TURFGRASS WEED RESPONSE TO PREEMERGENCE HERBICIDES

HERBICIDES	ANNUAL GRASSES	Annual bluegrass	Crabgrass	Goosegrass	Sandbur	ANNUAL BROADLEAVES	Bittercress	Common Chickweed	Corn Speedwell	Henbit	Hop Clover'	Knotweed	Lespedeza	Parsley Piert	Spurges	Spurweed	PERENNIAL GRASSES	Bahiagrass	Bermudagrass	Dallisgrass	Tall Fescue	PERENNIAL BROADLEAVES	Clovers	Dandelion	Dichondra	Docks	Ground Ivy	Mallow	Mock Strawberry	Mousear Chickweed	Pennywort	Plantains	Woodsorrel	Violets	Virginia Buttonweed	OTHER WEEDS	Nutsedge, Yellow	Wild Garlic/onion
atrazine (AAtrex)		E	F				E	E	E	E	E	E	E	E	E	E		F			F		E	F	G	G					E	G	E		F			
benefin (Balan)		E	E	F	F			G	E	G				E																E								
benefin + oryzalin (Surflan XL)		E	E	F	G			G		G				E	G																							
benefin + trifluralin (Team Pro)		E	E	F	F									E																								
bensulide (Bensumec, PreSan)		F	E	F	G							G	G	E																								
bensulide + oxadiazon (Goose/Crab)		F	E	E	G																																	
dithiopyr (Dimension)		E	E	G			E	E	G	E				E	G																							
ethofumesate (Prograss)		G																	F																		
indaziflam (Specticle)		E	E	E						E																												
isoxaben (Gallery)		P	P	P	P		E	E	E	E	E			E	E	E																						
metolachlor (Pennant)		F	F	F	F																																F	
oryzalin (Surflan)		G	E	G	G			G		G				G	E																							
oxadiazon (Ronstar)		G	E	E	F			P	G	P	G	G	G	E	F	P																						
pendimethalin (Pendulum Aquacap)		G	E	G	G										G																							
prodiamine (Barricade)		E	E	G				G		G		G			G																							
siduron (Tupersan)			G	P								P			P				F																			
simazine (Princep)		E	F				E	E	G	E	E	G	E	G	G	E					F		G							E								

E = Excellent, ≥ 90% control. Good = 80% to 89% control. F = Fair, 70% to 79% control. P = Poor, <70% control. Blank = no data.

