Bulletin No. 723

Herbicides for Lawn Weed Control

Robert H. Callihan, Francis E. Northam, Susan M. Bell and Daniel Kidder

Chemical control of persistent weeds in lawns requires less energy than hand weeding and in most cases will remain effective longer. Nevertheless, even highly trained weed control specialists rely on prevention and good cultural practices as their main line of defense against weeds and use herbicides only as a backup.

Nearly every lawn care practice plays a role in weed control. Neglecting any one of them can result in unnecessary weeds. For information on lawn care and nonchemical weed control practices, see University of Idaho CIS 888, *Weed Control in Lawns,* and EXP 565, *Establishing and Maintaining Idaho Lawns.*

Lawn herbicides sold in garden stores can successfully control many lawn weeds. However, herbicides should be used only by trained or experienced people or by people under their supervision. Incorrect use of any herbicide can kill lawn grass. Excessive doses that do not kill grass can suppress lawn growth and lead to more weeds.

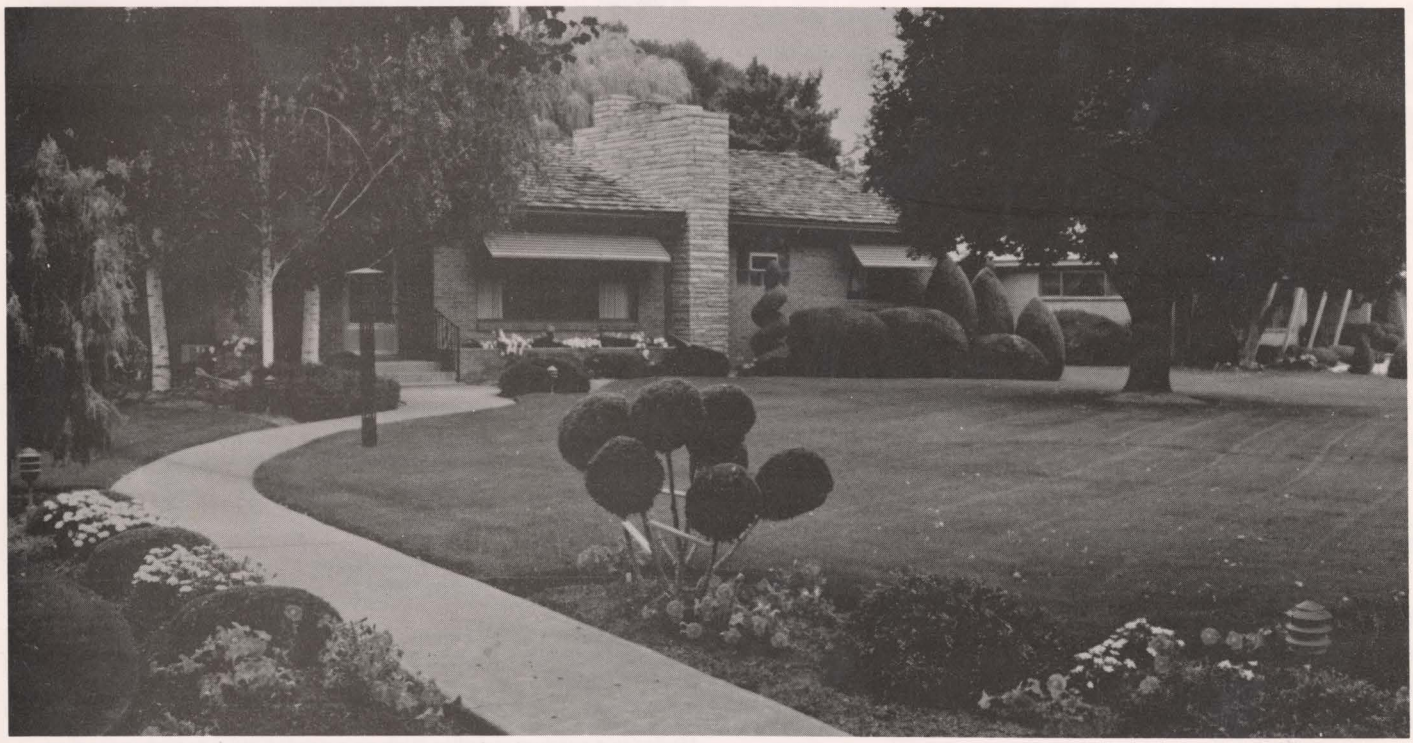
Bentgrasses are more susceptible to herbicide injury than bluegrasses, perennial ryegrasses and tall fescues. Fine fescues are intermediate in susceptibility. Check herbicide container labels for cautions.

