

CONVERSION TABLE FOR CALIBRATION

APPLICATION RATE CONVERSIONS						
LIQUID FORMULATIONS			GRANULAR or DRY FORMULATIONS			
Rate per Acre (43,560 Square Feet)	Rate per 1000 Square Feet	Rate per 100 Square Feet		Rate per Acre (43,560 Square Feet)	Rate per 1000 Square Feet	Rate per 100 Square Feet
1 pt.	3/4 Tbs.	1/4 tsp.		1 lb.	2 ½ tsp.	1/4 tsp.
1 qt.	1 ½ Tbs.	1/2 tsp.		3 lbs.	2 1/4 Tbs.	3/4 tsp.
1 gal.	6 Tbs.	2 tsp.		4 lbs.	3 Tbs.	1 tsp.
25 gal.	4 ½ pts.	1 cup		6 lbs.	4 ½ Tbs.	1 1/2 tsp.
50 gal.	4 ½ qts.	1 pt.		8 lbs.	2/5 cup	1 3/4 tsp.
75 gal.	6 ½ qts.	1 ½ pts.		10 lbs.	½ cup	2 tsp.
100 gal.	9 qts	1 qt.		100 lbs.	2 1/4 lbs.	1/4 lb

CONVERSIONS FOR SMALL AMOUNTS					
3 teaspoons (tsp.)	=	1 tablespoon (Tbs.)			
2 tablespoons	=	6 teaspoons	=	1 fluid ounce	
1 cup	=	16 tablespoons	=	8 fluid ounces	
2 cups	=	1 pint	=	16 fluid ounces	
2 pints	=	1 quart	=	4 cups	
4 quarts	=	1 gallon	=	16 cups	
16 ounces (by weight)	=	1 pound			

HERBICIDE APPLICATION CALENDAR

Instructions: This calendar is intended to aid in planning the timing of herbicide applications. Application timings are based on the life cycle of target weeds and available herbicide options. The number of herbicide applications is dependent on the desired maintenance level or quality of lawn appearance. Using this planning calendar, choose appropriate herbicide(s) and application type (or formulation) from the section **HERBICIDES FOR CONTROLLING LAWN WEEDS**.

APPLICATION TIMING	APPLICATION TYPE	TARGET WEEDS	MAINTENANCE LEVEL	TIPS
Late summer to early fall	PRE	GRASSES	High	Sites with history of annual bluegrass.*Apply in late summer or early fall prior to weed seed germination. Do not apply if considering fall re-seeding with desired lawn grass.
		BROADLEAVES	High Medium	Preventative for winter annuals.
Early fall	POST	GRASSES	High	Control of existing annual bluegrass.
Fall to early winter	POST	BROADLEAVES	High Medium <u>Low</u>	Control of existing perennial and emerged broadleaf weeds.
Spring	PRE	GRASSES	High Medium <u>Low</u>	Preventative for summer annuals like crabgrass and goosegrass prior to germination. Certain herbicides can not be applied if considering spring re-seeding with desired lawn grass.
		BROADLEAVES	High Medium	Preventative for summer annuals prior to germination. Several of the PRE grass herbicides also have limited activity towards certain broadleaf weeds.
	POST	GRASSES	High Medium	Existing perennials, winter and summer annuals not controlled by preemergence herbicides. May only require spot treatment.
		BROADLEAVES	High Medium <u>Low</u>	Existing perennials, winter and summer annuals.
Summer	POST	GRASSES	High	Difficult to control perennials and summer annuals escaping preemergence herbicides.
		BROADLEAVES	High	Difficult to control perennials. May only require spot treatment.

HERBICIDE OPTIONS FOR CONTROLLING LAWN WEEDS

SUMMER AND WINTER ANNUAL GRASSES : PRE HERBICIDE OPTIONS

Overall Comments: The following table lists preemergence (PRE) herbicides for controlling annual grasses. Applied in the spring, these herbicides control summer annual grasses like crabgrass and goosegrass. Applied in late summer to early fall, these herbicides provide control of winter annual grasses like annual bluegrass. In addition, certain products provide limited PRE control of annual broadleaf weeds (refer to weed susceptibility table). Weeds controlled depends on herbicide choice and application timing.

- ▶ PRE herbicides act by preventing germinating seedlings from emerging (generally do not inhibit actual seed germination). Thus to have activity, these herbicides must be applied prior to, not after, seed germination.
- ▶ Products with more than one active ingredient may improve weed control spectrum (e.g. broadleaf weeds).
- ▶ PRE herbicides for grass weed control provide residual activity or prevent weed seed germination over an extended period. The duration of residual activity is product dependent.
- ▶ For optimum weed control, PRE herbicides need to be activated by 1/2 inch of rainfall or irrigation immediately after application. Lack of timely activation by rain or irrigation may result in poor weed control.

Fertilizer/ Herbicide Combinations: The ideal application timing for lawn fertilization may not be the same as that required for PRE grass herbicides. Thus, combination products may result in wasted fertilizer or may adversely affect ideal lawngrass health (refer to text for further discussion). When optimum timing for weed control and fertilization do not coincide, use products not combined with a fertilizer.

SUMMER ANNUAL GRASSES (crabgrass, goosegrass and others):

- ▶ Crabgrass germinates in the spring when the soil temperature has been 55 F (air temp. 65 or greater) for four or more days.
- ▶ Goosegrass generally germinates four to six weeks later.
- ▶ Target the first application for approximately March 15th in West and April 15th in East Tennessee. Generally, abundant Forsythia bloom corresponds with soil temperatures favorable for crabgrass germination.
- ▶ Make second application approximately 6 to 8 weeks later (product dependent).

WINTER ANNUAL GRASSES (annual bluegrass):

- ▶ In Tennessee, the predominant winter annual grass weed is annual bluegrass.
- ▶ In Tennessee, annual bluegrass generally begins to germinate in early September. Thus, for PRE control of annual bluegrass target application for the end of August to early September.

Caution: Generally PRE herbicides for annual bluegrass should not be applied if considering fall re-seeding or over-seeding (unless otherwise stated on the product label).

