



IPM

Planning Guide

reference

Weed Reference

Presented by the



**Environmental
Institute for Golf**

The philanthropic organization of **GCSAA** 

WEED REFERENCE

Buckhorn plantain, *Plantago lanceolata*

DESCRIPTION:

Buckhorn plantain is a very common fibrous-rooted perennial weed that is found in low maintenance areas or areas where turf is not competitive. The leaves arise from the base and are long, narrow, and pointed with several prominent parallel veins. Flowers are arranged in a dense terminal spike on a long, hairy, leafless stem. As it blooms, the stamens are exerted from the spike.



Type of plant:	Broadleaf
Life cycle:	Perennial
Growth habit:	Bunch type
Aggressiveness (1-10 scale; 10=most aggressive):	5
Leaf attachment	whorled
Leaf color:	Dark green
Flower description:	Small, white to pink and arranged in a dense terminal spike on a long, hairy, leafless stem
Seed description:	Tan colored, oblong
Reproduces by:	Seed, rootstock
U.S. states found in:	Throughout U.S.
Countries found in:	Canada, Mexico, South and Central America, Europe and Asia
Golf course areas found in:	roughs, low maintenance areas

MONITORING:

Scout once temperatures reach 55 F (13 C). Most common in neutral to high pH soils and in areas where turf is weakened

WEED REFERENCE

MANAGEMENT STRATEGIES:

Always check labels to determine turfgrass sensitivity to herbicides.

Follow resistance management guidelines by rotating products as outlined in IPM Template Reference "Herbicide Resistance Management Groups." Always consult the most recent version of all product labels before use.

TYPE	TIMING/ THRESHOLD	PRACTICE	
Cultural	N/A	Encourage healthy turf	
Biological			
Chemical	Pre-emerge: most effect when post-emergence herbicides are part of the overall program	Active ingredient (example)	Label signal word
		atrazine	Caution (restricted use)
		isoxaben (Gallery)	Caution
		metribuzin (Sencor)	Caution
		Simazine (Simazine)	Caution
	Post-emerge:	2,4-D (Barrage)	Caution
		Triclopyr (Turflon)	Caution

WEED REFERENCE

Dandelion, *Taraxacum officinale*

DESCRIPTION:

Dandelion is a hardy perennial with a thick, fleshy taproot and no stem. Leaves grow in a rosette from the crown. They are long, narrow, irregularly lobed, and lance shaped. The lobed tips are often opposite each other and pointing toward the crown. Leaves are often purple at the base and emit a milky latex when broken. The deep golden yellow flowers are borne in heads on long hollow stalks. Blossoms soon mature into spherical clusters of whitish fruits, like white puffballs, composed of parachute-like seeds. Seeds are carried by wind.



Type of plant:	broadleaf
Life cycle:	Perennial
Growth habit:	Bunch type
Aggressiveness (1-10 scale; 10=most aggressive):	7
Leaf attachment	whorled
Leaf color:	Dark green
Flower description:	Deep yellow, with only one flower per seed stalk
Seed description:	Spherical clusters that appear as white puffballs. The seed resembles a parachute
Reproduces by:	Seed, rootstock
U.S. states found in:	Throughout the U.S.
Countries found in:	Mexico, South and Central America, Africa, Europe, Asia
Golf course areas found in:	Tees, fairways, roughs, low maintenance areas

MONITORING:

Begin scouting when average air temperatures reach 55 F (13 C)

WEED REFERENCE

MANAGEMENT STRATEGIES:

Always check labels to determine turfgrass sensitivity to herbicides.

Follow resistance management guidelines by rotating products as outlined in IPM Template Reference "Herbicide Resistance Management Groups." Always consult the most recent version of all product labels before use.