The types of herbicides

Herbicides are pesticides used to kill plants without harming other organisms. **Nonselective herbicides** kill all or nearly all kinds of plants in the treated area. **Selective herbicides** may kill only broadleaf plants or only grasses. Some may kill only certain species of broadleaf plants or grasses. Selectivity is affected by species tolerance as well as by herbicide rate, timing and placement; weather; and soil type. Herbicides at high rates lose their selectivity.

Contact herbicides such as cacodylic acid affect only the plant parts sprayed. Annual and biennial weeds can be killed or strongly suppressed with a contact herbicide. Perennials will survive because the herbicide kills only the foliage.

Translocated herbicides enter the plant and move within it to a site where they cause injury or death. Herbicides such as 2,4-D and glyphosate are applied to foliage and move into the roots. Some translocated herbicides are applied to soil and enter the plant through the roots. Translocated herbicides, properly selected and applied, will move throughout the plant, killing both above- and below-ground parts.



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Soil-applied herbicides such as DCPA and siduron kill seedlings as they start to grow. Soil-applied herbicides must be mixed into the surface layer of soil where weed seeds germinate. Instructions for proper incorporation methods appear on the herbicide label.

Soil type and organic matter content are important factors in determining effective, safe rates of soil-applied herbicides. Know your soil type and check label directions before purchasing herbicides. The residual life of a herbicide in the soil varies from a few days to several years depending on the herbicide, so be particularly careful when selecting and using one.

For convenience, herbicide labels may refer to **preemergence** use, which means the herbicide is applied to the soil before weeds have sprouted and emerged above the soil surface. **Postemergence** use means the herbicide is applied after the weeds have emerged, usually so that the herbicide can be absorbed by the leaves.

Mixtures of herbicides are commonly available to homeowners. These contain two or more active ingredients that broaden the spectrum of weeds controlled by a single treatment. Other advantages of mixtures include reduced rates of each component herbicide and increased safety with respect to desirable grasses. Proportions of the components of commercial mixtures often are adjusted to increase the mixture's safety for use on specific grasses such as bentgrass.

Examine the labels of mixtures carefully to find out the strength or concentration of various active ingredients. Active ingredients that make up less than 1 percent of the product's contents are probably too dilute to adequately control weeds except in ready-to-spray products that require no dilution. Don't mix herbicides together unless their label instructions allow mixing.

Herbicide name

All herbicides have a company trade name as well as a chemical name and a common name that specify the herbicide's active ingredient (Table 1). The herbicide label identifies the trade name as well as the kind and amount of active ingredient (ai) or acid equivalent (ae). The amount will be given in percent by weight and/or in pounds ai or ae per unit of commercial product.

Herbicide formulation

Herbicide formulation is the physical-chemical form of the herbicide as purchased. **Solutions** are liquids that contain herbicides dissolved in water. When they are mixed the liquid remains clear and does not need to be agitated. **Soluble powders** (SP) and **dry solubles** (DS) dissolve in water and form solutions. **Emulsifiable concentrates** (EC) are soluble in oil. When mixed with water they form milky suspensions of oil in water. **Wettable powders** (WP) are insoluble in water. When mixed with water they form suspensions of particles that settle out if not agitated frequently. **Granules** (G) and **pellets** (P) are used dry.

Herbicide application equipment

Use equipment designed specifically for pesticide application, and calibrate spray equipment for the desired application rate. For calibration instructions, see Univer-

Table 1. Lawn herbicide names and formulations.