TURFGRASS WEED RESPONSE TO POSTEMERGENCE HERBICIDES

HERBICIDES	ANNUAL GRASSES	Annual bluegrass	Crabgrass	Goosegrass	Sandbur	ANNUAL BROADLEAVES	Bittercress	Common Chickweed	Corn Speedwell	Henbit	Hop Clover	Knotweed	Lespedeza	Parsley Piert	Spurges	Spurweed	PERENNIAL GRASSES	Bahiagrass	Bermudagrass	Dallisgrass	Tall Fescue	PERENNIAL BROADLEAVES	Clovers	Dandelion	Dichondra	Docks	Ground Ivy	Mock Strawberry	Mousear Chickweed	Pennywort	Plantains	Woodsorrel	Violets	Virginia Buttonweed	OTHER WEEDS	Nutsedge, purple	Nutsedge, yellow	Wild Garlic/onion	Green Kyllinga
2,4-D (many)							G	F	F	F	F		F	F	F	F							F	E		G	F	F	F	F	P	P	F	P				G	
2,4-D + dichlorprop (DPC)							E	E	E	E	E	G	E	E	G	G							E	E		E	G	G	E	E	F	F	G	G				G	
2,4-D + dichlorprop + dicamba							E	E	E	E	E	G	E	E	G	G							E	E		E	G	G	E	E	F	F	G	G				G	
carfentrazone (Quicksilver)															G	G																							
chlorsulfuron (Corsair)								G		G					G	G																							
clopyralid (Lontrel)											E		P										E																
dicamba (Banvel)							E	E	E	E	E	E	G	E	G	G							E	E	G	E	G	G	E	E	F	F	G	F					
dicamba + iodosulfuron + thiencarbazone (Celsius)								G	G	G			G		G	G							G	G	G		G		G		G	G							
diclofop (Illoxan)				E																																			
diquat (Reward)		E	E	E	E			E	E	G	E		G	E	E	E					G																		
ethofumesate (Prograss)		E																																					
fenoxaprop (Acclaim)			G																F																				
foramsulfuron (Revolver)		E	P	E																	G																		
glyphosate		E	E	E	E		E	E	E	E	E	E	E	E	E	E		G	E	E	E		F	E	E	E	G	G	E	E	E	E		F		G		E	
halosulfuron (Sedgehammer)																																				E	G		F
imazaquin (Image)																																				G	F	E	E
mecoprop (Mecomec)																																							
metribuzin		E	G	E	G		G	G	E	G	G	G	E	E	E	E					G		G						E										
metsulfuron (Manor)										E	E	G	E		E	E		E					E	E	G	E	G		E	G	E	E	E	G				E	
pronamide (Kerb)		E						E	E	P				P																									
pyrimisulfan																																				E	E		E
sethoxydim (Segment)			E	G																																			
simazine (Princep)							E	E	E	E	G			E															E										
triclopyr + clopyralid (Confront)							E	E	E	E	E	G	E	E	G	G							E	E		E	G	G	E	E	F	F	G	G				G	
trifloxysulfuron (Monument)		E	P	P							G							F			G		G		G						P	P			G	E	E		E
sulfentrazone (Dismiss)																																				F	G		G
sulfosulfuron (Certainty)		G																																		E	E		E

E = Excellent, ≥90% control. Good = 80% to 89% control. F = Fair, 70% to 79% control. P = Poor, <70% control. Blank = no data.

Turfgrass Tolerance of Postemergence Herbicides

Herbicide	Bermudagrass	Centipedegrass	St. Augustinegrass	Tall Fescue	Zoysiagrass
2,4-D	S	I	I	I	S
2,4-D + dicamba	S	I	I	S	S
2,4-D + dichlorprop (2,4-DP)	S	I	I	S	S
2,4-D + mecoprop	S	I	I	S	S
2,4-D + mecoprop + dicamba	S	I	I	S	S
2,4-D + mecoprop + dichlorprop	S	I	I	S	S
atrazine (AAtrex)	S-I	S-I	S-I	NR	S-I
bentazon (Basagran)	S	S	S	S	S
bromoxynil (Buctril)	S	S	S	S	S
carfentrazone (Quicksilver)	S	S	S	S	S
chlorsulfuron (Corsair)	S	NR	NR	NR	NR
clopyralid (Lontrel)	S	S	S	S	S
dicamba (Banvel)	S	I	I	S	S
dicamba + iodosulfuron + thiencarbazone (Celsius)	S	S	S	NR	S
diclofop (Illoxan)	S	NR	NR	NR	NR
fenoxaprop (Acclaim)	NR	NR	NR	S	S
fluazifop-p (Fusilade II)	NR	NR	NR	S-I	S-I
foramsulfuron (Revolver)	S	NR	NR	NR	S
halosulfuron (Sedge Hammer)	S	S	S	S	S
imazaquin (Image)	I	NR	S	NR	S
MCPA + MCPP + dichlorprop	S	I	I	S	S
mecoprop (MCPP)	S	I	I	S	S
mesotrione (Tenacity)	NR	R	I	R	NR
metribuzin	S-I	NR	NR	NR	NR
metsulfuron (Manor)	S	S	S	NR	S
MSMA, DSMA	S	NR	NR	I	I
pronamide (Kerb)	S	NR	NR	NR	NR
pyrimisulfan	S	S	S	S	S
sethoxydim (Segment)	NR	S	NR	NR	NR
sulfentrazone (Dismiss)	S	S	NR	S	S
sulfosulfuron (Certainty)	S	S	S	NR	S
topramezone (Pylex)	I	NR	NR	S	S
triclopyr (Turflon)	N	S	NR	S	NR
triclopyr + clopyralid (Confront)	I	NR	NR	S	I
trifloxysulfuron (Monument)	S	NR	NR	NR	S

S = safe at labeled rates, I = Intermediate safety, use at reduced rates, NR = Not registered for use on this turfgrass, do not use.