TYPE	TIMING/ THRESHOLD	PRACTICE	
Cultural	N/A	Encourage healthy turf, mow regularly	
Biological			
Chemical	Pre-emerge: most effective when post-emerge herbicides are also part of the program	Active ingredient (example)	Label signal word
		Atrazine	Caution (restricted use)
		Isoxaben (Gallery)	Caution
		Metribuzin (Sencor)	Caution
		Simazine (Simazine)	Caution
	Post-emerge:	2,4-D (Barrage)	Caution
		Dicamba (Banvel)	Caution or Warning, depending on formulation
		mecoprop (MCP)	Caution to Danger, depending on formulation
		Triclopyr plus clopyralid mixture (Confront)	Danger

WEED REFERENCE

Dollarweed (pennywort), *Hydrocotyle* spp.

DESCRIPTION:

Dollarweed has several different species that make up this weed complex. Sometimes, these weeds are referred to as pennywort. Dollarweed is a perennial that has rhizomes and some species produce tubers. The most distinguishing characteristic is the position of the petiole relative to the leaf. In most dollarweed species, the petiole is in the center of the leaf. Several species of dollarweed have very shiny leaves which is a result of a very waxy leaf cuticle.



Type of plant:	Broadleaf
Life cycle:	Perennial
Growth habit:	Spreading
Aggressiveness (1-10 scale; 10=most aggressive):	8
Leaf color:	Dark green
Flower description:	Flowers are white and are elongated spikes at the top of stalks
Seed description:	Small and dark brown in color
Reproduces by:	Seed, rhizomes, tubers
U.S. states found in:	Coastal areas of U.S. From ME south through FL and west to TX, AZ and CA.
Countries found in:	South and Central America, Canada, southern Europe, Africa, Mexico
Golf course areas found in:	Greens, tees, fairways, roughs, low maintenance areas

MONITORING:

Begin scouting when average air temperatures reach 55 F (13 C). Focus scouting areas on wet areas of the golf course, where dollarweed thrives. Do not ignore greens — dollarweed can tolerate very low mowing heights.

WEED REFERENCE

MANAGEMENT STRATEGIES:

Many species of dollarweed are difficult to control with postemergence herbicides because of the waxy leaf cuticle.

Follow resistance management guidelines by rotating products as outlined in IPM Template Reference "Herbicide Resistance Management Groups." Always consult the most recent version of all product labels before use.

TYPE	TIMING/ THRESHOLD	PRACTICE	
Cultural	N/A	Encourage healthy turf	
Biological		_____	
Chemical	Post-emerge:	Active ingredient (example)	Label signal word
		Dicamba (Banvel), 2,4-D, and triclopyr (Turflon) mixture: repeat applications will be necessary	Caution or Warning (depends on formulation)/ Caution/ Caution
		Imazaquin (Image): most effective product available, but labeled only on warm-season turf	Caution

WEED REFERENCE

Kikuyugrass, *Pennisetum clandestinum*

DESCRIPTION:

Kikuyugrass is a very aggressive perennial grass that spreads rapidly via vigorous rhizomes and stolons. Kikuyugrass thrives in mild climates (Mediterranean climates) and often takes over golf course fairways and is sometimes grown as a desirable turfgrass species. Kikuyugrass is a major weed of golf courses in California and is not found on the east coast. Kikuyugrass prefers climates with low humidity. Under humid conditions, kikuyugrass often suffers from various diseases.



Type of plant:	grass
Life cycle:	perennial
Growth habit:	spreading
Aggressiveness (1-10 scale; 10=most aggressive):	10
Leaf color:	Dark green
Flower description:	Flowers not distinguishable with the naked eye
Seed description:	Small and tan in color
Reproduces by:	Seed, rhizomes, stolons
U.S. states found in:	CA, HI
Countries found in:	Mexico, South and Central America, Zustralia, New Zealand, Africa, Asia, various Pacific Islands
Golf course areas found in:	Greens, tees, fairways, roughs, low maintenance areas

MANAGEMENT STRATEGIES:

Always check labels to determine turfgrass sensitivity to herbicides.