Common name	Examples of trade names[1]	Type[2]	Formulation[3]	Professional use only
AMA	Cleary's Super Methar	F	L	X
	Super Dal-E-Rad	F	L	X
dazomet	Basamid	Fum	G	
bensulide	Betamec-4, Prefar	S	L	
	Betasan	F	L,G	
benefin	Balan	S	L	
bentazon	Basagran	F	L	X
bromoxynil	Nu-Lawn Weedar, Buctril	F	L	X
cacodylic acid	Kack, Phytar 560, Montar	F	L	
chloropicrin plus 1,3-dichloropropene	Telone C-17	Fum	L	X
cryptocidal soap	De-Moss	F	L	
dalapon	Dowpon M	F	WP	
DCPA	Dacthal	S	WP	
	Garden Weed-Preventer	S	G	
dicamba	Banvel	F	L	X
DSMA	Weed-E-Rod 360, Methar 30	F	L	X
endothall	Endothall Turf Herbicide	F	L	X
ethofumesate	Prograss	S	L	X
fenoxaprop-ethyl	Acclaim 1 EC	F	L	
ferrous ammonium sulfate		F	DS	
ferric sulfate		F	DS	
ferrous sulfate		F	DS	
glyphosate	Kleenup, Roundup, Rattler	F	L	
isoxaben	Gallery	S	DF	
MAA	Crabgrass Killer, others	F	L	
MCPA	Chiptox	F	L	
MCPP	Many trade names	F	L	
MCPP + 2,4-D	Many trade names	F	L	
MSMA	Many trade names	F	L	
metam-sodium	Vapam, others	Fum	L	X
oxadiazon	Chipco Ronstar G	S	G	X
	Ronstar	S	WP	X
pendimethalin	Pre-M	S	G	
siduron	Tupersan	S	WP	
2,4-D	Many trade names	F	L	
triclopyr	Turflon Ester	F	L	
triclopyr + clopyralid	Confront	F	L	
triclopyr + 2,4-D	Turflon D, Turflon II	F	L	X
2,4-D + MCPP + dicamba	Many trade names	F	L	

[1]Refer to a product supplier such as a garden store for other products.
[2]S = applied to soil; F = applied to foliage; Fum = soil fumigant.
[3]G = granular; L = liquid; WP = wettable powder; DF = dry flowable; DS = dry soluble; P = pellet.

sity of Idaho CIS 792, *Calibration of Lawn and Garden Pesticide and Fertilizer Applicators for Homeowners.*

Keep equipment clean. Do not allow a herbicide to remain in the sprayer more than 4 hours because it may settle or decompose. Empty and rinse the sprayer with clean water thoroughly after each use. Dispose of the rinse by spraying it on the treated area.

Before using the sprayer for other pesticides, wash it with a detergent, then soak it in a solution of ammonia (2½ tablespoons of household ammonia per gallon of water) or commercial neutralizer such as Nutra-Sol. To avoid accidental herbicide injury to desirable plants, use your herbicide sprayer for herbicides only.

Personal safety with herbicides

Lawn and garden herbicides have low toxicity to humans and animals. Like other consumer chemicals such as gasoline and cleaning agents, herbicides are safe to use when instructions on the label are followed. They can be harmful however if taken internally, and even though a herbicide may not be labelled dangerous, excessive exposure can cause skin irritation or illness.

Follow the following safety precautions:

- Avoid herbicide contact with mouth, skin or eyes. After using a herbicide, wash your hands with soap and water.
- Do not smoke, drink or eat while applying herbicides.
- If concentrated (undiluted) herbicides spill on the skin, wash immediately with soap and water.
- Wash clothing that has been contaminated with herbicides before wearing it again. If a concentrated herbicide spills on clothing, destroy the clothing. Wash herbicide contaminated clothing separately. For more information, see University of Idaho CIS 781, *Laundering Pesticide Contaminated Clothing.*

Herbicide storage and disposal

Herbicides for farm and industrial use are packaged in large quantities of concentrated product. Herbicides for homeowners are sold in smaller packages and often in more dilute forms for economy, convenience and safety.

