

2006 New England Guide to Weed Control in Turfgrass

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All pesticides listed in this publication are registered and cleared for suggested uses according to federal registrations and state laws and regulations in effect on the date of this publication: January, 2006.

The pesticides listed herein may be classified "for restricted use only" in accordance with federal and state regulations. Persons using "restricted use" pesticides must be certified in each state where they require licensing. Check with your Cooperative Extension agent regarding certification and licensing.

NOTICE: It is unlawful to use any pesticide for any purpose other than the registered use.

READ AND FOLLOW THE LABEL: User assumes all responsibilities for use inconsistent with the label on the product container.

WARNING: Pesticides are poisonous. Read and follow all directions and safety precautions on labels. Handle carefully and store in original labeled containers out of reach of children, pets, and livestock. Dispose of empty containers as required by your state regulations. Do not contaminate crops or water sources.

Trade names are used for identification. No product endorsement is implied, nor is discrimination intended against similar materials.

ENVIRONMENTAL CONSIDERATIONS

The application of herbicides is sometimes necessary as a component of a complete IPM system to maintain turf at an acceptable level. Some pesticides have the potential to leach through the soil to groundwater, and excessive movement of pesticides into groundwater can make the water unfit for use. However, pesticides applied to the soil are subject to physical, chemical, and biological processes that affect their movement through the soil and their potential for groundwater contamination. Pesticides applied to turf are further subject to interception by the turfgrass plants themselves, as well as by thatch.

Herbicide applications should be justified based on monitoring and threshold levels. Careful adherence to label directions, application rates, and pertinent laws and regulations can minimize the threat of groundwater contamination

I. Soil Characteristics

Soil texture plays a major role in herbicide performance and persistence. Soil organic matter can significantly influence herbicidal activity. Therefore, it is important to select the right herbicide based on your soil type and organic matter content. Chemicals tend to leach more readily in coarse textured soils with low organic matter content. In contrast, fine textured soils with high organic matter are highly adsorptive and therefore have low leaching potential.

II. Herbicide Characteristics

Some herbicides bind strongly (adsorb) to soils and therefore are not easily removed. Clay minerals and organic matter favor strong adsorption. Use soil analysis information on soil texture and organic matter content when selecting preemergence herbicides and application rates.

Herbicides that are highly soluble in water have increased leaching potential. However, leaching of an herbicide can be minimized by proper herbicide application rate, timing and method of application. Choose the right herbicide and rate for your situation.

Herbicide degradation by natural processes is highly dependent on both the herbicide class (chemistry) and environmental factors. Sunlight, temperature, soil pH, microbial activity, and other soil characteristics affect the breakdown of herbicides.

Some herbicides break down slowly, and therefore have greater potential for leaching. On the other hand, short-lived herbicides may be degraded before any leaching occurs. Choosing a short-lived herbicide when practical can minimize leaching potential. Microbial degradation occurs when fungi, bacteria and other soil microorganisms use herbicides as a food (energy) source. High organic matter along with other properties such as optimum moisture, aeration, temperature, and soil pH can enhance microbial degradation. In addition, chemical degradation of herbicides can occur by reaction with water, oxygen, and other chemicals.

In general, herbicides that are highly water-soluble, relatively persistent, and not readily adsorbed by soil have the greatest potential for leaching.

III. Water Table

Sites with high water tables may be vulnerable to contamination by pesticides and fertilizers due to the relatively short distance between the soil surface and groundwater. The presence of coarse textured soils on sites with high water tables further increases the potential for leaching.

Specific application information for each herbicide is contained in the herbicide label. Careful adherence to application and disposal directions, combined with proper equipment calibration, are the best methods of preventing groundwater contamination. Contact your state Cooperative Extension office for advice on appropriate herbicides for your situation.

