleaf							*8G		*	*	*G							*9G	*6		*6
Wild Garlic																					
Wild Onion																					

Table 4. Grass and Grass-Like Weeds Controlled by Preemergence Herbicides

Date of reference label	2001	1/99	9/94	2/02	9/99	2002	11/00	4/01	2001	2001	4/98	1999	2000	3/2001	7/2001	2001	4/01	9/00	9/00	12/00	2001
Grass and Grass-like Weeds	Barricade 65WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50 DF	Dimension EC Dimension Ultra WSP	Gallery 75 DF	OH-2	Pendulum 2G	Pendulum 3.3 EC	Pendulum 60 WDG	Pennant Magnum	RegalKade 0.5G	Regal O-O	RegalStar G	Ronstar G	Rout 3G	Snapshot 2.5 TG	Surflan AS	Treflan 5G	XL 2G
Key to text codes for anticipated levels of control: * = listed on product label as providing control; The following control codes are based on in-state research: G = good control; F = fair control; P = poor control; T = tolerant or no control. **Key to number codes**: 1/ Annual; 2/ Applications for this weed should be made in the late summer, fall or winter prior to germination; 3/ Persian speedwell; 4/ Corn speedwell; 5/ And annual; 6/ Suppression only; 7/ Split application, 60-90 days apart; 8/ Use low rate; 9/ Use medium rate; 10/ Use high rate; 11/ Seedling stage only; 12/ And giant; 13/ From seed; 14/ Repeat application if regrowth occurs.																					
Barnyardgrass	*G	*G	F	*G	*	*		*	*	*	*G	*G	*	*		*10G	*G	*8G	*G	*G	*G
Bermudagrass						T															
Bluegrass, Annual	*G	*G	F	*G	*	*		*	*	*	*G	*G	*	*	*	*G	*G	*8G	*G	*G	*G
Brome, Downy				*G	*	*														*G	
Crabgrass, Hairy									*			*		*	*	*				*	*
Crabgrass, Large	*G	*G	G	*G	*	*		*	*	*	*G	*G	*	*	*	*G	*G	*8G	*G	*G	*G
Crabgrass, Smooth	*G	*G	G	*G	*	*			*	*	*G	*G	*	*	*	*G		*8G	*G	*G	*G
Dallisgrass						*11															
Fescue, Tall						T															

Grass and Grass-like Weeds	Barricade 65WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50 DF	Dimension EC Dimension Ultra WSP	Gallery 75 DF	OH-2	Pendulum 2G	Pendulum 3.3 EC	Pendulum 60 WDG	Pennant Magnum	RegalKade 0.5G	Regal O-O	RegalStar G	Ronstar G	Rout 3G	Snapshot 2.5 TG	Surflan AS	Treflan 5G	XL 2G
Foxtail, Yellow	*G	*	G	*G	*	*			*	*	*G	*G	*13				*G	*8	*G	*G	*G
Foxtail, Green	*G	*	G	*	*	*			*	*	*	*	*13			*	*		*	*	*
Foxtail, Giant	*G	*	P	*G	*				*	*	*G	*G	*13					*9G	*G	*G	*G
Goosegrass	*7 G	*G	F	*G	*	*			*	*	*G	*G	*	*	*	*G	*G	*10 G	*G	*G	*G
Horsetail (Equisetum)																					
Johnsongrass (rhizome)																					
Johnsongrass (seedling)	*G		F	*F	*				*	*	*G	*6	*					*6	*G	*6 G	*G
Nutsedge, Purple																					
Nutsedge, Yellow												*G									
Orchardgrass																					
Panicum, Fall	*	*	P	*G	*				*	*	*G	*G	*			*G	*G	*8G	*G	*	*G
Panicum, Browntop	*		F	*					*	*	*		*						*		*
Panicum, Texas	*		P	*	*				*	*	*		*					*6	*	*6	*

Grass and Grass-like Weeds	Barricade 65WG Barricade FL	Betasan 4E, 7G	Dacthal W-75	Devrinol 2G	Devrinol 50 DF	Dimension EC Dimension Ultra WSP	Gallery 75 DF	OH-2	Pendulum 2G	Pendulum 3.3 EC	Pendulum 60 WDG	Pennant Magnum	RegalKade 0.5G	Regal O-O	RegalStar G	Ronstar G	Rout 3G	Snapshot 2.5 TG	Surflan AS	Treflan 5G	XL 2G
Quackgrass																					
Ryegrass, Annual						*												*9G			
Ryegrass, Italian				*	*														*		*
Ryegrass, Perennial						*															
Sandbur			F	*G	*				*	*	*	*6	*					*10 G		*G	*G
Signalgrass, Broadleaf	*G								*	*	*G	*G						*10	*G	*G	*G
Smutgrass						*															
Wheat																			*		*
Wild Barley				*	*	*													*		
Wild Garlic																					
Wild Oats				*	*	*										*		*8	*	*	*
Wild Onion																					

Table 5. Grass and Grass-like Weeds Controlled by Postemergence Herbicides

Date of reference label	4/00	3/98	1/02	2001	1/00	2000	2/99
Grass and Grass-like Weeds	Acclaim Extra	Basagran T/O	Envoy	Fusilade II	Image 70DG	Manage	Vantage
Key to text codes: * = listed on product label as providing control. **Key to number codes**: 1/ Annual; 2/ Applications for this weed should be made in the late summer, fall or winter prior to germination; 3/ Persian speedwell; 4/ Corn speedwell; 5/ And annual; 6/ Suppression only; 7/ Split application, 60-90 days apart; 8/ Use low rate; 9/ Use medium rate; 10/ Use high rate; 11/ Seedling stage only; 12/ And giant; 13/ From seed; 14/ Repeat application if regrowth occurs; 15/ Image has postemergence activity on the broad-leaved weeds listed.							
Barnyardgrass	*		*	*			*
Bermudagrass	*6		*14	*			*
Bluegrass, Annual			*		*6		
Brome, Downy			*	*			
Crabgrass, Hairy	*		*		*6		
Crabgrass, Large			*	*	*6		*
Crabgrass, Smooth	*		*	*	*6		*
Dallisgrass							
Fescue, Tall					*6		*11
Foxtail, Yellow	*		*	*			*