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT NAME (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool -Season Warm -Season	USE DIRECTIONS AND PRECAUTIONS
<p>* Note: * Next to product name, indicates a speciality product that may not be normally sold at common retail garden centers. Product may be available at or require order from agricultural chemical distributor. * or ** Next to a lawn grass type indicates a specific use precaution in the adjacent use directions and precautions.</p>				
Grasses PRE	benefin -BALAN 2.5 G	1.8 to 2.75 lb	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass Centipedegrass Zoysia	Safe to apply to well-established lawn grasses listed. Do not apply in the spring to lawns seeded the previous fall. Do not re-seed within 4 months of last application. May thin winter grasses over-seeded in warm-season grasses. Do not use on newly sprigged lawn grasses. For summer annual grasses, make second application 4 to 6 weeks after initial application.
	benefin + oryzalin -XL 2 G	2.5 to 3.5 lb	Tall Fescue Bermudagrass Centipedegrass Zoysia	Safe to apply to well-established lawn grasses listed. Do not apply in the spring to lawns seeded the previous fall. Do not re-seed fescue within 4 months of last application. Do not over-seed within 3 months of last application. Do not use on newly sprigged lawn grasses. For summer annual grasses, make second application 4 to 6 weeks after the initial application.
	benefin + trifluralin -TEAM 2 G	1.75 to 3.5 lb	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass Centipedegrass Zoysia	
	bensulide -BETASAN 4-E	9 fl. oz.		

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT NAME (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool -Season Warm -Season	USE DIRECTIONS AND PRECAUTIONS
Grasses PRE	dithiopyr -DIMENSION 1 EC	1.5 fl. oz.	Ky. Bluegrass Fine Fescue * Tall Fescue Bermudagrass ** Centipedegrass Zoysia	Provides PRE and early POST control of crabgrass (up to 3 leaf stage). POST activity will be improved with addition of non-ionic surfactant (0.5% volume/ volume). Apply to well-established lawngrasses listed that have received at least two mowings prior to application. Do not re-seed or over-seed within 4 months of last application. Does not require immediate irrigation for activation. Make second application 5 to 10 weeks later. * Certain varieties of fine fescue may be susceptible. ** Bermudagrass TIFGREEN (328) is susceptible. ** For fall application, bermudagrass may be over-seeded with perennial ryegrass eight weeks after last application.
	siduron * -TUPERSAN 50 WP	7.3 oz.	Ky. Bluegrass Fine Fescue Tall Fescue Zoysia	Do not use in the fall for annual bluegrass control. Do not apply to warm-season grasses other than zoysia. Can be used at 2.9 oz. per 1,000 sq. ft when seeding cool-season grasses listed. Can also be used in newly sprigged or established zoysia.
	metolachlor * -PENNANT 7. 8 E -PENNANT 5 G	0.75 to 1.5 fl. oz. 0.9 to 1.8 lb.	Bermudagrass Centipedegrass Zoysia	Do not apply to cool-season grasses. Can be applied to well-established warm-season grasses listed. May cause temporary slowed growth and/or yellowing. Do not re-seed 4 months before or 6 months after application. Do not apply in the fall if considering over-seeding. Activation requires ½ inch of rainfall or irrigation within 7 days of application. Repeat application 6 to 8 weeks later.

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT NAME (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool -Season Warm -Season	USE DIRECTIONS AND PRECAUTIONS
Grasses PRE	napropamide * -DEVRI NOL 50 DG -DEVRI NOL 5 G	1.5 to 2.2 fl. oz. 0.9 to 1.4 lb	Tall Fescue Bermudagrass Centipedegrass Zoysia	Do not apply to lawn grass less than 3 months old. Do not re-seed or over-seed within 4 months before or after application. For activity, <u>requires ½ inch of rainfall or irrigation within 24 hours</u> after application. Repeat application 4 to 6 weeks later.
	oryzalin * -SURFLAN 4 AS	1.0 to 1.5 fl. oz.*	Tall Fescue * Bermudagrass Centipedegrass Zoysia	* Do not apply to tall fescue seeded or re-seeded the previous fall. * To tall fescue, do not apply more than 1.0 oz per 1000 sq. ft. in a single application. Can be applied to well-established, warm-season grasses listed. Will thin over-seeded grasses. Delay re-seeding or over-seeding by 4 months after last application. May be tank-mixed with GALLERY to improve PRE broad leaf weed control. Single application of 1.5 or split application of 1.0 oz. 8 to 10 weeks after first application. Requires ½ inch rain within 21 days after application.
	pendimethalin -PRE-M 3.3 EC -PRE-M 60 DG -PRE-M 60 WP -PENDULUM 2 G -PENDULUM 3.3 EC -PENDULUM 60 DG -PENDULUM 60 WG -HALTS CRABGRASS PREVENTER	2.7 fl. oz. 1.8 oz. 1.8 oz. 2.0 lb. 2.7 fl. oz. 1.8 oz. 1.8 oz. 2.0 lb.	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass Centipedegrass Zoysia	Apply to well-established lawns that have been mowed at least four times. Do not re-seed within 3 months of last application. Do not apply in the fall if considering over-seeding. For summer annual grasses, make second application 6 to 8 weeks after initial application. Requires ½ inch rain within 30 days of application.

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT NAME (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool -Season Warm -Season	USE DIRECTIONS AND PRECAUTIONS
Grasses PRE	prodiamine * -BARRICADE 65 WG -REGALKADE 0.5 G	0.28 to 0.4 oz. 1.5 to 6.9 lb.	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass * Centipedegrass Zoysia	May be used on established grasses listed. * Do not apply more than 0.30 oz. per 1,000 sq. ft. when sprigging or plugging bermudagrass. Do not re-seed or over-seed within 7 months of last application. For summer annual grasses, repeat application 8 to 10 weeks after initial application. Requires ½ inch rain within 14 days of application.

ESTABLISHED PERENNIAL (eg. Dallisgrass), and ANNUAL GRASSES: POST HERBICIDE OPTIONS

Overall Comments: The following table provides control options for certain established perennial and annual grass weeds. Ideally, establishment of grass weeds needs to be prevented with PRE grass herbicides. POST herbicide options with an acceptable margin of selectivity providing control of established grass weeds in lawngrasses are limited. Application of these herbicides requires precise application.

- ▶ In general, control of perennial grasses will require repeat applications.
- ▶ For optimum control of perennial grasses, make applications early in their development or when re-growth is young.