Turfgrass Tolerance of Preemergence Herbicides

Herbicide	Bermudagrass	Centipedegrass	St. Augustinegrass	Tall Fescue	Zoysiagrass
atrazine (AAtrex)	I	S	S	NR	I-S
benefin (Balan)	S	S	S	S	S
benefin + oryzalin (XL)	S	S	S	S	S
benefin + trifluralin (Team)	S	S	S	S	S
bensulide (PreSan)	S	S	S	S	S
bensulide + oxadiazon (Goosegrass/Crabgrass)	S	NR	NR	NR	S
dithiopyr (Dimension)	S	S	S	S	S
fenarimol (Rubigan)	S	NR	NR	NR	NR
indaziflam (Specticle)	S	S	S	NR	S
isoxaben (Gallery)	S	S	S	S	S
metolachlor (Pennant)	S	S	S	S	S
napropamide (Devrinol)	S	S	S	S	NR
oryzalin (Surflan)	S	S	S	S	S
oxadiazon (Ronstar)	S	NR	S	S	S
pendimethalin (Pre-M)	S	S	S	S	S
prodiamine (Barricade)	S	S	S	S	S
pronamide (Kerb)	S	R	R	NR	R
simazine (Princep)	I	S	S	NR	S

S = safe at labeled rates on healthy mature turf. I = Intermediate safety, may cause minor damage to mature, healthy turf. Consider using the lower end of the rate range. Do not apply to turf under stress. NR = Not registered for use on this species.