Grass and Grass-like Weeds	Acclaim Extra	Basagran T/O	Envoy	Fusilade II	Image 70DG	Manage	Vantage
Foxtail, Green	*		*	*			*
Foxtail, Giant	*		*	*			*
Goosegrass	*		*	*			*
Horsetail (*Equisetum*)							
Johnsongrass (rhizome)	*6		*14	*			*
Johnsongrass (seedling)	*		*	*			*
Nutsedge, Purple					*15	*	
Nutsedge, Yellow		*14			*15	*	
Orchardgrass							*11
Panicum, Fall	*		*	*			*
Panicum, Browntop	*						*
Panicum, Texas	*		*	*			*
Quackgrass			*14	*			*
Ryegrass, Annual			*				
Ryegrass, Italian			*	*			
Ryegrass, Perennial					*15		
Sandbur	*		*	*	*15		*

Grass and Grass-like Weeds	Acclaim Extra	Basagran T/O	Envoy	Fusilade II	Image 70DG	Manage	Vantage
Signalgrass, Broadleaf			*	*			*
Smutgrass							
Wheat			*	*			*
Wild Barley			*	*			*
Wild Garlic					*		
Wild Oats			*	*			*
Wild Onion					*15		

HERBICIDE OPTIONS: DIRECTIONS AND PRECAUTIONS

Table 6. Preemergence Herbicides: Directions and Precautions

How to Use This Table: This table provides directions and precautions for using preemergence herbicides labeled for use on annuals, perennials and herbaceous ground covers. In this table, preemergence herbicides are listed alphabetically by herbicide trade name. Herbicide rate provides the amount of material to be applied based on amount of active ingredient per acre, rate of product per acre or product per 1,000 sq. ft. This will aid in purchasing the amount of material needed. These DIRECTIONS AND PRECAUTIONS provide a summary of what each product will or will not do, tips to optimize product performance and necessary precautions to prevent injury to ornamentals.

Preemergence Herbicides: Preemergence herbicides act by preventing weeds from emerging or establishing. Preemergence herbicides generally do not control established weeds. Thus, preemergence herbicides need to be applied after removal of existing weeds and prior to new weed emergence. The two peak periods of weed emergence are spring to early summer and early fall. Retreatment within the growing season may be required, depending on the product and length of residual control. Through the season, weeds escaping preemergence herbicides will need to be removed. Re-treat to re-establish a uniform herbicide barrier.

Note of Caution: Information provided in this table is not meant to replace reading of the actual herbicide product label. This table is meant to assist selecting the herbicide(s) product that best suits the need. **Prior to herbicide application, read and understand the directions and precautions provided in the actual herbicide product label.**

Key to Abbreviations: A = acre (43,560 sq. ft.); fl. oz. = fluid ounces; gal. = gallons; lbs. = pounds; pts. = pints; sq. ft. = square feet.

HERBICIDE TRADE NAME(S)	Active ingredient	HERBICIDE RATE			DIRECTIONS AND PRECAUTIONS
		Active ingredient per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	
BARRICADE 65WG	**prodiamine**	**0.65 to 1.5 lbs.**	**1.0 to 2.3 lbs.**	**0.36 to 0.83 oz.**	**Provides preemergence control of annual grasses (crabgrasses, foxtails, goosegrass and others) and several broadleaf weeds (carpetweed, chickweed, yellow woodsorrel and others). Do not apply more than 2.3 lbs. product /A in a growing season.**
BARRICADE FL		**8.4 to 19.5 oz.**	**21 to 48 oz.**	**0.5 to 1.1 oz.**	

HERBICIDE TRADE NAME(S)	Active ingredient	HERBICIDE RATE			DIRECTIONS AND PRECAUTIONS
		Active ingredient per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	
BETASAN 4E BETASAN 7G (granular)	bensulide	7.5 to 12.5 lbs.	15 to 25 pt. 107 to 180 lbs.	5.6 to 9.4 fl. oz. 2.4 to 4.1 lbs.	Not for use on plants grown for sale. Label is inclusive for landscape application. Preemergence control of annual grasses (like crabgrass, goosegrass, foxtails and annual bluegrass) and certain broadleaf weeds (like henbit or deadnettle). Weak on yellow woodsorrel. Will not control established weeds or large-seeded broadleaf weeds.
DACTHAL W-75	DCPA	10.5 to 12 lbs.	14 to 16 lbs.	0.33 lbs.	Provides preemergence control of certain annual grass and broadleaf weeds. Apply to weed-free soil following cultivation. Apply in at least 50 to 100 gallons of water per acre.
DEVRINOL 2G (granular) DEVRINOL 50DF	napropamide	2 to 3 lbs. 4 to 6 lbs.	100 to 150 lbs. 8 to 12 lbs.	4.6 to 6.9 lbs. 3.0 to 4.4 oz.	Provides preemergence control of annual grasses (like crabgrass) and certain small- seeded broadleaf weeds (like chickweed, groundsel, knotweed). Weak on yellow woodsorrel. Incorporate granular formulation about 1-2 inches into soil. Does not control established weeds or large- seeded broadleaf weeds like morningglories, mustards, nightshade or jimsonweed. Caution: The G formulation is safer; the DF formulation may cause injury if applied over-the-topto young foliage (direct under foliage).
DIMENSION 1EC DIMENSION ULTRA WSP	dithiopyr	0.5 lbs. 0.5 lbs.	2 qt. 1.25 lbs. or (4 water soluble packets)	1.0 to 1.5 oz. 0.46 oz.	For landscape use only, not production. Provides preemergence control of annual grasses (like crabgrass, goosegrass, foxtails and annual bluegrass) and several broadleaf weeds (like bittercress, yellow woodsorrel, chickweed, henbit, Carolina geranium, mustards, knotweeds, spurges and others). Apply as a directed spray; not over-the-top or broadcast. If ornamental foliage receives spray drift, the injury is typically cosmetic and plants will outgrow it.