Follow resistance management guidelines by rotating products as outlined in IPM Template Reference "Herbicide Resistance Management Groups." Always consult the most recent version of all product labels before use.

TYPE	TIMING/ THRESHOLD	PRACTICE	
Cultural	N/A	Encourage healthy turf	
Biological			
Chemical	Post emerge: In tolerant turf species only. Repeat applications are necessary.	Active ingredient (example)	Label signal word
		MSMA (MSMA) plus triclopyr (Turflon)	Caution/Caution
		Quinclorac (Drive)	Caution

WEED REFERENCE

Large Crabgrass, *Digitaria sanguinalis*

DESCRIPTION:

Large crabgrass is a summer annual and is very similar to smooth crabgrass. The distinguishable feature between the two species is large crabgrass has hairy stems whereas smooth crabgrass has smooth stems. Both species germinate when 24 hour mean soil temperatures average about 53 to 55 degrees F near the soils surface for several days. Alternating dry and wet conditions at the soil surface in the spring encourages germination. Crabgrass species germinate and grow best when adequate light and moisture are present. Crabgrass species are some of the most problematic weeds in golf course turf due to their abundance and the fact that they can survive very low mowing heights such as those found on putting greens. Crabgrass competition is enhanced by thin, open turfgrass stands.



Type of plant:	grass
Life cycle:	Summer annual
Growth habit:	Slightly spreading
Aggressiveness (1-10 scale; 10=most aggressive):	9
Leaf color:	Medium green
Flower description:	Not distinguishable with naked eye
Seed description:	Small tan, oblong seed that drops in late summer
Reproduces by:	seed
U.S. states found in:	Throughout U.S.
Countries found in:	Central and South America, Europe, Asia
Golf course areas found in:	Greens, tees, fairways, roughs, low maintenance areas

MONITORING:

Begin monitoring when weeds begin to germinate, when soil temperatures reach a 24 hour average of 53 – 55 F (12-13 C).

WEED REFERENCE

MANAGEMENT STRATEGIES:

Always check labels to determine turfgrass sensitivity to herbicides.

Follow resistance management guidelines by rotating products as outlined in IPM Template Reference “Herbicide Resistance Management Groups.” Always consult the most recent version of all product labels before use.

TYPE	TIMING/ THRESHOLD	PRACTICE	
Cultural	N/A	Keep turf healthy to avoid weed invasion	
Biological			
Chemical	Pre-emerge: apply late winter/spring before average soil temperatures reach 53 – 55 F (12 – 13 C)	Active ingredient (example)	Label signal word
		dithiopyr (Dimension)	Caution or Warning, depending on formulation
		oryzalin (Surflan)	Caution
		oxadiazon (Ronstar)	Warning
		pendimethalin, trifluralin + benefin (Team pro)	Warning
		prodiamine (Barricade)	Caution
		Post-emerge: apply when weeds are small	fenoxaprop (Acclaim Extra)
fluazifop (Fusilade)	Caution		
quinclorac (Drive)	Caution		

WEED REFERENCE

Silvery thread moss: *Bryum argenteum*

DAMAGE CAUSED

Symptoms of invasion:

Small dollar-sized velvety green patches that can coalesce if not managed.

Plants attacked:

Low mown bentgrass and poa.

Pests/conditions that cause similar damage

None

Geographic distribution:

Worldwide

PREDICTING INFESTATION

Threat temperature:

50 F (10C)

Conducive environmental conditions:

Wide range of conditions are suitable for invasion

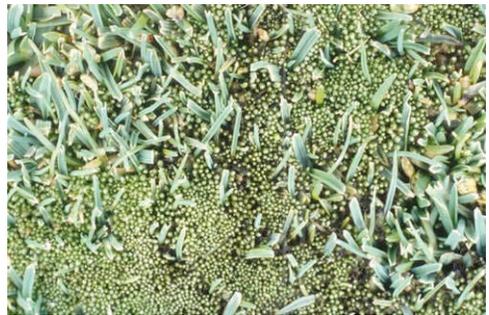
MONITORING TECHNIQUES:

Monitor for very small patches of moss invasion (top photo above)

Start looking on slopes and contours that might be mowed slightly lower than desired.