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
<p>* Note: * Next to product name, indicates a speciality product that may not be normally sold at common retail garden centers. Product may be available at or require order from agricultural chemical distributor. * or ** Next to a lawngrass type indicates a specific use precaution in the adjacent use directions and precautions.</p>				
Grasses -crabgrasses -goosegrass -other grasses POST	sethoxydim -VANTAGE	0.5 fl. oz.	Fine Fescue Centipedegrass	Requires precise application. Can be used in seedling and established centipedegrass. In new plantings, do not apply until centipedegrass has 3 in. of new stolon growth. In established centipedegrass, do not apply until at least 3 weeks after spring green up. Do not mow for 7 days before or after application. Can be used in well-established fine fescues. Do not apply to other lawngrasses. Does not control sedges. Does not control annual bluegrass.
	fenoxaprop -ACCLAIM EXTRA*	0.3 to 0.9 fl. oz.	Ky. Bluegrass Fine Fescue Tall Fescue Zoysia	Requires precise application. Application to well-established lawngrasses listed may result in temporary injury (yellowing and stunted growth). Use rate is dependent on lawngrass tolerance and growth stage of grass weeds (refer to product label).

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
Grasses -dallisgrass and -crabgrasses -goosegrass -other grasses POST	DSMA -CRABGRASS KILLER (<i>Green Light</i>) -CRABGRASS KILLER (<i>Ortho</i>)	8 fl. oz. 8 fl. oz.	Ky. Bluegrass Fine Fescue * Tall Fescue * Bermudagrass Zoysia **	Requires accurate application. Bermudagrass is tolerant. * Injury to well-established cool-season grasses listed can be severe. ** Well established Zoysia is slightly sensitive. Injury will be temporary when properly applied. Apply when air temperature is 80 to 90 F. Rainfall or irrigation within 24 hours will decrease effectiveness. May require repeat applications. For perennial grasses, repeat 14 to 21 days later. Do not re-seed for at least 2 weeks after last application. May require addition of surfactant or non-phytotoxic crop oil (refer to product label). In addition to grasses, has activity towards broadleaf weeds and sedges. Control of sedges will require repeat applications (refer to Sedges: POST Herbicide Options table and actual product label) .
	MSMA -MSMA 6.6 L -912 Herbicide -CRABGRASS KILLER (<i>Green Light</i>) -CRABGRASS KILLER II (<i>Ortho</i>) -CRABGRASS and NUTGRASS KILLER (<i>Ortho</i>)	1 fl. oz. 1.5 fl. oz. 1 to 2 fl. oz. 3 fl. oz. Ready to Use (Spot Treatment)		
Common bermudagrass (suppression) POST	fluazifop -FUSILADE II	0.04 to 0.14 fl. oz.*	Tall Fescue * Zoysia **	Requires precise application. * For tall fescue, apply 0.11 to 0.14 oz. per 1,000 sq. ft. when common bermudagrass is breaking dormancy. Apply again in fall just prior to bermudagrass dormancy. ----- ** For zoysiagrass, apply 0.07 to 0.09 oz. per 1,000 sq. ft. in late spring and repeat every 3 to 4 weeks. In late summer, reduce rate to 0.04 to 0.07 oz.

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWNGRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
Common bermudagrass (suppression) POST	fenoxaprop -ACCLAIM EXTRA*	0.46 fl. oz.	Ky. Bluegrass Fine Fescue Tall Fescue Zoysia	Requires precise application. Initial application in spring when common bermuda breaks dormancy. Repeat application every 3 to 4 weeks (dependent on re-growth).
Annual blue-grass and winter broadleaf weeds PRE and POST	simazine -PRINCEP 4 L	0.75 to 1.5 fl. oz.	 Bermudagrass Centipedegrass Zoysia	For annual bluegrass, apply after Oct. 1 st . Provides PRE and early POST control of this weed and winter annual broadleaf weeds. For summer annual weeds, can be used in the spring, up to June 1st. Requires ½ inch rainfall or irrigation within 10 days after application. Do not seed or over-seed within 4 months before or 6 months after application.
Annual blue-grass and winter broadleaf weeds POST	glyphosate -(VARIOUS) ROUNDUP 4 L diquat -REWARD 2 L	0.37 fl. oz. 0.4 to 0.75 fl. oz.	 Bermudagrass (DORMANT)	Apply to <u>dormant bermudagrass only</u> . Must be applied when dormant prior to spring greenup. May require surfactant (refer to product label).

BROADLEAF WEEDS (Annuals and Perennials) : PRE and POST HERBICIDE OPTIONS

Overall Comments: The following table lists preemergence (PRE) and post-emergence (POST) herbicides for control of broadleaf weeds. Several POST herbicides are available that selectively control established broadleaf weeds in established lawns. Established broadleaf weeds can be controlled with POST herbicide options. For optimum control, application(s) need to be timed early in the life cycle of summer and winter annuals. Established perennials (e.g. wild onion), may require repeat application(s).

Note: For summer annual broadleaf weeds, PRE herbicides for summer annual grasses may provide limited (product dependent) PRE activity towards summer annual broadleaf weeds (refer to weed susceptibility table).

- ▶ POST herbicides for broadleaf weeds do not require activation by rain or irrigation.
- ▶ If lawn is under drought stress, irrigate or wait for a rain to cause weeds to resume active growth.
- ▶ Do not apply if rain is forecast.
- ▶ Ensure uniform application and do not overlap spray pattern.

PRECAUTIONS: Products containing “phenoxy” herbicides, such as 2,4-D, MCPP and dicamba, can cause injury to or loss of desired plants, shrubs and trees. Injury can result from:

- a. Phenoxy herbicides can release vapors from treated areas into the air and drift. Application of products containing these herbicides must be applied when the air temperature is less than 85 F.
- b. Application of products containing these herbicides combined with other herbicides for non-selective weed control. Read the product label to be sure that the product is intended for use on lawns.
- c. Application underneath or around desired vegetation.
- d. Application or over-application to areas of the lawn where roots of desired vegetation are established.
- e. Application when air is not still.
- f. Use of the same sprayer to make later application of fungicides or insecticides to desired vegetation. Removal of phenoxy herbicide residues from the sprayer after application is very difficult. Thus, an individual sprayer should be designated for application of herbicides. A second sprayer should be used for application of other pesticides.