Store all herbicides in their original containers in a locked storage area where children cannot reach them. Don't buy more than you will use in one season. When herbicides are stored over winter, they may freeze or decompose or the container may break.

Mix only the amount of chemical needed for a single job. Do not pour unused herbicide or sprayer rinse water down the drain, into street gutters or into irrigation or drainage ditches. Instead, use them up in areas of labeled use. All lawn herbicides discussed in this bulletin are decomposed by sunlight, soil microorganisms and natural chemical reactions.

Using herbicides

For a guide to herbicide selection for treatment of common lawn weeds, see Table 2. If you do not have the equipment, skills and experience to apply these herbicides precisely, do not attempt to use them. If you are a beginner, get an experienced person with an applicator's license to teach and advise you.

Before selecting a herbicide, read the label and ask the seller, your county Extension agricultural agent or other licensed consultant to answer your questions. Understand how to use the herbicide, what the target weed species are, what their life cycles are and how lawn grasses tolerate the herbicide. Before handling a herbicide, consult the label again to ensure you are using it correctly.

Herbicides should not be allowed to contact any part of a desirable nontarget plant (including roots, stems and branches) because serious injury may result. Avoid applying lawn herbicides when air currents may carry spray mist to ornamentals or gardens. Spray on calm days and keep spray pressure below 30 pounds per square inch to minimize drift to desirable plants.

If herbicide spray accidentally contacts desirable plants, wash it off immediately. Don't apply herbicides to soil that may wash into the root zone of sensitive plants with irrigation water or heavy rain. The directions for some herbicides prohibit use when temperatures are above 80°F because they can vaporize or drift to nontarget plants.

Herbicides for broadleaf weeds

Broadleaf weeds differ in their susceptibilities to herbicides (Table 3). Broadleaf herbicides discussed here are harmful to many garden plants. Some plants such as tomatoes, beans, potatoes, lettuce and grapes are extremely sensitive to broadleaf herbicides.

Herbicides for annual grasses

Grass weeds differ in their susceptibilities to herbicides (Table 4).

Annual bluegrass

Annual bluegrass is the most difficult weed to contend with in Idaho lawns for two primary reasons. First, annual bluegrass in irrigated lawns can behave as a perennial and tolerate preemergence herbicides. Second, annual bluegrass seed is capable of germinating nearly year-round so it is impossible for a single treatment to control all germinating seeds.

Where mature annual bluegrass plants are normally killed by drought or cold winter temperatures, repeated applications of preemergence herbicides can be effective (Tables 2 and 4). A typical sequence of treatments begins with an application in late winter or early spring after mature plants have died due to cold winter temperatures or in late summer after they have died from drought. Subse-

Table 2. Which herbicide to use?