THRESHOLDS:

Depending upon the desired quality of the green, up to several percent infestation can be tolerable. For high quality greens performance there is no tolerance for moss.



WEED REFERENCE

MANAGEMENT STRATEGIES:

The products below have demonstrated good activity in research field trials on moss. Always consult the most recent version of all product labels before use.

TYPE OF CONTROL	PRACTICE	
Cultural	<ul style="list-style-type: none"> • Increase mowing height • Adequate nitrogen (0.1 – 0.2 lb nitrogen / 1000 ft² / wk [0.5 – 1.0 g nitrogen/ m² / wk] during season), but do not exceed 20 ppm total nitrogen in soil • Aerify and regularly topdress to encourage robust turfgrass growth • Brush and groom regularly • Physically remove small patches of moss • Avoid wetting agents that hold water near the surface of the thatch • Manage irrigation wet spots – hand water as needed 	
Biological	No effective products currently available	
Chemical Curative: Apply when moss infestation reaches the tolerance level for the facility.	Active Ingredient (Product)	Signal word
	carfentrazone (Quicksilver) *	Caution
	chlorothalonil (Daconil Weather Stik) use when average air temperature > 65	Caution

* Designated “reduced risk” by the U.S. Environmental Protection Agency

WEED REFERENCE

Purple nutsedge, *Cyperus rotundus*

DESCRIPTION:

Purple nutsedge is an aggressive perennial and has one of the most prolific growth rates of any weed in the world. Tubers are dark colored and form in chains along rhizomes.

Tubers are bitter to the taste. Tubers start to form in spring and proceed throughout the summer. Leaf tips are more blunt than yellow nutsedge. Seedhead is purple or dark red in appearance. One of the most difficult turfgrass weeds to control.



Type of plant:	Sedge
Life cycle:	Perennial
Growth habit:	Spreading
Aggressiveness (1-10 scale; 10=most aggressive):	10
Leaf attachment:	3 ranked
Leaf color:	Dark green
Flower description:	Indistinguishable to the naked eye
Seed description:	Seedhead has characteristic purple color
Reproduces by:	Rhizomes, tubers
U.S. states found in:	Warmer climates — north to KY and west to southern CA
Countries found in:	Mexico, Central and South America, Europe, Africa
Golf course areas found in:	Tees, fairways, roughs, low maintenance areas

MONITORING:

Begin scouting when average air temperatures reach 55 F (13 C). Target wet and poorly draining areas.

WEED REFERENCE

MANAGEMENT STRATEGIES:

One of the most difficult of all weeds to control, and more difficult to control than yellow nutsedge. As with other sedges and rushes, purple nutsedge tends to thrive in wet areas of the golf course. Therefore, poor drainage and overwatering can enhance purple nutsedge presence. However, once established on the golf course, this weed can thrive in areas that are not wet.

Always check labels to determine turfgrass sensitivity to herbicides. Follow resistance management guidelines by rotating products as outlined in IPM Template Reference “Herbicide Resistance Management Groups.” Always consult the most recent version of all product labels before use.

TYPE	TIMING/ THRESHOLD	PRACTICE	
Cultural	N/A	Address wet and poorly drained areas. Lower mowing heights to less than 0.5 inch (1.3 cm). Encourage healthy turf	
Biological			
Chemical	Post emerge: Apply in early summer before additional tubers form. Repeat applications and multi-year programs will be necessary.	Active ingredient (example)	Label signal word
		Halosulfuron (Manage)	Caution
		Sulfosulfuron (Certainty)	Caution
		Trifloxysulfuron (Monument)	Caution

WEED REFERENCE

Virginia buttonweed, *Diodia virginiana*

DESCRIPTION:

Virginia buttonweed is a perennial with prostrate or spreading branches that thrives in wet areas of the golf course. The stems are longitudinally ridged with hairs along the ridges. Leaves are opposite without petioles and rough along the margins. The leaves are slightly thickened, green on the upper surface and light green on the lower surface with both surfaces smooth and slightly folded. The leaves of Virginia buttonweed often take on a mottled-yellow mosaic look. The white flowers sometimes have pink streaks in the center and are borne in the leaf axil. Petals are united into a tube. The fruit, bearing four membranous sepals at the tip, is produced in leaf axils.