Fertilizer/ Herbicide Combinations: Granular fertilizer products pre-mixed with phenoxy herbicides are readily available. However, postemergence control may be less than desirable when applied in granular form. For optimum activity and dollar value, these herbicides need to be applied POST (alone, not mixed with fertilizer) as liquids (contacting the foliage).

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
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* Note: * Next to product name, indicates a speciality product that may not be normally sold at common retail garden centers. Product may be available at or require order from agricultural chemical distributor.

* or ** Next to a lawngrass type indicates a specific use precaution in the adjacent use directions and precautions.

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
Broadleaf Weeds PRE	isoxaben -GALLERY 75 DF	0.25 to 0.5 oz.	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass Centipedegrass Zoysia	Only PRE herbicide just for broadleaf weed control. Apply to well-established lawns (to newly seeded, re-seeded or over-seeded lawns, apply only after new seedlings have reached the three leaf stage and are tillering). Do not seed, re-seed or over-seed within two months of the last application. Requires activation with ½ in. rain or irrigation within 21 days of application.
Broadleaf Weeds POST	The herbicides 2,4-D, MCPP and dicamba are listed individually due to availability of certain products. However, for optimum broad-spectrum weed control and dollar value, use products that contain combinations of these three herbicides rather than a product with a single herbicide (refer to weed susceptibility table). These herbicides are available under several PRODUCT names. When purchasing, look for the actual herbicide(s) name in small print in the active ingredients at or near the bottom of the front label, or in the use information contained on the back of the package.			
2,4-D amine -LAWN WEED KILLER (Eliminator) -WEED-KILLER (Ortho) -WEED STOP (Spectracide)		3.2 to 5.2 fl. oz. Ready to Use Ready to Use	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass Zoysia	Apply to well-established grasses listed. To newly seeded or re-seeded lawns, delay application until after at least the second mowing (apply only if weeds are present). Delay re-seeding for 2 weeks after last application. Do not apply to newly over-seeded warm season grasses
MCPP or MCPA -CHICKWEED and CLOVER CONTROL (Ortho)		3.3 fl. oz.		

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
Broadleaf Weeds POST	dicamba -BANVEL (BASF)	0.09 to 0.37 fl. oz.	Ky. Bluegrass Fine Fescue Tall Fescue	Apply to well-established grasses listed. To newly seeded or re-seeded lawns, delay application until after at least the second mowing (apply only if weeds are present). Delay re-seeding for 2 weeks after last application. Do not apply to newly over-seeded warm season grasses
	2,4-D plus MCPA or MCPP plus dicamba -WEED-B-GON -WEED-B-GON (Ortho) -LAWN WEED KILLER (Spectracide) -LAWN WEED KILLER -BROADLEAF KILLER (Super K-Grow) -BROADLEAF KILLER	2.5 to 5 fl. oz. Ready to Use 2 to 4 fl. oz. Ready to Use 2 to 4 fl. oz. Ready to Use	Bermudagrass Zoysia	
	clopyralid plus triclopyr -CONFRONT *	0.37 to 0.74 fl. oz.	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass Centipedegrass Zoysia	

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
Wild Onion or Garlic (Broadleaf Weeds) POST	<p>Wild onions or wild garlic are perennials requiring repeat applications of the listed herbicides. Target fall application after the first hard frost, and after re-growth has occurred. Optimum control should be achieved with fall and early spring applications, repeated annually. If sufficient regrowth occurs within the spring or fall, a second application will aid in long-term control.</p>			
	2,4-D amine -Various, see previous listing	Product dependent	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass Zoysia	Note: Use products containing 2,4-D alone or in combinations. MCPP or MCPA alone will not control or is weak on wild onions or wild garlic. 2,4-D and dicamba have activity towards these weeds.
	2,4-D plus MCPP or MCPA plus dicamba -Various, see previous listing	Product dependent		
	imazaquin -IMAGE 1.5 LC	0.5 to 1 fl. oz.	Bermudagrass Centipedegrass Zoysia	Apply only to well-established warm season grasses listed. Do not apply to warm-season grasses over-seeded with perennial ryegrass. In addition to POST activity towards wild onions or garlic, will provide additional POST activity towards sedges and PRE and POST control of certain broadleaf weeds.

SEDGES (e.g. Yellow Nutsedge): POST HERBICIDE OPTIONS

Overall Comments: The following table lists post-emergence (POST) herbicide options for controlling sedges. In choosing an option, a weed must be identified as a sedge. Sedges are vigorous perennials (with the exception of the less frequent annual sedge), making them difficult to control. Control of these weeds will require repeat applications.

- ▶ Target first application when weeds have three to eight leaves.
- ▶ Make second or third application when weeds have sufficient re-growth (approximately 14 to 21 days after last application).
- ▶ Infestations of these weeds are often localized, thus treatment can be a spot spray or treatment of localized infested area.

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
<p>* Note: * Next to product name, indicates a speciality product that may not be normally sold at common retail garden centers. Product may be available at or require order from agricultural chemical distributor. * or ** Next to a lawngrass type indicates a specific use precaution in the adjacent use directions and precautions.</p>				
<p>Yellow nutsedge and annual sedge</p> <p>POST</p>	<p>bentazon -BASAGRAN T/O -LESCOGRAN</p>	<p>0.75 fl. oz. 0.75 to 1.5 fl. oz.</p>	<p>Ky. Bluegrass Fine Fescue Tall Fescue</p> <p>Bermudagrass Centipedegrass Zoysia</p>	<p>Apply only to well-established lawngrasses listed. Does not control grass weeds. Will provide limited broadleaf weed control. For optimum control, do not mow within 5 days of application and do not apply if rain is anticipated within 48 hours. May require addition of surfactant or non-phytoxic crop oil (refer to product label).</p>