HERBICIDE TRADE NAME(S)	Active ingredient	HERBICIDE RATE			DIRECTIONS AND PRECAUTIONS
		Active ingredient per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	
GALLERY 75DF	Isoxaben	0.5 to 1.0 lbs.	0.66 to 1.33 lbs.	0.25 to 0.5 oz.	Has limited use with annuals, perennials, and groundcovers in production. Do not apply to containers until media has settled. Apply to weed- free media. Landscape: Do not apply to bedding plants or areas where bedding plants will be planted within one year. Do not apply to ground covers until they are well established. Provides broad spectrum, preemergence activity towards annual broadleaf weeds. Weak on annual grasses. May be tank mixed with PENDULUM or SURFLAN to provide broad-spectrum control of annual grasses and broadleaf weeds where both are labeled.
OH - 2 (granular)	oxyfluorfen plus pendimethalin	2 lbs. plus 1 lbs.	100 lbs.	2.3 lbs.	Provides broad spectrum preemergence control of grass and broadleaf weeds. Apply to weed-free soil or media. Apply only to dry foliage; irrigate immediately to remove particles from the foliage. Do not apply when plants are breaking dormancy or making a flush of growth. Do not apply to plants like daylily, liriope or *Hosta* with leaves that channel and concentrate the herbicide at the base. Apply two weeks prior to enclosure of greenhouse/ or shadehouse.
PENDULUM 2G (granular) PENDULUM 3.3EC PENDULUM 60WDG	pendimethalin	2 to 4 lbs.	100 to 200 lbs. 2.4 to 4.8 qt. 3.3 to 6.6 lbs.	2.3 to 4.6 lbs. 1.8 to 3.3 fl. oz. 1.2 to 2.4 oz.	Provides preemergence control of annual grasses (like crabgrass, goosegrass, foxtails, panicums, barnyardgrass, etc.) and certain broadleaf weeds (like bittercress, yellow woodsorrel, spurge, knotweed, chickweed, henbit, etc.) May be tank-mixed with GALLERY to improve broadleaf weed control spectrum; but plants sprayed must appear on both labels. Apply to weed- free media. Apply the G formulation to dry foliage and then irrigate to move herbicide from the foliage. May cause temporary discoloration of sprayed surfaces. Rinse immediately to avoid staining wood, stone, concrete, etc.

HERBICIDE TRADE NAME(S)	Active ingredient	HERBICIDE RATE			DIRECTIONS AND PRECAUTIONS
		Active ingredient per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	
PENNANT MAGNUM	metolachlor	1.23 to 1.90 lbs.	1.3 to 2.0 pt. Do not exceed 4.2 pints per year.	14 to 21 ml Do not exceed 46 ml per 1000 sq. ft. per year.	Provides preemergence control of yellow nutsedge (not purple) in addition to preemergence control of annual grasses and certain broadleaf weeds. Does not control bittercress, yellow woodsorrel, or mustards. Apply to weed- free soil or media and follow with ½ inch of irrigation to move herbicide from foliage onto underlying soil or media. Use rate is dependent upon soil texture. Typical Tennessee soils are medium- to coarse- textured, requiring 1.3 to 2.0 pts. per acre.
REGALKADE 0.5G (granular)	prodiamine	0.75 to 1.5 lbs.	132 to 300 lbs.	3 to 7 lbs.	Granular REGALKADE can be applied over-the-top of container, field grown ornamentals and established ornamental plantings. Provides preemergence control of annual grasses (crabgrasses, foxtails, goosegrass, etc.) and certain broadleaf weeds (carpetweed, chickweed, yellow woodsorrel, etc.). Weak on bittercress, morningglories and ragweed. May be applied to new transplants after soil settles from a thorough watering. Apply to dry foliage.
REGAL O-O (granular)	oxyfluorfen plus oxadiazon	2.0 lbs. Plus 1.0 lbs.	100 lbs.	2.3 lbs.	Granular Regal O-O can be applied over the top of container and field grown ornamentals. Do not apply to wet foliage. Tender new leaves are especially sensitive and injury may result.
REGALSTAR G (granular)	oxadiazon plus prodiamine	1.2 lbs.	200 lbs.	4.5 lbs.	Can be applied over the top of nursery and landscape crops. Do not apply to wet foliage. Do not apply in greenhouses.
RONSTAR G (granular)	oxadiazon	2 to 4 lbs.	100 to 200 lbs.	2.25 to 4.5 lbs.	Provides preemergence control of most annual grasses (like crabgrass and goosegrass) and broadleaf weeds (including yellow woodsorrel and bittercress). Do not apply to wet foliage or conditions where granules will collect and remain on leaves. Apply to weed- free soil or media. Requires ½ inch irrigation to move granules from foliage onto underlying soil or media. For optimum weed control, do not disturb soil or media after application.

HERBICIDE TRADE NAME(S)	Active ingredient	HERBICIDE RATE			DIRECTIONS AND PRECAUTIONS
		Active ingredient per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	
ROUT 3G (granular)	oxyfluorfen plus oryzalin	2 lbs. plus 1 lbs.	100 lbs.	2.3 lbs.	Provides preemergence control of most annual grass and broadleaf weeds. Do not apply to plants like *Hosta* that channel or concentrate the herbicide towards the base of the plant. Do not apply two weeks before or after bud break, or during periods of flush. Follow application to dry foliage, with ½ inch of overhead irrigation to wash herbicide from foliage onto the underlying media. For optimum residual control, do not disturb media surface after application.
SNAPSHOT 2.5TG (granular)	isoxaben plus trifluralin	0.5 to 1.0 lbs. plus 2 to 4 lbs.	100 to 200 lbs.	2.3 to 4.6 lbs.	Provides preemergence control of broadleaf weeds and most annual grass weeds. Apply to weed-free growing media. Requires ½ inch rainfall or irrigation within three days after application. This product contains Gallery; thus do not apply to bedding plants or areas where bedding plants will be grown.
SURFLAN AS	oryzalin	2 to 4 lbs.	2 to 4 qt.	1.5 to 3.0 fl. oz.	Provides preemergence control of annual grasses and certain annual broadleaf weeds (like chickweed and bittercress). May be tank-mixed with GALLERY to improve broadleaf weed control spectrum; but plants sprayed must appear on both labels. Apply to weed-free soil or media surface or prior to weed seed germination. Requires ½ inch rain or irrigation within 21 days after application to activate. Delay application until soil/media has settled. Landscape: May cause temporary discoloration of sprayed surfaces. Injury to begonia and coleus has been observed.