Crop, Situation, and Active Chemical Per Broadcast Acre	Weeds Controlled	Formulated Material Per Broadcast Acre	Time of Application	Method of Application and Precautions
TURFGRASSES	.			
Preemergence - Established Grasses				
atrazine @ 1 to 2 lb/A	Annual bluegrass, spurweed, chickweed and many other weeds.	**AAtrex 4 L** 1 to 2 qt/A.	Mid-October to November; after turf goes dormant.	**Restricted use herbicide. Do not apply to cool season grasses.** Atrazine provides both preemergence and post emergence control of annual broadleaf weeds. See label for special instructions. Do not apply to fairways or other areas that drain onto golf greens. Avoid applications during greenup. Should only be applied to dormant bermudagrass or zoysiagrass. DO NOT overseed 4 months before or 6 months after treatment. DO NOT apply within the active root zone of ornamental shrubs.
benefin @ 1.5 to 3.0 lb/A	Summer annual grasses, annual bluegrass, some small-seeded broadleaves.	**Balan 2.5 G** Up to 120 lb/A.	Apply February 15 to March 1 for control of crabgrass or goosegrass. Apply in September – Mid-October for annual bluegrass control.	Do not use on golf course putting greens. Will temporarily thin turf in sites heavily infested with annual bluegrass.
bensulide @ 7.5 to 12.5 lb/A	Summer annual grasses, annual bluegrass, and selected broadleaf weeds.	**Bensumec 4 LF** 1.88 to 3.13 gal/A or **Pre-san 12.5 G** 80 to 100 lb/A.	Apply February 15 to March 1 for control of crabgrass or goosegrass. Apply in September – Mid-October for annual bluegrass control.	Liquid formulation is labeled for use in home lawns and golf courses, granular formulation for golf courses only. Apply a light irrigation immediately after treatment. DO NOT apply to newly sprigged grasses. Delay reseeding for 4 months after treatment. May be used on bermudagrass and bentgrass greens.
dimethenamid-P @ 1.0 to 1.5 lb/A	Small-seeded broadleaf weeds, doveweed, purslane, spurge, yellow nutsedge and some annual grasses.	**Tower 6 L** 21 to 32 oz/A.	Apply February 15 to March 1 for control of summer annuals. Apply in September – Mid-October for winter annuals.	Golf courses: cool- and warm-season grasses. All other turf areas: warm-season grasses ONLY. Do not apply more frequently than 35 days, do not use more than 64 fl oz (3 lb ai) per year.
dithiopyr @ 0.25 to 0.5 lb/A	Annual grasses and small-seeded broadleaf weeds.	**Dimension Ultra 40 WP** 0.625 to 1.25 lb/A. or **Dimension 1 EC or 1 EW** 1 to 2 pt/A.	Apply February 15 to March 15.	May be used on most species of turfgrass. Has postemergence activity on very small crabgrass. Do not reseed, overseed, or sprig within 8 weeks of application.
ethofumesate @ 0.75 to 2 lb/A	annual bluegrass, annual grasses and some annual broadleaves. Supression of bermudagrass in St. Augustine- grass.	**Prograss 1.5 L** 1 to 2 qt/A. or **PoaConstrictor or Prograss 4 SC** 0.75 to 2 qt/A.	Preemergence for weeds. Postemergence for suppression of bermudagrass in St. Augustinegrass.	Labeled for use in creeping bentgrass, perennial ryegrass, Kentucky bluegrass, tall fescue, and St. Augustinegrass. May also be applied to dormant bermudagrass. Do not apply more than 0.75 lb ai/A on Kentucky bluegrass and creeping bentgrass. **Check label for specific rates for each turf type.**
flumioxazin @ 0.25 to 0.38 lb/A	Annual bluegrass, winter annual broadleaf weeds, and summer annual grasses.	**SureGuard 51 WDG** 8 to 12 oz/A. or **SureGuard 4 SC** 8 to 12 fl oz/A.	Apply February 15 to March 1 for control of crabgrass or goosegrass. Apply late in the fall, after desirable turf is dormant.	**Do not use on cool-season turf**. Apply only to dormant bermudagrass. Leave at least 15 feet when applying upslope of creeping bentgrass putting greens.