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
Purple nutsedge and Kyllinga (in addition to annual sedge and yellow nutsedge) POST	MSMA -MSMA 6.6 L -912 Herbicide -CRABGRASS KILLER <i>(Green Light)</i> -CRABGRASS KILLER II <i>(Ortho)</i> -CRABGRASS and NUTGRASS KILLER <i>(Ortho)</i>	1 fl. oz. 1.5 fl. oz. 1 to 2 fl. oz. 3 fl. oz. Ready to Use (Spot Treatment)	Ky. Bluegrass Fine Fescue * Tall Fescue * Bermudagrass Zoysia **	Bermudagrass is tolerant. * Injury to well-established cool season grasses listed can be severe. ** Well established Zoysia is slightly sensitive. Injury will be temporary when properly applied. Apply when air temperature is 80 to 90 F. Rainfall or irrigation within 24 hours will decrease effectiveness. For control of sedges, repeat applications will be required when sufficient regrowth has occurred (or approximately, 14 to 21 days later). Do not re-seed for at least 2 weeks after last application. May require addition of surfactant or crop oil (refer to product label). In addition to sedges, has activity towards broadleaf weeds and established grass weeds.
	imaza quin -IMAGE 1.5 LC -IMAGE CONSUMER CONCENTRATE	0.5 to 1 fl. oz. 0.6 fl. oz.	 Bermudagrass Centipedegrass Zoysia	Apply only to well-established warm-season grasses listed. May cause temporary yellowing. Do not apply during spring green up or fall transition to dormancy. Do not apply to warm season grasses over-seeded with perennial ryegrass. Do not re-seed or over-seed for at least 45 days after application IMAGE 1.5 LC requires addition of non-ionic surfactant at 0.25% volume/ volume. Provides partial control of wild onions or garlic with limited activity towards other broadleaf and grass weeds.
	halosulfuron -MANAGE 75 DF*	0.02 to 0.03 oz.	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass Centipedegrass Zoysia	Apply only to well established lawngrasses listed. Do not make more than two applications per year. Requires addition of nonionic surfactant at 0.25% volume/ volume. For optimum control, do not mow within two days before or after application.

WEED SUSCEPTIBILITY TO HERBICIDES

BROADLEAF WEED SUSCEPTIBILITY TO PRE HERBICIDES

KEY TO CONTROL CODES: E = Excellent (90 to 100%); G = Good (80 to 90%); F = Fair (70 to 80%); P = Poor (less than 70%); N = No Activity; - = Lack of information.

For a specific target weed(s) choose an appropriate herbicide that provides excellent (E) to good control (G). Fair to poor control of additional weeds should be considered as added benefits in addition to control of specific target weeds. Ratings are based on optimum application timing and most susceptible stage of weed growth.

HERBICIDE CHOICE: This table is meant to assist in choosing the appropriate herbicide(s). This table is intended to complement the HERBICIDE APPLICATION CALENDAR and the HERBICIDE OPTIONS FOR CONTROLLING LAWN WEEDS.

BROADLEAF WEEDS (from seed)	benefin BALAN	benefin + oryzalin XL2G	benefin + trifluralin TEAM 2G	bensulide BETASAN	napropamide DEVIRINOL	dithiopyr DIMENSION	oryzalin SURFLAN	pendimethalin PENDULUM	siduron TUPERSAN	simazine PRINCEP	metolachlor PENNANT	prodiamine BARRICADE	isoxaben GALLERY
Bedstraw	--	--	--	F	--	--	--	--	N	F	--	--	G
Bittercress	--	G	--	F	--	G	G	P	N	F	--	--	G
Black medic	--	--	--	--	--	G	--	--	N	F	--	--	G
Buttercup	--	N	--	--	--	--	--	--	N	P	--	--	G
Carolina geranium	--	N	--	--	G	G	G	--	N	G	G	G	G
Carpetweed	--	G	G	G	G	G	G	G	N	G	G	G	F
Chickweed, common	N	G	G	G	G	G	G	G	N	G	--	G	G
Chickweed, mouse-ear	N	P	--	G	P	G	P	G	N	G	--	G	G
Clover, hop	N	N	--	G	--	--	N	G	N	G	--	--	G
Clover, white	N	N	--	G	--	--	N	P	N	G	--	--	G
Dandelion	N	F	--	--	--	--	G	P	N	P	--	--	G
Deadnettle	N	G	G	G	--	--	G	G	N	G	P	--	G
Docks	N	N	--	G	--	--	N	P	N	G	--	--	F
Ground ivy	N	N	--	P	--	--	N	P	N	--	--	--	--
Henbit	N	E	G	G	G	G	G	G	N	G	--	G	G
Knawel	N	N	--	--	G	--	N	--	N	G	--	--	--

BROADLEAF WEED SUSCEPTIBILITY TO PRE HERBICIDES

KEY TO CONTROL CODES: E = Excellent (90 to 100%); G = Good (80 to 90%); F = Fair (70 to 80%); P = Poor (less than 70%); N = No Activity; - - = Lack of information.

For a specific target weed(s) choose an appropriate herbicide that provides excellent (E) to good control (G). Fair to poor control of additional weeds should be considered as added benefits in addition to control of specific target weeds. Ratings are based on optimum application timing and most susceptible stage of weed growth.

HERBICIDE CHOICE: This table is meant to assist in choosing the appropriate herbicide(s). This table is intended to complement the HERBICIDE APPLICATION CALENDAR and the HERBICIDE OPTIONS FOR CONTROLLING LAWN WEEDS.

BROADLEAF WEEDS (from seed)	benefin BALAN	benefin + oryzalin XL2G	benefin + trifluralin TEAM 2G	bensulide BETASAN	napropamide DEVINOL	dithiopyr DIMENSION	oryzalin SURFLAN	pendimethalin PENDULUM	siduron TUPERSAN	simazine PRINCEP	metolachlor PENNANT	proflamime BARRICADE	isoxaben GALLERY
Knotweed	N	G	G	--	F	P	G	G	N	F	--	G	G
Lespedeza	N	N	--	--	--	G	N	--	N	--	--	--	--
Mugwort	N	N	N	N	N	N	N	N	N	N	--	--	N
Mustards	--	N	--	--	F	G	F	G	N	G	P	--	G
Pennycress	--	--	--	--	F	--	--	G	N	G	--	--	G
Pepperweed	--	G	--	--	G	--	G	G	N	G	--	--	G
Plantain	--	P	--	--	P	P	G	P	N	P	G	--	G
Purslane	--	G	G	F	G	G	G	G	N	G	G	G	G
Red sorrel	--	--	--	--	P	--	N	--	N	P	--	--	G
Redstem filaree	--	--	--	--	G	--	G	G	N	G	--	--	G
Shepherds- purse	--	G	--	G	G	G	G	G	N	G	--	G	G
Speedwell	--	N	--	--	P	G	N	G	N	G	--	G	G
Spurge, prostrate	--	G	--	--	P	G	G	G	N	F	F	G	G
Wild carrot	--	G	--	--	P	--	P	G	N	--	--	--	G
Wild onion or wild garlic	--	--	--	--	N	--	N	P	N	--	--	--	--
Wild strawberry	--	--	--	--	--	--	N	--	N	--	--	--	--

BROADLEAF WEED SUSCEPTIBILITY TO PRE HERBICIDES

KEY TO CONTROL CODES: E = Excellent (90 to 100%); G = Good (80 to 90%); F = Fair (70 to 80%); P = Poor (less than 70%); N = No Activity; - - = Lack of information.