IV. Thatch Layer

Thatch is composed of both living and partially decayed leaves, roots, rhizomes, and stolons. This layer of living and non-living materials accumulates between the layer of green vegetation and the soil. The thickness of this layer is dependent upon the turfgrass species, environmental conditions, and the management practices imposed. In a good growing environment, the rate of plant tissue accumulation often exceeds the rate of decay, resulting in the development of a moderate thatch layer. In general, a moderate thatch layer is beneficial in holding pesticides or nutrients, thereby minimizing leaching potential. Also, the organic matter in the thatch layer increases as leaves, stems, roots, and rhizomes decompose over time. This also helps in binding of pesticides and thereby reduces potential leaching of pesticides.

Studies conducted in Massachusetts, Pennsylvania, New York, Ohio, and Rhode Island have revealed that pesticides applied to turf do not move significantly further than the thatch layer.

CONTROL METHODS

Cultural Control

Effective weed management involves the use of sound cultural practices and the application of herbicides when necessary. Maintaining a dense, healthy stand of turfgrass is the best way to deter annual grass and broadleaf weed invasion and helps to crowd out existing weeds. To this end, proper mowing height and frequency, fertilization, and irrigation are part of a sound integrated weed control program and should be practiced throughout each growing season. Correct selection of turfgrass species and the accurate timing of applications of the proper amounts of balanced fertilizer will improve the chances of establishing strong, healthy turf.

When weeds are present it is critical that the turf manager accurately identify the weed species and understand the life cycle prior to selecting a control method. Knowledge of which weeds are present may provide information on poor site conditions. Correction of poor growing conditions is necessary to deter future weed encroachment.

Other cultural methods of weed control include removing clippings when seedheads of grassy weeds are present, and hand pulling weeds when they are not too numerous. Accurate scouting of weeds during periods of peak germination is also important, allowing control efforts to be aimed at weeds when they are youngest and most vulnerable.

Control of Annual Grasses

Timing is important for herbicide application. The best time for annual grass weed control is late April or early May in New England. The best approach is application of a preemergence crabgrass or annual grass control herbicide about two weeks

before annual grass seeds germinate. If you apply these herbicides after annual grasses appear above ground, the application may not be effective. Preemergence herbicides control germinating weeds and provide effective control of crabgrass and other annual grass weeds for several weeks or months, depending upon application rate and products. The effectiveness of these materials is based upon their ability to provide excellent weed control with no turf injury.

Control of emerged grass seedlings with postemergence herbicides can complement a sound weed management program. A primary postemergence herbicide for grass weed control in turfgrass is MSMA. This compound can injure turfgrass, especially when applied during hot weather. ACCLAIM EXTRA (fenoxaprop) is available for annual grass control. This herbicide offers a wider window of postemergence control than MSMA with less potential for turfgrass injury.

Control of Established Broadleaf Weeds

Two-way or three-way mixtures of herbicides containing 2,4-D are effective in controlling many established broadleaf weeds (Table 1). Also, there are several combinations that do not contain 2,4-D (Table 2). These mixed products give broad-spectrum broadleaf weed control. The best time to treat is early fall or mid-spring. The time of application of these treatments may vary depending on the species and their life cycles (Table 3). Avoid using these products during hot weather. Do not apply on sod within four weeks of transplanting.

Records: Keeping accurate records on scouting results, herbicides applied, application dates, weather conditions (temperatures, rainfall, etc.), application rates, and observation of control response will assist in next year's management strategies.

CHARACTERISTICS OF HERBICIDES

2, 4-D TYPE HERBICIDES

Examples of this class are 2, 4-D (Weedone), mecoprop (MCP) and dicamba (Banvel). These are generally applied as foliar sprays. They are readily absorbed by the foliage and usually distribute relatively well throughout the plant. They are selective herbicides. Selectivity is physiological in nature and these herbicides control only broadleaf plants and not grasses. General symptoms include growth regulator effects. The most obvious effects are twisting and downward curvature (epinasty) of the stems and leaves. Products such as Trimec (a mixture of 2,4-D, mecoprop, and dicamba) and Turflon D (a mixture of 2, 4-D and triclopyr) are widely used for controlling broadleaf weeds in established turfgrass (Table 1).