Type of plant:	broadleaf
Life cycle:	perennial
Growth habit:	spreading
Aggressiveness (1-10 scale; 10=most aggressive):	9
Leaf attachment:	opposite
Leaf color:	Dark green, variegated
Flower description:	Small white flowers have 4 petals
Seed description:	Dark brown seeds are slightly round to oblong in shape
Reproduces by:	Seed, rootstock, stem fragments
U.S. states found in:	NJ, south to FL and west to MO
Countries found in:	No known occurrence in other countries
Golf course areas found in:	Tees, fairways, roughs, low maintenance areas

MONITORING

Start scouting when average air temperatures reach 55 F (13 C)

WEED REFERENCE

MANAGEMENT STRATEGIES:

Always check labels to determine turfgrass sensitivity to herbicides. Follow resistance management guidelines by rotating products as outlined in IPM Template Reference “Herbicide Resistance Management Groups.” Always consult the most recent version of all product labels before use.

TYPE	TIMING/ THRESHOLD	PRACTICE	
Cultural	N/A	Manage moisture to avoid overly wet areas. Encourage growth of healthy turf	
Biological			
Chemical	Post-emergence: repeat applications to target re-growth every 4 -5 weeks. A full year of applications may be necessary for full control.	Active ingredient (example)	Label signal word
		2,4-D (Barrage)	Caution
		Dicamba (Banvel): use in combination with 2,4-D	Caution or Warning, depending on formulation
		Triclopyr (Turflon): use in combination with 2,4-D	Caution

WEED REFERENCE

Yellow nutsedge, *Cyperus esculentus*

DESCRIPTION:

Yellow nutsedge is a perennial that gets its name from the characteristic tubers (ironically – not nuts) that form on the tips of rhizomes. Tubers are chestnut colored and occur below the soil surface. Tubers often break off when plant is pulled up. To find tubers, plant must be carefully dug to prevent tubers from dislocating from rhizomes. Tubers are produced in summer only. Tubers have a sweet taste and have a high nutritional value. Plant is often planted as wildlife food called Chufa.



Type of plant:	sedge
Life cycle:	Perennial
Growth habit:	spreading
Aggressiveness (1-10 scale; 10=most aggressive):	8
Leaf attachment:	3 ranked
Leaf color:	Medium green
Flower description:	Flowers are indistinguishable to the naked eye
Seed description:	Seedhead has characteristic yellow color, the basis of the plant's name
Reproduces by:	Seed, rhizomes, tubers
U.S. states found in:	Throughout North America
Countries found in:	Central and South America, Europe, Africa
Golf course areas found in:	roughs, low maintenance areas

MONITORING:

Begin scouting when average air temperatures reach 55 F (13 C). Target wet areas, poorly draining areas.

WEED REFERENCE

MANAGEMENT STRATEGIES:

As with other sedges and rushes, yellow nutsedge tends to thrive in wet areas of the golf course. Therefore, poor drainage and overwatering can enhance yellow nutsedge presence. However, once established on the golf course, this weed can thrive in areas that are not wet.

Always check labels to determine turfgrass sensitivity to herbicides. Follow resistance management guidelines by rotating products as outlined in IPM Template Reference “Herbicide Resistance Management Groups.” Always consult the most recent version of all product labels before use.