For a specific target weed(s) choose an appropriate herbicide that provides excellent (E) to good control (G). Fair to poor control of additional weeds should be considered as added benefits in addition to control of specific target weeds. Ratings are based on optimum application timing and most susceptible stage of weed growth.

HERBICIDE CHOICE: This table is meant to assist in choosing the appropriate herbicide(s). This table is intended to complement the **HERBICIDE APPLICATION CALENDAR** and the **HERBICIDE OPTIONS FOR CONTROLLING LAWN WEEDS**.

BROADLEAF WEEDS (from seed)	benefin BALAN	benefin + oryzalin XL2G	benefin + trifluralin TEAM 2G	bensulide BETASAN	napropamide DEVINOL	dithiopyr DIMENSION	oryzalin SURFLAN	pendimethalin PENDULUM	siduron TUPERSAN	simazine PRINCEP	metolachlor PENNANT	prodiamine BARRICADE	isoxaben GALLERY
Wild violet	--	--	--	--	--	--	N	--	N	--	--	--	--
Yarrow	--	--	--	--	P	--	N	G	N	--	--	G	--
Yellow woodsorrel (oxalis)	--	G	--	G	P	G	G	G	N	P	P	G	G

GRASS AND SEDGE WEED SUSCEPTIBILITY TO PRE HERBICIDES

KEY TO CONTROL CODES : E = Excellent (90 to 100%); G = Good (80 to 90%); F = Fair (70 to 80%); P = Poor (less than 70%); N = No Activity; Blank Space = Lack of Information.

For a specific target weed(s) choose an appropriate herbicide that provides excellent (E) to good control (G). Fair to poor control of additional weeds should be considered as added benefits in addition to control of specific target weeds. Ratings are based on optimum application timing and most susceptible stage of weed growth.

HERBICIDE CHOICE: This table is meant to assist in choosing the appropriate herbicide(s). This table is intended to complement the HERBICIDE APPLICATION CALENDAR and the HERBICIDE OPTIONS FOR CONTROLLING LAWN WEEDS.

GRASS WEEDS (fromseed)	benefin BALAN	benefin + oryzalin XL2G	benefin + trifluralin TEAM 2G	bensulide BETASAN	napropamide DEVIRINOL	dithiopyr DIMENSION	oryzalin SURFLAN	pendimethalin PENDULUM	siduron TUPERAN	simazine PRINCEP	metolachlor PENNANT	prodiamine BARRICADE	isoxaben GALLERY
Common Bermuda	--	--	P	P	--	--	P	P	--	F	P	--	N
Bluegrass, annual	E	E	E	E	G	E	E	E	N	E	G	E	N
Crabgrass	E	E	E	E	E	E	E	E	G	E	G	G	N
Dallisgrass	G	G	F	F	--	E	F	F	--	F	G	G	N
Goosegrass	G	E	E	E	G	E	E	E	--	G	G	G	N
Jewgrass, annual	--	--	--	--	--	--	--	--	--	--	--	--	N
Nimblewill	--	--	--	--	--	--	--	--	--	F	--	--	N
Orchardgrass	--	--	G	--	G	G	G	G	G	F	--	G	N
Smutgrass	--	--	--	--	--	G	--	--	--	--	--	--	N
SEDGES													
Ann. Sedge	N	N	N	N	N	N	N	N	N	N	G	N	N
Nutsedge, yellow	N	N	N	N	N	N	N	N	N	N	G	N	N
Nutsedge, purple	N	N	N	N	N	N	N	N	N	N	N	N	N
Kyllinga	N	N	N	N	N	N	N	N	N	N	N	N	N

WEED SUSCEPTIBILITY TO POST HERBICIDES

KEY TO CONTROL CODES : E = Excellent (90 to 100%); G = Good (80 to 90%); F = Fair (70 to 80%); P = Poor (less than 70%); N = No Activity; Blank Space = Lack of Information.

For a specific target weed(s) choose an appropriate herbicide that provides excellent (E) to good control (G). Fair to poor control of additional weeds should be considered as added benefits in addition to control of specific target weeds. Ratings are based on optimum application timing and most susceptible stage of weed growth.

HERBICIDE CHOICE: This table is meant to assist in choosing the appropriate herbicide(s). This table is intended to complement the HERBICIDE APPLICATION CALENDAR and the HERBICIDE OPTIONS FOR CONTROLLING LAWN WEEDS.

WEEDS	clopyralid + triclopyr CONFRONT	fluzifop FUSILADE	sethoxydim VANTAGE	2,4-D VARIOUS	MCP VARIOUS	dicamba VARIOUS	2,4-D+ MCP+ dicamba VARIOUS	glyphosate ROUNDUP	bentazon BASAGRAN	DSMA or MSMA VARIOUS	imazaquin IMAGE	halosulfuron MANAGE
BROADLEAF SEEDLINGS												
Bedstraw	G	N	N	F	P	E	E	G	P	P	--	--
Bittercress	G	N	N	G	P	E	E	G	F	F	G	--
Black medic	E	N	N	P	P	F	E	G	P	--	G	--
Buttercup	G	N	N	G	P	F	E	G	P	P	G	--
Carolina geranium	G	N	N	P	P	E	E	G	P	P	G	--
Carpetweed	G	N	N	G	P	E	E	G	P	F	--	--
Chickweed, common	P	N	N	G	P	E	E	G	F	G	G	P
Chickweed, mouse-ear	P	N	N	P	G	E	G	G	P	P	G	--
Clover, hop	E	N	N	P	G	G	G	G	P	P	--	--
Clover, white	E	N	N	P	G	G	G	G	P	P	G	--
Dandelion	E	N	N	G	G	E	E	G	P	P	F	--
Deadnettle	E	N	N	F	P	E	E	G	P	P	G	--
Docks	E	N	N	G	P	G	E	G	P	P	--	--
Ground ivy	G	N	N	P	F	G	E	G	P	P	--	--
Henbit	E	N	N	P	G	G	E	G	P	F	G	--
Knawel	E	N	N	F	P	G	G	G	P	P	G	--

WEED SUSCEPTIBILITY TO POST HERBICIDES

KEY TO CONTROL CODES : E = Excellent (90 to 100%); G = Good (80 to 90%); F = Fair (70 to 80%); P = Poor (less than 70%); N = No Activity; Blank Space = Lack of Information.