Crop, Situation, and Active Chemical Per Broadcast Acre	Weeds Controlled	Formulated Material Per Broadcast Acre	Time of Application	Method of Application and Precautions
indaziflam @ 0.03 to 0.04 lb/A	Annual grasses including crabgrass and goosegrass and some broadleaf weeds.	**Specticle Flo** 6 to 9 fl oz/A or **Specticle G** 125 to 200 lb/A	Preemergence.	**Do not use on cool-season grasses.** Use only on well-established grasses. Leave a 15-foot buffer between treated areas and cool-season grasses. Do not apply more than 6 fl oz/A on centipedegrass or St. Augustinegrass. Do not apply to golf course putting greens, tees, or collars. Irrigate immediately after application. Sequential application recommended after 45-90 days.
isoxaben @ 0.5 to 1 lb/A	Broadleaf weeds including spurge.	**Gallery 75 DF** 0.66 to 1.33 lb/A. or **Gallery 4.16 SC** 16 to 31 fl oz/A.	MId-March to early April for summer weeds, October for winter annuals.	Tank mix with a grass herbicide such as Surflan, etc., if using for fall preemergence treatment to improve annual bluegrass control. May be used on most common turfgrasses. Do not use on putting greens.
oxadiazon @ 2 to 4 lb/A	Summer annual grasses including goosegrass, annual bluegrass, and some small-seeded broadleaves.	**Ronstar 50 WP** 4 to 8 lb/A. or **Ronstar Flo 3.17 L** 2.5 to 3.8 qt/A.	MId-March to early April for summer weeds, October for winter annuals.	Ronstar products are only available for professional applicators. Apply to dormant bermudagrass or zoysiagrass at least 2-3-weeks before greenup. DO NOT apply more than 3 lb ai/acre on St. Augustine. May cause temporary discoloration of bermudagrass and St. Augustine which is normally outgrown in 2 to 3 weeks. DO NOT apply to wet turf. Delay reseeding for 4 months after treatment. DO NOT apply to red fescue, centipede or golf course greens or tees.
oxadiazon + bensulide @ 1.5 + 6 lb/A	Annual grasses including crabgrass and goosegrass and some broadleaf weeds.	**Goosegrass/Crabgrass Control** 114 lb/A.	Preemergence.	**For golf course use only**. Apply a light irrigation after treatment. DO NOT use on newly sprigged grasses until well established. Delay reseeding for 5 months after treatment. May be used on bermudagrass and bentgrass greens under conditions of heavy goosegrass infestations. See label for precautions concerning use on putting greens.
oryzalin @ 1.5 to 3 lb/A	Annual grasses and certain broadleaf weeds.	**Surflan 4 AS** 1.5 to 2.0 qt/A or **Surflan XL 2 G** 100 to 150 lb/A.	Apply in late fall or early spring prior to the onset of conditions favorable for annual weed germination.	Do not use on cool-season grasses, except tall fescue. Do not apply to newly sprigged grasses until well-established. Delay reseed- ing 90 to 120 days after application. A second application of Surflan can be applied 8 to 10 weeks after initial application for extended control.
pendimethalin @ 1.5 to 3 lb/A	Summer annual grasses, annual bluegrass, and small-seeded broadleaves.	**Pendulum AquaCap 3.8 AS** 3.15 to 6.31 pt/A.	Spring. Preemergence to target weeds.	DO NOT use on newly sprigged turfgrasses; NOT recommended for turfgrass that has been severely thinned due to winter stress. DO NOT reseed within 4 months of application. Use the low rate for tall fescue and Kentucky bluegrass. The high rate may be used on warm-season grasses.
prodiamine @ 0.325 to 1.5 lb/A	Annual grasses and some broadleaf weeds.	**Barricade 65 WDG** 0.5 to 2.3 lb/A. or **Barricade 4 L** 0.625 to 3 pt/A.	Before crabgrass germinates. Applying around March 15 is usually effective.	Apply only to well established turf. See label for limitations. Do not apply to tees or greens. Do not exceed 0.65 lb of active ingredient per year for centipedegrass and St. Augustinegrass. Do not make more than two applications per calendar year, and allow at least 60 days between treatments. Use a split application for goosegrass control. Wait 4 to 6 months per 0.75 lb of Barricade applied before reseeding.

Crop, Situation, and Active Chemical Per Broadcast Acre	Weeds Controlled	Formulated Material Per Broadcast Acre	Time of Application	Method of Application and Precautions
TURFGRASSES Preemergence - Established Grasses [cont.]				
simazine @ 1 to 2 lb/A	Annual bluegrass, spurweed and many other winter annual weeds.	**Princep Liquid 4 L** 1 to 2 qt/A. or **Simazine 90 DF** 1.1 to 2.2 lb/A.	Apply simazine in October or November for preemergence control of winter annual weeds. Apply December through February for late post emergence control of winter annual weeds.	**Do not use on cool season turf. Apply only to dormant turf.** Apply low rate for annual blue- grass control or high rate for winter annual broadleaf control. DO NOT overseed with desirable turfgrass within 4 months before or 6 months after treatment. DO NOT apply more than 1 lb ai/acre on newly sprigged turfgrasses or on hybrid bermudagrass.
S-metolachlor @ 1.8 to 3.9 lb/A	Annual grasses and some small-seeded broadleaf weeds, yellow nutsedge suppression.	**Pennant Magnum 7.62 EC** 1.3 to 2.6 pt/A.	Mid-March to early April.	May be used on bermuda, zoysia, St. Augustine or centipede. **DO NOT use on cool-season turf**. See label for overseeding restrictions. May cause delayed greenup when applied to dormant bermudagrass. Needs 0.5-inch rainfall or irrigation within 5 days of application.