TYPE	TIMING/ THRESHOLD	PRACTICE	
Cultural	N/A	Address wet areas and poorly draining areas. Decrease mowing heights to 0.5 inch (1.3 cm) or less. Encourage healthy turf	
Biological			
Chemical	Post-emerge: Begin treatment in early summer, before new tubers form. Repeat applications and multi-year programs usually necessary.	Active ingredient (example)	Label signal word
		bentazon (Basagran)	Caution
		DSMA	Caution
		halosulfuron (Manage)	Caution
		imazaquin (Image)	Caution
		MSMA	Caution
		sulfentrazone (Dismiss)	Caution
		sulfosulfuron (Certainty)	Caution
trifloxysulfuron (Monument)	Caution		

WEED REFERENCE

Herbicide resistance management groups. Pesticides are organized into Resistance Management Groups based on mode of action and chemical structure. In general, a pest that develops resistance to one pesticide within a group will probably be cross-resistant to other members of the group. Therefore, current resistance management strategies rely on rotation among different pesticide groups. Source: Herbicide Resistance Action Committee (www.plantprotection.org/HRAC/)

Active ingredient	Trade Name	Herbicide Group	Group #
fenarimol	Rubigan	unclassified	
clethodim	Envoy	cyclohexanediones	A
fenoxaprop	Acclaim	aryloxyphenoxy-propionates	A
fluazifop	Fusilade 2000	aryloxyphenoxy-propionates	A
bispyribac	Velocity	pyrimidinylthiobenzoates	B
chlorsulfuron	Corsair	sulfonylurea	B
foramsulfuron	Revolver	sulfonylurea	B
halosulfuron	Manage	sulfonylurea	B
imazaquin	Image	imidazolinones	B
metsulfuron	Manor, Escort	sulfonylurea	B
rimsulfuron	TranXit	sulfonylurea	B
trifloxysulfuron	Monument	sulfonylurea	B
atrazine	Drexel, Atrazine, AAtrex, Purge.	triazines	C1
metribuzin	Sencor	triazinones	C1
simazine	Princep, Simazine	triazines	C1
siduron	Tupersan	ureas	C2
bentazon	Basagran	benzothiadiazinone	C3
bromoxynil	Buctril	nitriles	C3
oxadiazon	Ronstar	oxadiazoles	E
glyphosate	Roundup	glycines	G
glufosinate	Finale	phosphinic acids	H
asulam	Asulox, Asulam	carbamate	I
benefin	Balan	dinitroanimilines	K1
DCPA	Dacthal W-75	benzoic acids	K1
dithiopyr	Dimension	pyridines	K1
oryzalin	Surflan	dinitroaniline	K1
pendimethalin	Pre-M, Pendulum	dinitroaniline	K1
prodiamine	Barricade	dinitroaniline	K1
pronamide	Kerb	benzamides	K1
trifluralin	Team 2G	dinitroaniline	K1
metolachlor	Pennant	chloroacetamides	K3
napropamide	Devrinol	acetamides	K3
isoxaben	Gallery	benzamides	L
bensulide	Betasan, Bensumec, Presan	phosphorodithioates	N
ethofumesate	Prograss	benzofuranes	N
2,4-d amine	2, 4-D	phenoxy-carboxylic-acids	O
clopyralid	Stinger, Lontrel	pyridine carboxylic acids	O
dicamba	Banvel, Vanquish	benzoic acids	O
mecoprop	MCPP	phenoxy-carboxylic-acids	O
quinclorac	Drive	quinoline carboxylic	O
triclopyr	Turflon	pyridine carboxylic acids	O
dazomet	Basamid	unknown	Z
DSMA	Methar	unknown	Z
MSMA	MSMA, etc.	unknown	Z
pelargonic acid	Scythe	unknown	Z

WEED REFERENCE

Sensitivity of turf species to herbicides

Sensitivity of turf species to pre-emergence herbicides. Modified from: UC IPM Pest Mgt Guidelines: ANR Publication 3365T