ACCLAIM EXTRA (fenoxaprop)

Fenoxaprop is recommended for postemergence control of annual grass weeds in turf. It is absorbed through the foliage and acts physiologically to selectively control annual grasses. Fenoxaprop does not control broadleaf weeds, and it has no preemergence activity. Drought stress may significantly reduce activity. Rate of use depends on the growth stage of annual grass weeds.

BANVEL (dicamba)

Dicamba is very similar to 2,4-D type herbicides. It is foliar applied and systemic in nature. Selectivity is physiological in nature and therefore dicamba controls only broadleaf plants and not grasses. Symptoms are very similar to 2,4-D induced symptoms. Drift to desired plants, particularly flowers, ornamentals, and other broadleaf plants could be a problem. Take necessary precautions to avoid drift during spraying. Dicamba leaches readily in soil.

BARRICADE (proflumicetone), PENDULUM (pendimethalin), TEAM PRO (trifluralin plus benefin), BALAN (benefin)

These herbicides are typically soil applied. They are mitotic (cell division) inhibitors and are primarily effective in inhibiting root growth of germinating seedlings. They are selective in controlling annual grass weeds in established turfgrass. These herbicides may break down in the soil by ultraviolet light and some are lost by volatilization (vapor loss). Therefore, these herbicides must be watered in. In general, herbicides in this class may persist for a relatively long period of time, resulting in season-long weed control. These herbicides are recommended for preemergence use in established turfgrass.

BASAGRAN (bentazon) *

Bentazon is a selective herbicide. It is a postemergence contact herbicide used for selective control of many broadleaf weeds and sedges (yellow nutsedge) in turfgrass. It inhibits photosynthesis in susceptible plants, resulting in yellowing and eventual death of plants. Symptoms occur within two to seven days after application. It is readily metabolized in tolerant plants. Bentazon has no activity in soil at postemergence rates. **Regulated in Zone II (Wellhead Protection) areas in Massachusetts.*

DACONATE (MSMA)

This herbicide is an arsenical. It is primarily a contact herbicide, and is strictly foliar applied with a surfactant. Symptoms include yellowing of foliage within seven days of treatment. MSMA is tightly bound to soil. It is recommended for crabgrass control in established turf.

DIMENSION (dithiopyr)

Dithiopyr is a selective preemergence herbicide primarily used for annual grass weed control in established turf. Dithiopyr also provides selective postemergence control of crabgrass and other grass seedlings. It enters plants through the roots and shoots. The major site of physiological activity is within developing plant tissues found in the roots and shoots of susceptible species. The inhibition of cell division is thought to be the mode of action. Dithiopyr is broken down in the soil by both chemical and microbial degradation. Very little vertical or lateral movement of dithiopyr occurs. Therefore, there is little chance of groundwater contamination when dithiopyr is used according to label directions.

DRIVE (quinclorac)

Quinclorac is used for postemergence control of annual grass weeds and several broadleaf weeds. It provides excellent control of clovers, black medic, common dandelion and speedwells. It is absorbed by foliage and roots, and translocated throughout the plant. The control symptoms exhibited by broadleaf weeds include leaf and stem curl or twisting, and chlorosis. Susceptible grasses demonstrate stunting and chlorosis, and gradual reddening followed by necrosis and death.

FINALE (glufosinate)

Glufosinate-ammonium is a nonselective herbicide primarily used to kill most broadleaf and grass plants. This foliar applied herbicide inhibits photosynthesis and plants die within 3 to 4 days after application. It has no residual soil activity. Glufosinate-ammonium degrades into the natural compounds carbon dioxide, nitrogen, and water. Turfgrass seeding can be done one day after application of glufosinate.