HERBICIDE TRADE NAME(S)	Active ingredient	HERBICIDE RATE			DIRECTIONS AND PRECAUTIONS
		Active ingredient per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	
TREFLAN 5G (granular)	trifluralin	4	80 lbs.	1.8 lbs.	Provides preemergence control of predominantly annual grasses and some broadleaf weeds. Apply to weed- free soil or media or prior to weed seed germination. Requires ½ inch rainfall or irrigation within three days of application (ideally, immediately after application). Repeat application no sooner than 60 days after the initial application [do not apply more than 240 lb. per acre (or three applications) in a 12-month period].
XL 2G (granular)	benefin plus oryzalin	2 to 3 lbs. plus 2 to 3 lbs.	200 to 300 lbs.	4.5 to 7.0 lbs.	Provides preemergence control of annual grasses and certain broadleaf weeds. Repeat application no sooner than 90 days after initial application (do not apply more than 900 lbs. per acre within a 12-month period). Apply to weed-free soil or media. Requires ½ inch rainfall or irrigation within 21 days after application (ideally, immediately after application). Injury to begonia and coleus has been observed.

Table 7. Postemergence Herbicides: Directions and Precautions

How to Use This Table: This table provides directions and precautions for postemergence herbicides labeled on annuals, perennials, and herbaceous ground covers. In this table, postemergence herbicides are listed alphabetically by the herbicide trade name. Herbicide rate provides the amount of material to be applied based on amount of active ingredient per acre, rate of product per acre or product per 1,000 sq. ft. These DIRECTIONS AND PRECAUTIONS provide a summary of what each product will or will not do, tips to optimize product performance and necessary precautions to prevent injury to ornamentals. This will aid in purchasing the amount of material needed.

Postemergence Herbicides: Postemergence herbicides control weeds after they have emerged or become established. Unfortunately, selective postemergence herbicides for use in ornamentals are limited. Herbicide options are available for selective control of emerged grass weeds in many ornamentals. However, control of emerged broadleaf weeds is limited to physical removal or careful spot spraying of a non-selective postemergence herbicide. To prevent re-infestation, a preemergence herbicide can be applied to the soil, mulch or media surface.

Note of Caution: Information provided in this table is not meant to replace reading of the actual herbicide product label. This table is meant to assist in selecting the herbicide(s) product that best suits the need. **Prior to herbicide application, read and understand the use directions and precautions provided in the actual herbicide product label.**

Key to abbreviations: A = acre (43,560 sq. ft.); fl. oz. = fluid ounces; gal. = gallons; lbs. = pounds; pts. =- pints; sq. ft. = square feet.

HERBICIDE TRADE NAME(S)	Herbicide Active Ingredient	Herbicide Rate				DIRECTIONS AND PRECAUTIONS
		Active per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	Spot Treatment Rate	
ACCLAIM EXTRA 0.57EC (selective for grasses)	**fenoxaprop-p**	**0.06 to 0.17 lbs.**	**13 to 39 fl. oz.**	**0.3 to 0.9 fl. oz.**	**0.30 - 0.46 fl. oz. per gallon**	**Provides postemergence control of annual grasses and suppression of certain perennial grasses like johnsongrass and bermudagrass. Suppression (not control) of bermudagrass requires repeat applications on 30 day intervals. Use rate is dependent on stage of growth of target weeds. Seedling annual grasses require 13 oz. per acre. Annual grasses with three to four tillers require 28 oz. per acre. Use high rate on more mature grasses. Thorough coverage is essential. For best results, apply to seedling grasses up to the three tiller stage. May be tank-mixed with certain preemergence herbicides (see label). Addition of non-ionic surfactant is not required for broadcast application but may benefit in spot treatments.** **Injury may result when applied over-the-top of young succulent tissue; apply as directed spray.** **Do not apply to *Salvia.***

HERBICIDE TRADE NAME(S)	Herbicide Active Ingredient	Herbicide Rate				DIRECTIONS AND PRECAUTIONS
		Active per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	Spot Treatment Rate	
BASAGRAN T/O 4L (selective for sedges)	**bentazon**	**1 to 2 lbs.**	**1.5 to 2 pt.**	**0.55 to 0.75 fl. oz.**	**n/a**	**Provides postemergence control of annual and yellow nutsedge (but not purple nutsedge). Make first application when three to six new leaves are present. Make second application when regrowth has three to six new leaves (approximately 7 to 21 days after initial application). Addition of crop oil concentrate (at 0.75 fl. oz. per 1,000 sq. ft.) will improve activity, but may potentially cause ornamental injury. Potential for injury increases under high humidity and temperature. Apply as a directed spray where possible or do not add crop oil concentrate. Can be applied over-the-top of ajuga, English ivy, liriope and pachysandra. Do not apply around sycamore or rhododendron.**
ENVOY 1L (selective for grasses)	**clethodim**	**0.13 to 0.26 lbs.**	**17 to 34 fl. oz.**	**0.4 to 0.8 fl. oz.**	**0.65 to 1.3 fl. oz. plus 0.33 fl. oz. non-ionic surfactant per gallon**	**Provides postemergence control of annual grasses and several perennial grasses. Perennial grasses controlled include bermudagrass and johnsongrass. Apply at low rate to young, actively growing annual and perennial grasses. Use this rate when annuals are 2 to 6 in. tall or bermudagrass has less than 8 in. new growth. Use the highest rate for very mature grasses (may only result in suppression). Requires addition of non-ionic surfactant (at 0.25% v/v or ½ pt. in 25 gallons of water carrier). Do not add crop oil concentrate as ornamental injury can result. Optimum control obtained when grasses are actively growing, or not stressed (due to drought or extreme temperature).**