For a specific target weed(s) choose an appropriate herbicide that provides excellent (E) to good control (G). Fair to poor control of additional weeds should be considered as added benefits in addition to control of specific target weeds. Ratings are based on optimum application timing and most susceptible stage of weed growth.

HERBICIDE CHOICE: This table is meant to assist in choosing the appropriate herbicide(s). This table is intended to complement the HERBICIDE APPLICATION CALENDAR and the HERBICIDE OPTIONS FOR CONTROLLING LAWN WEEDS.

WEEDS	clopyralid + triclopyr CONFRONT	fluzafop FUSILADE	sethoxydim VANTAGE	2,4-D VARIOUS	MCP VARIOUS	dicamba VARIOUS	2,4-D+ MCP+ dicamba VARIOUS	glyphosate ROUNDUP	bentazon BASAGRAN	DSMA or MSMA VARIOUS	imazaquin IMAGE	halosulfuron MANAGE
Knotweed	E	N	N	P	E	G	G	G	P	F	--	--
Lespedeza	E	N	N	P	P	G	G	G	P	P	--	--
Mugwort	G	N	N	N	N	P	G	F	P	P	--	--
Mustards	G	N	N	G	G	G	E	G	G	F	--	--
Pennycress	G	N	N	G	G	G	E	G	F	P	--	--
Pepperweed	G	N	N	G	G	G	E	G	F	P	--	--
Plantain	E	N	N	G	G	G	E	G	P	P	--	--
Purslane	G	N	N	G	G	G	E	G	G	P	--	G
Red sorrel	E	N	N	P	P	G	F	G	P	P	G	--
Redstem filaree	--	N	N	P	P	G	G	G	P	P	--	--
Shepherds- purse	--	N	N	G	G	G	E	G	G	P	--	--
Speedwell	P	N	N	P	P	G	G	G	F	P	--	--
Spurge, prostrate	G	N	N	P	P	G	E	G	--	F	--	--
Wild carrot	--	N	N	P	P	F	E	G	--	P	--	F
Wild onion or wild garlic	N	N	N	G	P	G	G	P	P	P	--	--
Wild strawberry	E	N	N	P	--	G	E	G	P	P	--	--

WEED SUSCEPTIBILITY TO POST HERBICIDES

KEY TO CONTROL CODES : E = Excellent (90 to 100%); G = Good (80 to 90%); F = Fair (70 to 80%); P = Poor (less than 70%); N = No Activity; Blank Space = Lack of Information.

For a specific target weed(s) choose an appropriate herbicide that provides excellent (E) to good control (G). Fair to poor control of additional weeds should be considered as added benefits in addition to control of specific target weeds. Ratings are based on optimum application timing and most susceptible stage of weed growth.

HERBICIDE CHOICE: This table is meant to assist in choosing the appropriate herbicide(s). This table is intended to complement the **HERBICIDE APPLICATION CALENDAR** and the **HERBICIDE OPTIONS FOR CONTROLLING LAWN WEEDS**.

WEEDS	clopyralid + triclopyr CONFRONT	fluzafop FUSILADE	sethoxydim VANTAGE	2,4-D VARIOUS	MCP VARIOUS	dicamba VARIOUS	2,4-D+ MCP+ dicamba VARIOUS	glyphosate ROUNDUP	bentazon BASAGRAN	DSMA or MSMA VARIOUS	imazaquin IMAGE	halosulfuron MANAGE
Wild violet	E	N	N	P	--	G	E	G	P	P	G	--
Yarrow	G	N	N	P	--	G	E	G	P	P	--	--
Yellow woodsorrel (oxalis)	F	N	N	P	--	G	E	F	P	G	--	F
GRASSES												
Common Bermuda	N	G	G	N	N	N	N	G	N	P	N	N
Bluegrass, annual	N	G	G	N	N	N	N	G	N	P	F	N
Crabgrass	N	G	G	N	N	N	N	G	N	G	F	N
Dallisgrass	N	G	G	N	N	N	N	G	N	G	P	N
Goosegrass	N	G	G	N	N	N	N	G	N	F	P	N
Jewgrass, annual	N	G	G	N	N	N	N	G	N	G	--	--
Nimblewill	N	G	G	N	N	N	N	G	N	F	--	N
Orchardgrass	N	G	G	N	N	N	N	G	N	P	--	N
Smutgrass	N	G	G	N	N	N	N	F	N	F	--	--
SEDGES												
Ann. Sedge	N	N	N	N	N	N	N	G	G	F	F	E

WEED SUSCEPTIBILITY TO POST HERBICIDES

KEY TO CONTROL CODES : E = Excellent (90 to 100%); G = Good (80 to 90%); F = Fair (70 to 80%); P = Poor (less than 70%); N = No Activity; Blank Space = Lack of Information.

For a specific target weed(s) choose an appropriate herbicide that provides excellent (E) to good control (G). Fair to poor control of additional weeds should be considered as added benefits in addition to control of specific target weeds. Ratings are based on optimum application timing and most susceptible stage of weed growth.

HERBICIDE CHOICE: This table is meant to assist in choosing the appropriate herbicide(s). This table is intended to complement the **HERBICIDE APPLICATION CALENDAR** and the **HERBICIDE OPTIONS FOR CONTROLLING LAWN WEEDS**.