GALLERY (isoxaben)

Isoxaben is applied preemergence in established turf. It controls broadleaf weeds by inhibiting root growth of germinating

seedlings. It requires soil moisture for its activity. Symptoms from isoxaben are similar to symptoms caused by dinitroaniline herbicides such as pendimethalin and proflumicetone. Isoxaben is strongly adsorbed to soil. It persists 50 to 120 days in the soil.

MANAGE (halosulfuron)

Halosulfuron is a selective foliar applied herbicide used for nutsedge control in turfgrass. It affects meristematic (areas of new growth) regions of plants. Halosulfuron inhibits the production of three essential amino acids used in protein synthesis. The lack of protein production results in death of the plant. Halosulfuron is degraded by microbial activity in the soil and has a low potential for leaching.

PROGRASS (ethofumesate)

Ethofumesate is a selective herbicide for use on established perennial ryegrass, Kentucky bluegrass, creeping bentgrass and turf-type fall fescue for the control of annual bluegrass and several broadleaf weeds. Ethofumesate has both preemergence and early (two-leaf stage) postemergence activity. It is readily absorbed by emerging shoots and roots. Soil persistence is between 2 to 5 weeks. Leaching potential is low. It is recommended for professional use only on golf courses, sod farms, parks, cemeteries, and lawns of commercial establishments.

RONSTAR (oxadiazon)

Oxadiazon is a preemergence herbicide that controls many annual grass and broadleaf weeds by killing the germinating seeds. Oxadiazon is strongly adsorbed by soil colloids and therefore very little leaching occurs. It is recommended for use in established turf.

ROUNDUP (glyphosate)

Glyphosate is a nonselective herbicide available as Roundup (isopropylamine salt), Touchdown (trimethylsulfonium salt) and several other formulations. It is strictly used as a foliar spray. It is systemic in nature and distributes well throughout plants. It is very effective for perennial weeds because of its translocation characteristics. It inhibits plant growth by inhibition of amino acid synthesis. Glyphosate rapidly reacts with and is inactivated by most soils. Visible symptoms generally occur on annual plants in two to four days and on perennial plants in seven to ten days. Symptoms on the shoots include yellowing and wilting which progresses from the new to the older tissue. It is commonly used for turf renovation.

SPEED ZONE (carfentrazone + 2,4-D + MCPP + dicamba) or POWER ZONE (carfentrazone + MCPA + MCPP + dicamba)

Carfentrazone is recommended for postemergence control of many of the broadleaf weeds in established turf as four-way combinations such as Speed Zone and Power Zone. It is a contact herbicide and controls weeds by disrupting cell membranes. Weeds treated with carfentrazone become necrotic and die shortly after treatment. Initial symptoms are observed within hours and death occurs within a few days. Carfentrazone is non-persistent in the soil as it is degraded by microbial activity and by chemical hydrolysis.

TUPERSAN (siduron)

Siduron is a selective preemergence herbicide. It is soil applied and is absorbed through roots. Siduron is a root growth inhibitor. Symptoms include slow death of young seedling weeds. It is used for selective control of crabgrass and other annual grass weeds. It is the only herbicide that can be used safely in newly seeded turfgrass.

PROBLEM/ HERBICIDE	ACTIVE INGREDIENT PER ACRE	COMMERCIAL PRODUCT PER ACRE (PER 1000 SQ. FT.)	COMMENTS
Common name (TRADE NAME)			

I. CRABGRASSES AND OTHER ANNUAL GRASSES

Apply herbicides in late April or early May prior to the time crabgrass seeds start to germinate. Water in the material if no rain occurs within a week of application. Some control of other annual grasses can be expected. Except for TUPERSAN, do not use these materials on seedling turfgrass or in soil where seed or sod will be planted within approximately four months (exact time frame depends on the product and application rates). **Please refer to product labels for specific timing and use on different grass species.**