HERBICIDE TRADE NAME(S)	Herbicide Active Ingredient	Herbicide Rate				DIRECTIONS AND PRECAUTIONS
		Active per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	Spot Treatment Rate	
FINALE 1L (non-selective)	**glufosinate**	**0.75 to 1.5 lbs.**	**3 to 6 qt.**	**2.2 to 4.4 fl. oz.**	**1.5 to 4 fl. oz. per gallon**	**Provides non-selective control of emerged grass and broadleaf weeds (annuals and perennials). Control symptoms should be evident in two to four days. Avoid contact with desired foliage; thus apply as directed or shielded spray. Do not use in container nursery stock as root uptake can occur in soilless media. In the landscape, can be used for edging. However, it does not provide residual control of later-emerging weeds. Can be tank-mixed with GALLERY, PENDULUM, SURFLAN or BARRICADE to provide residual control.**
FUSILADE II T/O (selective for grasses)	**fluazifop-P-butyl**	**0.25 to 0.375 lbs.**	**16 to 24 fl. oz.**	**0.37 to 0.55 fl. oz.**	**0.75 fl. oz. plus 0.5 fl. oz. non ionic surfactant per gallon**	**Apply over-the-top or as directed spray to control annual grasses and several perennial grasses including johnsongrass and bermudagrass (does not control broadleaf weeds). Spray when annual grasses are 2-8 inches tall and johnsongrass is 8-18 inches tall. For bermudagrass, apply when 4 to 8 inches of runner growth is achieved. Perennial grasses may require repeat applications dependent on regrowth. Requires addition of non-ionic surfactant at 0.25 to 0.50% v/v or 0.5 pint in 25 gallons of water carrier (do not use crop oil concentrate).**

HERBICIDE TRADE NAME(S)	Herbicide Active Ingredient	Herbicide Rate				DIRECTIONS AND PRECAUTIONS
		Active per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	Spot Treatment Rate	
GRAMOXONE EXTRA 2.5L (non-selective)	paraquat	0.6 to 0.9 lbs.	2 to 3 pts.	0.7 to 1.1 fl. oz.	1 fl. oz. plus 0.25 fl. oz. surfactant per gallon	RESTRICTED USE PESTICIDE, with use limited to certified pesticide applicators. Requires the use of respirator and eye protection in addition to other personal protective equipment. Provides non-selective control of annual grass and broadleaf weeds and suppression of perennial weeds. Avoid contact with desired foliage; apply as a directed or shielded spray. Does not provide residual control of later-germinating annuals or regrowth of perennials. Requires the addition of non-ionic surfactant at 6.4 fl. oz. per 20 gallons of water carrier or crop oil concentrate at 26 fl. oz. per 20 gallons of water carrier.
IMAGE 70 DG (selective for grasses and sedges)	imazaquin	n/a	n/a	0.2 to 0.26 oz.	0.5 oz. per 3 gallon	Provides post- and preemergence control of certain broadleaf weeds. Very few ornamentals are known to be tolerant (refer to species tolerance tables). Injury to sensitive ornamentals can be severe (has residual activity in soil). Do not apply around bedding plants. Repeat application required for control of purple nutsedge and may be required for control of yellow nutsedge. Do not apply to areas where bedding plants will be planted within one year.
MANAGE 75WG (selective for sedges)	halosulfuron	0.03 to 0.06 lbs.	0.67 to 1.3 oz.	0.9 grams (or 1 dose pack) per 1 to 2 gallons plus 1/3 fl. oz. surfactant	n/a	Provides control of emerged yellow and purple nutsedge in established plantings. Apply as a directed spray to avoid contact on desirable plants. May require repeated applications when sufficient regrowth occurs (three to six new leaves develop). Requires addition of non-ionic surfactant at 0.25 to 0.50% v/v or 0.5 to 1 pt. in 25 gallons.

HERBICIDE TRADE NAME(S)	Herbicide Active Ingredient	Herbicide Rate				DIRECTIONS AND PRECAUTIONS
		Active per Acre	PRODUCT per Acre	PRODUCT per 1,000 sq. ft.	Spot Treatment Rate	
REWARD 2L (non-selective)	**diquat**	**0.25 to 1 lbs.**	**1 to 2 pts.**	**0.4 to 1.5 fl. oz.**	**0.75 fl. oz. plus 0.25 fl. oz. surfactant**	**RESTRICTED USE PESTICIDE, with use limited to certified pesticide applicators. Requires the use of respirator and eye protection in addition to other personal protective equipment (see label). Provides non-selective control of emerged annual grass and broadleaf weeds and suppression of perennial weeds. Avoid contact with desired foliage; apply as a directed or shielded spray. Does not provide residual control of later-germinating annuals or regrowth of perennials.**
ROUNDUP PRO 4L (non-selective)	**glyphosate**	**1 to 5 lbs.**	**1 to 5 qt.**	**2 to 4 fl. oz.**	**0.7 to 2.7 fl. oz.**	**Provides non-selective control of annual and perennial broadleaf weeds. Control symptoms should be observed in 7 to 10 days. Avoid contact with desired foliage and succulent stems; apply as a directed or shielded spray. Avoid spray drift. Provides systemic activity. Does not provide residual control towards later-germinating annuals or regrowth of perennials. For rope or sponge wick applications use a 33 to 75% concentration in water.**
Generic formulations are available	**glyphosate**	**see label**	**see label**	**see label**	**see label**	
VANTAGE 1EC (selective for grasses)	**sethoxydim**	**0.3 to 0.5 lbs.**	**36 to 60 fl. oz.**	**0.8 to 1.4 fl. oz.**	**2 to 3 fl. oz. per gallon**	**Provides control of annual and perennial grasses. Apply low rate when grasses are 2 to 8 inches tall prior to tillering. For more mature grasses use the high rate (may result in suppression only). VANTAGE already contains spray additive (thus, do not add crop oil concentrate).**

Table 8. Carrier Volumes, Rain-fast Times and Re-entry Intervals For Pre and Postemergence Herbicides

Directions for Table: This table provides useful information to assist in the optimum application and performance of herbicides. Pre-and postemergence herbicides are listed alphabetically in the left column.