PREEMERGENCE												
TURF SPECIES	ATR	BEN	BES	FEN	DIT	ISO	ORY	OXA	PEN	PRD	PRO	SIM
bentgrasses	S	S	T		R		S	S	S	S	S	
bermudagrass, common	R	T	T	T	T	T	R	T	T	T	T	D
bermudagrass, hybrid	R	T	T	T	T	T	R	T	T	T	T	D
bluegrass, Kentucky	S	T	T	T	T	T	S	T	R	R	S	
dichondra	S	S	T				T	S	T	R	R	
fescue, fine	S	T	T		R		S	T	T	T	S	
fescue, tall	S	T	T	T	T	T	S	T	T	T	S	
kikuyugrass		T	T					R	R	T		
ryegrasses	S	T	T	T		T	S	R	R	T	S	
St. Augustinegrass	T	T	T			T	T	R			S	T
zoysiagrass	T	T	T			T	S	R	R	T	S	T

RATINGS LEGEND

S = sensitive R = relatively tolerant T = tolerant D = dormant turf only

PRODUCTS

ATR = atrazine (Drexel Atrazine)

BEN = benefin (Balan)

BES = bensulide (Presan)

DIT = dithiopyr (Dimension)

FEN = fenarimol

ISO = isoxaben (Gallery)

ORY = oryzalin (Surflan)

OXA = oxadiazon (Ronstar)

PEN = pendimethalin (PreM, Pendulum)

PRD = prodiamine (Barricade)

PRO = pronamide (Kerb)

SIM simazine

WEED REFERENCE

Sensitivity of turf species to post-emergence herbicides. Modified from: UC IPM Pest Mgt Guidelines: ANR Publication 3365T

POSTEMERGENCE																	
TURF SPECIES	ETH	QUI	CLO	DIC	DSM	FLU	GLY	HAL	SIM	MSM	PRO*	TRY	IMA	METR	CHL	METS	RIM
bentgrasses			T	R	R	S	S	T		S	S	S					
bermudagrass, common	D	R	T	T	T	S	S	T	D	T	T	R	R	R	T	T	T
bermudagrass, hybrid	D	R	T	T	T	R	S	T	D	T	T	S	R	R	T	T	T
bluegrass, Kentucky	T	T	T	T	T	S	S	T		R	S	T			T		
dichondra			T	S	R	T	S			S	R	S					
fescue, fine	R	R	T	T	T	T	S	T		T	S	T			R		
fescue, tall	T	T	T	T	T	S	S	T		T	S	T					
kikuyugrass				R	R	S	S			S		S					
ryegrasses	T	T	T	T	T	S	S	T		T	S	T					
St. Augustinegrass				S	S		S	T	R	S	S	S	T		R	R	
zoysiagrass		T	T	R	R	S	S	T	R	T	S	S	T		R	T	

RATINGS LEGEND

S = sensitive R = relatively tolerant T = tolerant D = dormant turf only

PRODUCTS

ATR = atrazine (Drexel Atrazine)

BEN = benefin (Balan)

BES = bensulide (Presan)

CHL = chlorsulfuron

CLO = clopyralid (Stinger, Lontrel)

DIC = dicamba (Banvel 4S)

DIT = dithiopyr (Dimension)

DSM = DSMA (Methar)

ETH = ethofumesate

FLU = fluazifop (Fusilade 2000)

GLY = glyphosate (Roundup)

HAL = halosulfuron (Manage)

IMA = imazaquin

ISO = isoxaben (Gallery)

METR = metribuzin

METS = metsulfuron

MSM = MSMA

NAP = napropamide (Devrinol)

ORY = oryzalin (Surflan)

OXA = oxadiazon (Ronstar)

PEN = pendimethalin (PreM, Pendulum)

PRD = prodiamine (Barricade)

PRO = pronamide (Kerb)

QUI = quinclorac

RIM = rimsulfuron

SIM = simazine

TRY = triclopyr (Turflon)