A. Preemergence

benefin (BALAN 2.5G)	1.5 - 2 lbs	80 - 120 lbs (1.5 - 2 lbs)	May cause injury to bentgrass. Fair to good crabgrass control.
benefin plus trifluralin (TEAM PRO)	1.5 - 3 lbs	75 - 150 lbs (1.75 - 3.5 lbs)	May injure fine fescue at higher rates. Better to use in a split application.
dithiopyr (DIMENSION IE)	0.25 - 0.5 lbs	1 - 2 qts. (0.75 - 1.5 fl. oz.)	Use only on established turfgrass. Good seasonal control. Will also control emerged crabgrass in the 1-3 leaf stage. May injure fine fescue.
oxadiazon (RONSTAR 2G)	2 - 3 lbs	100 - 150 lbs (2.25 - 3.37 lbs)	For use in Kentucky bluegrass turf. Effective for goosegrass control.
prodiamine (BARRICADE 65WG)	0.65 - 0.75 lbs	1.00 - 1.15 lbs (0.37 - 0.4 oz.)	Prodiamine is a preemergence selective herbicide for annual grass weed control established turf. Tall fescue, Kentucky bluegrass and perennial ryegrass are most tolerant, followed by creeping red fescue and bentgrass (min. 1/2" height).
siduron (TUPERSAN 50W)	2 - 6 lbs	4 - 12 lbs (1.5 - 4.5 oz.)	Safe for use at time of seeding turfgrasses, on seedling turf, and on sod to be harvested and transplanted.
pendimethalin (PENDULUM 60WG)	1.5 - 2 lbs	2.5 - 3.33 lbs (0.9 - 1.2 oz.)	Good seasonal control. Will also control spurge, oxalis, chickweed and other broadleaf weeds.

B. Postemergence

MSMA (DACONATE 6)	1.5 - 2 lbs	2.0 - 2.67 pts (0.75 - 1.0 fl. oz.)	Apply as soon as crabgrass is noticed. Two or three applications at 7- to 14-day intervals are necessary. Some turf discoloration is likely.
fenoxaprop (ACCLAIM EXTRA 0.57)	0.02 - 0.12 lbs	10 - 32 fl. oz. (0.08 - 0.64 fl. oz.)	Excellent crabgrass control with one application. Rate is dependent on crabgrass growth stage.
quinclorac (DRIVE 75 DF)	0.75 lbs	1.0 lb (0.36 oz.)	Requires addition of crop oil concentrate. Good control of some broadleaf weeds such as white clover.

PROBLEM/ HERBICIDE	ACTIVE INGREDIENT PER ACRE	COMMERCIAL PRODUCT PER ACRE (PER 1000 SQ. FT.)	COMMENTS
Common name (TRADE NAME)			

II. BROADLEAF WEEDS

A. Postemergence

2,4-D combined with one or more of the following: dicamba, 2,4-DP, MCPP or triclopyr

(See Tables 1, 2, and 3)

Gives broad spectrum broadleaf weed control. Best time to treat is in early fall or mid spring. Avoid using during hot weather. Do not apply on sod within four weeks of transplanting. Products containing 20% or more 2,4-D are RESTRICTED USE in Massachusetts.

B. Prememergence

isoxaben
(GALLERY 75 DF)

0.5 - 1.0 lbs

0.66-1.33 lbs
(0.25-0.5 oz.)

Gives preemergence control of many broadleaf weeds and partial control of some annual grasses. Apply in late summer - early fall or early spring prior to germination of target species. Gives season long control. Safe on most turfgrasses.

III. ANNUAL BLUEGRASS (*Poa annua*)

bensulide
(LESCOSAN 4E)

7.5 - 10 lbs

7.5 - 10 qts.
(5.5 - 7.3 fl. oz.)

Apply in late March and again in early August to prevent infestation of *Poa annua* from seed. Use only where killing of *Poa annua* will not create bare areas. Several annual applications may be necessary before control is satisfactory.

ethofumesate
(PROGRASS 1.5E)

0.5 - 0.75 lbs

0.33 - 0.5 gal
(1.0 - 1.5 fl. oz.)