Codes: n/a = Not appropriate; Hrs. = hours ; Immediately = Irrigate soon after application; Spray Additive: COC = crop oil concentrate; surfactant = non-ionic surfactant; NS = no spray additive required; - - = information not available; REI = Re-entry interval: ft^2 = foot square.

Herbicide	Rain-fast (in hrs)	Time herbicide will remain stable prior to irrigation or rainfall (in days)	Inches of rain or irrigation required to activate	Spray Pressure (psi) Screens (Mesh)	Gallons of Water Required per Acre or 1,000 ft^2	Spray Additive	Length of control or re-treat interval (in days)	REI (in hrs)
Preemergence								
BARRICADE 65WG	**n/a**	**14**	**0.5**	**20 - 40 50 mesh**	**20 minimum or 0.5 per 1000 ft^2**	**NS**	**90**	**12**
BARRICADE FL	**n/a**	**14**	**0.5**	**20 - 40 50 mesh**		**NS**	**90**	**12**
BETASAN 4E	**n/a**	**24 hrs.**	**0.5**	**20 - 40 50 mesh**	**80 - 100**	**NS**	**90 - 120**	**12**
BETASAN 7G	**n/a**	**24 hrs.**	**0.5**	**n/a**	**n/a**	**n/a**	**90 - 120**	**12**
DACTHAL W-75	**n/a**	**- -**	**- -**	**- -**	**40 minimum (50 - 100 recommended)**	**NS**	**90**	**12**
DEVRINOL 2G	**n/a**	**2 -3**	**0.5**	**n/a**	**n/a**	**n/a**	**- -**	**12**
DEVRINOL 50DF	**n/a**	**2 -3**	**1.0 - 2**	**20 - 60 50 mesh**	**20 - 100**	**NS**	**- -**	**12**
DIMENSION 1EC	**n/a**	**21**	**0.5**	**20 - 40 50 mesh**	**25 minimum**	**NS**	**60 - 90**	**12**
DIMENSION ULTRA WSP	**n/a**	**- -**	**- -**	**20-40 - -**	**40 minimum or 1 gallon/1000 ft^2**	**- -**	**- -**	**12**

Herbicide	Rain-fast (in hrs)	Time herbicide will remain stable prior to irrigation or rainfall (in days)	Inches of rain or irrigation required to activate	Spray Pressure (psi) Screens (Mesh)	Gallons of Water Required per Acre or 1,000 ft^2	Spray Additive	Length of control or re-treat interval (in days)	REI (in hrs)
GALLERY 75DF	n/a	21	0.5	20 - 40 50 mesh	10 - 200	NS	90 - 120	12
OH-2	n/a	Irrigate Immediately	0.5	n/a	n/a	n/a	90	24
PENDULUM 2G	n/a	30	0.5	n/a	n/a	n/a	90	12
PENDULUM 3.3EC	n/a	30	0.5	25 - 50 50 mesh	20 - 40	NS	90	12
PENDULUM 60WDG	n/a	30	0.5	20 - 40 50 mesh	20 - 40	NS	90	12
PENNANT MAGNUM	n/a	7	0.5	20 - 40 50 mesh	10 - 80	NS	90	24
REGALKADE 0.5G	n/a	14	0.5	n/a	n/a	n/a	90	12
REGAL O-O	n/a	Irrigate Immediately	0.5	n/a	n/a	n/a	90	24
REGALSTAR G	n/a	14	enough to wash herbicide into soil	n/a	n/a	n/a	90	12
RONSTAR G	n/a	Irrigate Immediately	0.5	n/a	n/a	n/a	90	12
ROUT 3G	n/a	Irrigate Immediately	0.5	n/a	n/a	n/a	90	24
SNAPSHOT 2.5TG	n/a	3	0.5	n/a	n/a	n/a	90	12
SURFLAN AS	n/a	21	0.5	20 - 40 50 mesh	20 - 40	NS	90	24
TREFLAN 5G	n/a	3	0.5	n/a	n/a	n/a	90	12
XL 2G	n/a	21	0.5	n/a	n/a	n/a	90	12

Herbicide	Rain-fast (in hrs)	Time herbicide will remain stable prior to irrigation or rainfall (in days)	Inches of rain or irrigation required to activate	Spray Pressure (psi) Screens (Mesh)	Gallons of Water Required per Acre or 1,000 ft^2	Spray Additive	Length of control or re-treat interval (in days)	REI (in hrs)
Postemergence								
ACCLAIM EXTRA 0.57EC	1	n/a	n/a	30 - 60 50 - 100 mesh	30 - 60 or 0.7 - 1.4 / 1000 ft^2	See label	n/a	24
BASAGRAN T/O 4L	8	n/a	n/a	40 - 80 50 mesh	20 - 100 or 0.5 / 1000 ft^2	COC	Regrowth dependent (see label)	12
ENVOY 1L	1	n/a	n/a	30 - 60 50 - 100 mesh	5 - 40	surfactant	n/a	24
FINALE 1L	4	n/a	n/a	30	20 minimum	NS	n/a	12
FUSILADE II T/O	1	n/a	n/a	40 - 60 50 - 100 mesh	5 - 40	surfactant	n/a	12
GRAMOXONE EXTRA 2.5L	1/2	n/a	n/a	30 - 50 50 - 100 mesh	20 minimum	COC surfactant	n/a	12
IMAGE 70 DG	4 - 8	1 - 7 days	0.5	20 - 60 50 - 100 mesh	40 - 100	surfactant	n/a	12
MANAGE 75WG	4 - 8	n/a	n/a	20 - 40	10 - 20	surfactant	n/a	12
REWARD 2L	1/2	n/a	n/a	30 50 -100 mesh	15 minimum	surfactant	n/a	24
ROUNDUP PRO 4L	2 - 6	n/a	n/a	- - 50 - 100 mesh	3 - 25	NS	n/a	4
VANTAGE 1EC	1	n/a	n/a	30 - 60 50 - 100 mesh	5 - 50	NS	n/a	12