WEEDS	clopyralid + triclopyr CONFRONT	fluzazifop FUSILADE	sethoxydim VANTAGE	2,4-D VARIOUS	MCP VARIOUS	dicamba VARIOUS	2,4-D+ MCP+ dicamba VARIOUS	glyphosate ROUNDUP	bentazon BASAGRAN	DSMA or MSMA VARIOUS	imazaquin IMAGE	halosulfuron MANAGE
Yellow nutsedge	N	N	N	N	N	N	N	G	G	F	G	F
Purple nutsedge	N	N	N	N	N	N	N	F	N	F	G	F
Kyllinga	N	N	N	N	N	N	N	F	N	F	G	G

ALGAE AND MOSS: HERBICIDE OPTIONS

Overall Comments: In lawns, the presence of moss and algae is an indicator of one or more of the following conditions: poor drainage; compacted soil; acid soil (high acidity or low pH); low soil fertility, and/or heavy or intense shading (restricted light for optimum grass growth). Thus, chemical treatment will only provide temporary control.

Before applying control treatment, assess soil condition for these factors, including a soil test for fertility and pH. Make corrective treatments to encourage turf growth and to help prevent recurrence.

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per 1,000 sq. ft.	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
Moss POST	copper sulfate iron sulfate ferrous sulfate (VARIOUS)	3 to 5 fl. oz. 2 to 3 fl. oz. 2 to 3 fl. oz.	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass Centipedegrass Zoysia	Add appropriate amount in 5 gallons of water using a garden-type liquid sprayer.
	sulfate of ammonia (VARIOUS)	10 lbs.		Apply when moss is damp from dew or sprinkler irrigate.
Algae POST	copper sulfate (VARIOUS)	1 to 2 oz.		Apply in 4 gallons of water using a garden type liquid sprayer.
	hydrated lime	3 to 5 lbs.		Make application evenly to the problem area.

HONEYSUCKLE, SUMAC, KUDZU and POISON IVY: HERBICIDE OPTIONS

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per gallon (Spot Spray)	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
Honeysuckle, Sumac, Kudzu, Poison Ivy and other woody weeds POST	Control of these weeds is difficult, as they are aggressive perennials and plants are often entangled with desired trees and shrubs. For control of these weeds there are three application techniques; 1. Spray application directly to foliage when not entangled in desired vegetation. 2. Spot application directly to the foliage with paint brush, rag or sponge (when desired vegetation present). 3. Cut stem near soil surface, and spot apply to newly cut stump with paint brush, rag or sponge (when desired vegetation present). Use concentrated form - see label for instructions. CAUTION: Avoid contact with desired vegetation. Misapplication may result in loss of desired vegetation.			
	Glyphosate -VARIOUS e.g. ROUNDUP	5 to 10%	NON-TOLERANT	Mix with water at 5 to 10 percent for spot spray or spot treatment. For optimum activity, apply when weeds are in flowering stage.
	triclopyr -BRUSH-B-GON CONCENTRATE -BRUSH B-GON (Ortho) -ENFORCER BRUSH KILLER	Ready to Use 3% or 4 fl. oz. See Label		This herbicide is effective towards these weeds. Exercise caution to avoid contact with soil and desired foliage. Root uptake by desired plants is possible when soil is contacted.
	2,4-D plus MCPP plus dicamba -BRUSH KILLER CONCENTRATE -BRUSH KILLER (Spectracide)	Ready to Use 3 to 5%	Ky. Bluegrass Fine Fescue Tall Fescue Bermudagrass Centipedegrass Zoysia	CAUTION: Application of products containing these herbicides could result in damage or death of desired vegetation when present. These products are meant for use when desired ornamentals are not present. Wet foliage to cover but do not spray to runoff.

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per gallon (Spot Spray)	LAWN GRASS TOLERANCE: Cool-Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
Common Bermuda and other grass weeds POST	sethoxydim -VANTAGE fluazifop -FUSILADE II glyphosate (VARIOUS) -ROUNDUP	1.5% 1.5% 2 to 5%	NON-TOLERANT	CAUTION: Application will result in damage or death of desired grasses. Common bermudagrass (and other perennial grasses) will require repeat applications. VANTAGE or FUSILADE II will not control sedges or broadleaf weeds. Fusilade or Roundup may require a surfactant.

LANDSCAPE EDGING: HERBICIDE OPTIONS

Overall Comments: This section suggests herbicides for spot treatment of areas free of desirable vegetation (e.g. control of weeds in cracks in sidewalks and driveways, and around structures where no desired vegetation is present). These are non-selective herbicides providing activity towards all plants. Thus, they are not intended for use in or around desired vegetation. If desired vegetation is contacted, immediately wash treated foliage with water.

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per gallon (spot spray)	LAWN GRASS TOLERANCE: Cool -Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
All Weeds including perennials POST (Spot Treatment)	<p>Systemic Herbicides. The following products contain herbicides with systemic activity. These products will move within the plant 'systemically' from the point of contact to shoots and roots not contacted in the initial application. These products provide activity towards all plants including desired and undesired (grass, broadleaf and grass-like weeds). For control of perennial weeds, systemic herbicides are preferred.</p>			
	glyphosate -WEED AND GRASS KILLER (Eliminator) -ROUNDUP	3.5 fl. oz. 3.2 fl. oz.	NON-TOLERANT	
	diquat plus fluazifop -SYSTEMIC GRASS AND WEED KILLER -SYSTEMIC GRASS AND WEED KILLER (Spectracide)	8 to 12 fl. oz. Ready to Use		<p>Note: Diquat is not systemic (contact only). Fluazifop is systemic in grasses only (with no activity towards broadleaf weeds when used alone).</p>

Target Weeds and APPLICATION TYPE	Herbicide and PRODUCT (examples)	PRODUCT RATE per gallon (spot spray)	LAWN GRASS TOLERANCE: Cool -Season Warm-Season	USE DIRECTIONS AND PRECAUTIONS
All Weeds (limited activity towards perennials) POST	<u>Non-systemic (contact) herbicides.</u> The following products contain herbicides that do not provide systemic activity. These herbicides generally have little movement to other plant parts not contacted by the initial application. Thus, use is best suited towards non-perennial plants. These herbicides are preferred for making applications to reduce the risk of detrimental injury resulting from misapplication to desired plants (e.g. edging of walkways and roadside curbs).			
	diquat -LIQUID EDGER (<i>Real Kill</i>)	Ready to Use	NON-TOLERANT	
	NaClO ₃ plus diquat -LIQUID EDGER (<i>Security</i>)	Ready to Use		Do not apply where roots of desirable trees or shrubbery may be present.
	glufosinate -FINALE	3 to 8 fl. oz.		
	prometon -TOTAL VEGETATION KILLER (<i>Spectricide</i>)	8 fl. oz.		