Used mainly as a postemergence treatment, but also has some preemergence activity. Requires 2 fall applications at 28-day intervals beginning in September or October and ending just before freeze-up. A single spring application may also be needed. Acts quite slowly, so results of fall applications may not be seen until spring.

IV. YELLOW NUTSEDGE

MSMA
(DACONATE 6)

2 lbs

2.67 pts
(1 fl. oz.)

Two or three applications spaced about 10 days apart are necessary. Turf discoloration is likely.

halosulfuron
(MANAGE 75 WG)

0.031 - 0.062 lbs

1.3 oz
(0.9 g)

Provides excellent control. The product is translocated to all attached parts of the nutsedge plant. Best to apply when nutsedge is in 3-8 leaf stage. Requires use of a non-ionic surfactant. Most cool-season grasses show excellent tolerance.

PROBLEM/ HERBICIDE	ACTIVE INGREDIENT PER ACRE	COMMERCIAL PRODUCT PER ACRE (PER 1000 SQ. FT.)	COMMENTS
Common name (TRADE NAME)			

V. MOSS

copper sulfate		3 - 5 oz. in 5 gal water per 1,000 sq. ft.	Chemical control of moss is generally temporary and the problem will persist unless growing conditions are improved.
iron sulfate		2 - 3 oz. in 5 gal water per 1,000 sq. ft.	Treatment of dormant moss will not be effective. Do not water in.

VI. COMPLETE PLANT KILL

glufosinate-ammonium (FINALE 1L)	0.75 - 1.5 lbs	3 - 6 qts (2.2 - 4.4 fl. oz.)	For nonselective weed control of emerged weeds in non-turf areas. Limited translocation and rapid control are the advantages.
glyphosate (GLYPHOSATE PRO 4L)	1 - 2 lbs	1 - 2 qts (0.75 - 1.5 fl. oz.)	Useful for turf renovation. Seedings can be safely made one day after the treatment. A second application may be required. Effects are not visible for 7-10 days. Best results are obtained on unmown, matured plants
diquat (REWARD 2.OL)	0.25 - 1 lbs	1 - 4 pts (0.37 - 1.5 fl. oz.)	Apply in 50-100 gallons of water per acre. Use 1/2 pint of X-77 or CHARGER per 100 gallons of water to improve wetting of foliage. May not provide complete kill of perennial weeds such as dandelion, clover, or quackgrass.
pelargonic acid (SCYTHE 4.2E)	3 - 6 gal (13 - 26 lbs)	5 - 10 gal (1 - 2 pts.)	Apply in minimum of 100 gallons of water per acre. Active ingredient is a naturally occurring fatty acid which acts very rapidly by rupturing plant cell membranes. Works best on annual weeds less than 6 inches tall. It has no systemic activity.

Table 1: Trade name, common, name, formulation, and use rates of herbicide combinations containing 2,4-D for broadleaf weed control in turf.

Trade Name	Common Name	Formulation Pounds/Gallon	Recommended fl. oz. per 1000 sq. ft.	Use Rate Pints/Acre
Bentgrass Selective	2,4-D + MCPP + dicamba	2.2 S	1.0 to 1.25	3 to 4
Millennium Ultra	2,4-D + clopyralid + dicamba	3.75 S	0.75 to 1.1	2 to 3
Speed Zone	2,4-D + carfentrazone + MCPP + dicamba	2.2 EC	1.1 to 1.8	3 to 5
Trimec (Classic)	2,4-D + MCPP + dicamba	3.32 S	1.2 to 1.5	3.25 to 4
Turflon D	2,4-D + triclopyr	3.0 EC	1.1 to 1.5	3 to 4
Triplet	2,4-D + MCPP + dicamba	3.96 S	1.0 to 1.25	3 to 4
Weedone DPC	2,4-D + 2,4-DP	3.7 EC	1.0 to 1.25	3 to 4
Weedstroy triamine	2,4-D + MCPP + dicamba	3.9 S	0.7 to 1.3	3 to 4

Table 2: Trade name, common, name, formulation, and use rates of herbicide combinations without 2,4-D for broadleaf weed control in turf.