Table 9. Cross Reference of the Common Name with the Botanical Name

Genus	Common Name	Genus	Common Name	Genus	Common Name
Abutilon	Flowering Maple	*Athyrium*	Painted Fern	*Chasmanthium*	Northern Sea Oats
Achillea	Yarrow	*Aurinia*	Alyssum (Golddust)	*Cheiranthus*	Wallflower
Acorus	Sweet Flag	*Baptisia*	False Indigo	*Chrysanthemum*	Chrysanthemum
Agapanthus	African Lily (Lily-of-Nile)	*Begonia*	Begonia, Fibrous	*Chrysanthemum*	Daisy
Agastache	Anise Hyssop	*Begonia*	Begonia, Tuberous	*Chrysanthemum*	Garden Mum
Ageratum	Ageratum	*Bergenia*	Heartleaf Bergenia	*Chrysanthemum*	Ox-eye Daisy
Ajuga	Bugleweed	*Boltonia*	Boltonia	*Chrysanthemum*	Shasta Daisy
Akebia	Fiveleaf Akebia	*Brassica*	Cabbage, Ornamental	*Chrysogomum*	Green & Gold, Goldenstar
Alcea	Hollyhock	*Brassica*	Kale, Ornamental	*Clarkia*	Godetia
Allium	Allium	*Brugmansia*	Angel's Trumpet	*Coleus*	Coleus
Allium	Chives, Ornamental	*Cactus*	Cactus	*Convallaria*	Lily-of-the-Valley
Alternanthera	Joseph's Coat	*Caladium*	Caladium	*Convolvulus*	Morning Glory
Alyssum	Alyssum	*Calamentha*	Calamint	*Coreopsis*	Coreopsis
Amaranthus	Amaranthus	*Calemogratis*	Feather Reed Grass	*Cortaderia*	Pampas Grass
Ammophila	Beach Grass	*Calemogratis*	Southern Reed Grass	*Cosmos*	Cosmos
Amsonia	Amsonia	*Calendula*	Calendula	*Crocosmia*	Coppertip
Anagallis	Pimpernel	*Calliandra*	Fairy Duster	*Crocus*	Crocus
Anemone	Anemone	*Callistephus*	Aster	*Cuphea*	Heather, False
Anthemis	Marguerite, Golden	*Calluna*	Heather	*Cymbopogon*	Lemon Grass
Antirrhinum	Snapdragon	*Campanula*	Bellflower	*Cytisus*	Skotch Broom
Aquilegia	Columbine	*Canna*	Canna	*Dahlia*	Dahlia
Arctotis	African Daisy	*Capsicum*	Pepper, Ornamental	*Daucus*	Queen Anne's Lace
Arenaria	Sandwort	*Carex*	Carex	*Delosperma*	Iceplant
Arisaema	Jack-in-the-Pulpit	*Carpobrotus*	Iceplant	*Delphinium*	Larkspur (Delphinium)
Armeria	Sea Pink	*Caryopteris*	Blue Beard	*Dendranthema*	Chrysanthemum
Artemesia	Artemesia	*Cassia*	Cassia	*Deschampsia*	Hair Grass, Tufted
Artemesia	Wormwood (Artemesia)	*Catharanthus*	Periwinkle (Bedding)	*Dianthus*	Carnation
Arum	Arum	*Celosia*	Celosia	*Dianthus*	Dianthus
Arundo	Giant Reedgrass	*Celosia*	Cockscomb	*Dianthus*	Pinks
Asarina	Snapdragon Vine	*Centaurea*	Bachelor's Button	*Dianthus*	Sweet William
Asclepias	Butterflyweed (Milkweed)	*Centaurea*	Cornflower	*Dicentra*	Bleeding Heart
Asparagus	Asparagus Fern	*Centaurea*	Dusty Miller	*Digitalis*	Foxglove
Aspidistra	Cast-iron plant (Aspidistra)	*Centranthus*	Jupiter's Beard	*Dimorphotheca*	Cape Marigold
Aster	Aster, Tatarian Daisy	*Cerastium*	Snow-In-Summer	*Doronicum*	Leopards-Bane

Genus	Common Name	Genus	Common Name	Genus	Common Name
Astilbe	Astilbe	*Ceratostigma*	Plumbago	*Echinacea*	Coneflower
Endymion	Hyacinth, Wood	*Hibiscus rosa- sinensis*	Hibiscus	*Lupinus*	Lupine
Eragrostis	Weeping Love Grass	*Hosta*	Hosta (Plantain-Lily)	*Lychnis*	Maltese Cross
Erianthus	Ravenna Grass	*Hyacinthus*	Hyacinth	*Lychnis*	Rose Champion
Erica	Heath	*Hypericum*	St. Johnswort	*Lysimachia*	Moneywort
Erygium	Rattlesnake Master	*Hypoestes*	Polk-a-dot Plant	*Lythrum*	Loosestrife
Eschscholzia	Poppy, California	*Iberis*	Candytuft	*Macleaya*	Plume Poppy
Euonymus fortunei	Wintercreeper	*Impatiens*	Balsam	*Maleophora*	Iceplant
Eupatorium	Joe-Pye Weed	*Impatiens*	Impatiens	*Matricaria*	Chamomile
Euphorbia	Snow-on-Mountain	*Impatiens*	New Guinea Impatiens	*Matthiola*	Stock
Festuca	Fescue, Blue	*Ipomoea*	Hummingbird Vine	*Melampodium*	Melampodium
Filipendula	Queen-of-the-Meadow	*Ipomoea*	Sweetpotato Vine	*Melissa*	Lemon Balm
Fragaria	Strawberry (ornamental)	*Iris*	Iris, Bulbous	*Mentha*	Spearmint
Freesia	Freesia	*Iris*	Iris, Rhizomatous	*Mertensia*	Bluebells
Gaillardia	Blanket Flower (Gaillardia)	*Juncus*	Rush, Soft	*Mina*	Spanish Flag
Gaillardia	Gaillardia (Blanketflower)	*Justicia*	Shrimp Plant	*Mirabilis*	Four O'Clock
Galanthus	Snow Drops	*Kniphofia*	Poker Plant (Red Hot)	*Miscanthus*	Miscanthus
Gaura	Gaura	*Kosteletskya*	Seashore Mallow	*Mitchella*	Partridge-berry
Gazania	Gazania	*Lablab*	Hyacinth Bean Vine	*Monarda*	Bee Balm
Geranium	Cranesbill	*Lamiastrum*	Archangel	*Monarda*	Monarda
Geranium	Geranium, True	*Lantana*	Lantana	*Moraea*	Fortnight Lily
Gerbera	Gerbera Daisy	*Lathyrus*	Sweet Pea	*Muscari*	Hyacinth, Grape
Geum	Geum (Avens)	*Lavendula*	Lavender	*Myosotis*	Forget-Me-Not
Gilia	Gilia	*Layia*	Tidy Tips	*Narcissus*	Daffodil
Gladiolus	Gladiolus (Glads)	*Leonotis*	Lion's Ear	*Narcissus*	Narcissus
Gomphrena	Globe Amaranth	*Leucanthemum*	Chrysanthemum	*Nasturtium*	Nasturtium (Daffodil)
Gypsophila	Baby's Breath	*Leucanthemum*	Shasta Daisy	*Nemophila*	Baby-Blue-Eyes
Hebes	Hebes	*Liatris*	Gayfeather (Liatris)	*Nepeta*	Catmint
Hedera spp.	Ivy	*Ligularia*	Leopard Plant	*Nephrolepis*	Boston Fern
Helenium	Sneezeweed	*Lilium*	Lily	*Nephrolepis*	Sword Fern
Helianthus	Sunflower	*Limonium*	Statice	*Nicotiana*	Nicotiana
Helichrysum	Strawflower	*Linum*	Scarlet Flax	*Ocimum*	Basil
Heliopsis	Hardy Zinnia	*Liriope giganteum*	Liriope	*Oenothera*	Evening Primrose
Heliotropium	Heliotropium	*Liriope muscari*	Liriope	*Oenothera*	Sundrops
Hemerocallis	Daylily	*Liriope spicata*	Liriope	*Onopordum*	Giant Thistle

Genus	Common Name	Genus	Common Name	Genus	Common Name
Herniaria	Rupturewort	*Lobelia*	Lobelia	*Ophiopogon*	Mondo Grass
Hesperis	Dames Rocket	*Lobularia*	Sweet Alyssum	*Opuntia*	Prickly Pear
Heuchera	Coralbells			*Origamum*	Oregano, Greek
Ornithogalum	Star-of-Bethlehem	*Salvia*	Sage, Sweet or Texas	*Verbena*	Verbena
Osteospermum	African Daisy (trailing)	*Salvia*	Salvia	*Veronica*	Speedwell (Veronica)
Pachysandra	Pachysandra	*Sanguisorba*	Burnet	*Vicia*	Crown Vetch
Paeonia	Peony	*Santolina*	Lavendercotton	*Vinca major*	Vinca (ground cover)
Panicum	Switch grass	*Sanvitalia*	Zinnia, Creeping	*Vinca minor*	Periwinkle (ground cover)
Papaver	Poppy	*Saponaria*	Soapwort	*Viola*	Johnny-Jump-Up
Patrinia	Patrinia	*Saxifraga*	Strawberry Begonia	*Viola*	Pansy
Pelargonium	Geranium	*Scabiosa*	Mourning Bride	*Xylosma*	Xylosma
Pennisetum	Fountain Grass, Green	*Scaevola*	Fan Flower	*Yucca*	Yucca
Pennisetum	Fountain Grass, Red	*Scilla*	Squill (Scilla)	*Zantedeschia*	Calla Lily
Penstemon	Beardtongue	*Sedum*	Sedum (Stonecrop)	*Zinnia*	Zinnia
Pentas	Pentas	*Sempervivum*	Hens and Chickens		
Perovskia	Russian Sage	*Senecio*	Dusty Miller		
Petroselinum	Parsley	*Silene*	Catchfly		
Petunia	Petunia	*Solanum*	Nightshade		
Phalaris	Ribbon Grass	*Solidago*	Goldenrod		
Phlox	Phlox	*Sorghastrum*	Indian Grass		
Physostegia	False Dragonhead	*Stachys*	Lamb's Ear (Stachys)		
Platycodon	Balloonflower	*Stokesia*	Stokes Aster		
Plectranthus	Oregano, Cuban	*Strelitzia*	Bird of Paradise		
Polygonatum	Solomon's Seal	*Stylophorum*	Wood Poppy		
Polygonum	Pink Clover	*Symphytum*	Comfrey		
Polysticum	Christmas Fern	*Tagetes*	Marigold		
Portulaca	Moss Rose	*Tanacetum*	Feverfew		
Potentilla	Cinquefoil	*Tanacetum*	Tansy		
Primula	Primose	*Teucrium*	Germander		
Ranunculus	Ranunculus	*Thymus*	Mother of Thyme		
Ratibida	Prairie Coneflower	*Thymus*	Wild Thyme		
Ricinus	Castor Bean	*Tiarella*	Foam Flower		
Rosa spp.	Rose	*Tithonia*	Mexican Sunflower		
Rosa rugosa	Rose	*Torenia*	Wishbone Flower		
Rosmarinus	Rosemary	*Trachelospermum*	Jasmine, Asian		

Genus	Common Name	Genus	Common Name	Genus	Common Name
Rubus	Raspberry, Creeping	*Tradescantia*	Spiderwort		
Rudbeckia	Black-eyed Susan	*Trientalis*	Starflower		
Rumex	Bloody Dock	*Trillium*	Trillium		
Rumohra	Leatherleaf Fern	*Tulbaghia*	Garlic, Society		
Saintpaulia	African Violet	*Tulipa*	Tulip		

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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
The University of Tennessee Institute of Agriculture, U.S. Department of Agriculture,
and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914.
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