Trade Name	Common Name	Formulation Pounds/Gallon	Recommended fl. oz. per 1000 sq. ft.	Use Rate Pints/Acre
Confront	Triclopyr + clopyralid	3.0 EC	0.37	1 to 2
Power Zone	carfentrazone + MCPA + MCPP + dicamba	2.91 EC	1.5 to 2.2	4 to 6
Trimec Encore	MCPA + MCPP + dicamba	3.75 S	1.2 to 1.5	3 to 4
Weedestroy MCPP-4	MCPP	3.97 S	1 to 1.5	2.25

Table 3: Common turf weeds, life cycles, suggested control materials, and timing.

Weed	Life Cycle ¹	Recommended Herbicide	Time of Application
Black medic	A,B,P	Dicamba, MCPP, TD ² , CF ³ , or TM ⁵	Early spring
Carrot, wild	B	2,4-D, TD, or TM	Spring
Chickweed, common	WA	Dicamba, MCPP, TD, MU ⁴ , CF, or TM	Spring or fall
Chickweed, mouse-ear	P	Dicamba, MCPP, TD, MU, CF, or TM	Fall or Spring
Chicory	P	2,4-D, TD, or TM	Spring
Cinquefoil	P	2,4-D, dicamba, TD, or TM	Spring or fall
Clover, hop	P	Dicamba, MCPP, TD, CF, or MU	Spring or fall
Clover, white	P	Dicamba, MCPP, TD, MU, CF, or TM	Spring or fall
Dandelion, common	P	2,4-D, TD, MU, CF, or TM	Fall or spring
Dock, curly	P	2,4-D, dicamba, CF, or TM	Fall or spring
Garlic, wild	P	2,4-D, dicamba, or TM	Late fall or early spring
Hawkweed(s)	P	2,4-D, dicamba, CF, or TM	Fall or early spring
Heal all	P	2,4-D, TM, or MU	Spring
Henbit	WA	TD, CF, MU, or TM	Spring
Ivy, ground	P	MCPP, TD or TM	Fall*
Knotweed, prostrate	A	Dicamba, MU, or TM	Spring to early summer
Oxalis	P	TD, CF, MU, or TM	Spring or fall
Pearlwort	P	Dicamba or MCPP	Spring or fall
Plantain, buckhorn	P	2,4-D, CF, MU, or TM	Fall or spring
Plantain, broadleaf	P	2,4-D, TD, CF, MU, TM	Fall or spring
Purslane, common	A	2,4-D or TM	Summer
Red sorrel	P	Dicamba, CF, or TM	Spring, summer, or fall
Sow thistle	A	2,4-D, dicamba, or TD	Fall
Speedwell, corn	WA	TD	Spring
Speedwell, purslane	WA	TD	Spring
Spurge, prostrate	A	TD or TM	Spring or summer
Spurry, corn	A	Dicamba	Fall
Strawberry, wild	P	TD or TM	Fall
Thistle, Canada	P	dicamba, TD, CF, or MU	Spring
Violet	P	Dicamba, TD, or CF	Spring*

¹A = Annual, B = Biennial, P = Perennial, and WA = Winter Annual.

²TD = Turflon D (a commercial mixture of 2,4-D and triclopyr). ³CF = Confront (a commercial mixture of triclopyr and clopyralid)

⁴MU = Millennium Ultra (a commercial mixture of 2,4-D, clopyralid and dicamba). ⁵TM = Trimec (a commercial mixture of 2,4-D, MCPP and dicamba)

*Repeat applications may be required for effective control

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