Weed species and lawn conditions	Herbicide common name (Be sure the brand you buy lists the weed and situation)	Comments (Read the label for directions)
BROADLEAF WEEDS		
Certain seedling broadleaf annuals (see label) in seedling lawns.	bromoxynil	Apply as a foliar spray when weeds are in the 3- to 4-leaf stage and after grass has emerged.
Many broadleaf weeds; see the herbicide label.	2,4-D	This controls more kinds of broadleaf weeds than most herbicides and is normally among the lowest priced herbicides for broadleaf lawn weeds. It may be applied several times during the year. It will not control all broadleaf weeds so it also is available in mixtures with other herbicides. 2,4-D is absorbed primarily by leaves but also can be absorbed by roots. It may injure bentgrass if applied at maximum labelled rates or during environmental stress.
Black medic, bull thistle (biennial), chickweed, clover, dandelions, ground ivy, healall, knotweed, mustards, oxalis (yellow woodsorrel), plaintains and wild violet in established lawns.	2,4-D + triclopyr	Apply as a spray when weeds are growing vigorously. September application will reduce infestation the following year. Usually, two treatments per year are enough. Make the second application in early summer. Avoid spraying ornamentals. Mixture may injure bentgrass lawns; check the label for bentgrass sensitivity.
Black medic, buttercups, chickweeds, clovers, dandelions, field bindweed, ground ivy, henbit, mallow, oxalis, plantains, poison ivy, prostrate spurge, sowthistles and yarrow in established lawns.	triclopyr, commercially prepared mix of 2,4-D + MCPP + dicamba	Apply anytime during the growing season. Results are best when weeds are growing vigorously. Avoid contact with all desirable trees, shrubs and garden plants. Do not apply dicamba if the temperature on the day of application is expected to exceed 85°F.
Speedwells, annual spurges, common chickweed, prostrate knotweed and purslane in established lawns.	DCPA	Kills only germinating weeds. Apply in early spring before the weeds germinate. Repeat applications are acceptable.
Chickweeds, docks, black medic, common yarrow, speedwells, English daisy and clovers in established lawns.	dicamba, MCPP, triclopyr	Apply when weeds are growing vigorously. More than one application per year is usually required. Avoid applying an overdose (above label rates) or contacting ornamentals. Do not use dicamba near the root zones of trees and shrubs. The root zone may be twice the diameter of the top. Do not apply dicamba if the temperature on the day of application is expected to exceed 85°F. MCPP is less effective when used alone than when mixed with 2,4-D or dicamba.
Dandelion, lambsquarters, mustards, pigweeds, shepherdspurse and Canada thistle in established lawns.	MCPA	Chemically similar to 2,4-D. Can injure bentgrass; see the label for details.
A wide range of broadleaf annual weeds.	isoxaben	Must be applied before the weeds germinate. Will not control perennials.
Certain broadleaf weeds in perennial ornamentals.	napropamide, oryzalin, oxadiazon	Apply in early spring before weed seed germination. Oxadiazon may be used only on Kentucky bluegrass and perennial ryegrass lawns. Apply only when grass foliage is dry.
GRASSES		
Annual grasses (except annual bluegrass) in newly seeded lawns.	siduron	
Crabgrass and certain other annual grasses (depending on label) in established lawns.	DCPA, benefin, bensulide, siduron, oxadiazon	Apply early in spring (March or April) before crabgrass seed germinates. Accurate, uniform coverage is essential. Avoid overlapping with spreader. DCPA may injure fine fescues.

Table 2. (cont'd). Which herbicide to use?

Weed species and lawn conditions	Herbicide common name (Be sure the brand you buy lists the weed and situation)	Comments (Read the label for directions)
GRASSES (cont'd)		
Emerged crabgrass in established lawns.	MSMA, AMA, DSMA	Apply when crabgrass is in the 5-leaf to flowering stages. Repeat applications are usually necessary. Soil should be moist but not saturated during treatment. Injury to lawn grass will occur, but the grass will recover.
Barnyardgrass, hairy crabgrass, foxtail, (*Setaria* spp.), smooth crabgrass and witchgrass in Kentucky bluegrass, fine fescue, tall fescue or perennial ryegrass lawns.	fenoxaprop-ethyl	Apply when weeds are small and actively growing. Rainfall or irrigation within 1 hour of application may reduce control. Yellowing of weeds is usually evident 4 to 10 days after treatment, but control will take 12 to 21 days.
Barnyardgrass, hairy crabgrass, foxtail, (*Setaria* spp.), smooth crabgrass and witchgrass in Kentucky bluegrass, fine fescue, tall fescue or perennial ryegrass lawns.	ethofumesate, pendimethalin	Apply before the weeds germinate. Rain or irrigation after application is necessary.
Quackgrass in established lawns.	dalapon, glyphosate	These herbicides will kill lawn grass as well as quackgrass. Use for lawn renovation. Apply when grass is growing vigorously and several days after mowing.
Annual bluegrass in established lawns.	benefin, bensulide, oxadiazon, DCPA, pendimethalin, ethofumesate	Apply in early spring before the annual bluegrass seeds germinate. Repeat applications are normally necessary for season-long control. Benefin must be watered in quickly to avoid decomposition by sunlight and may injure bentgrass. DCPA may injure fine fescues and bentgrass; check the label. Oxadiazon may be used only on Kentucky bluegrass and perennial ryegrass lawns. Apply only when grass foliage is dry.
Annual bluegrass in established lawns.	endothall	Apply to emerged annual bluegrass. Repeat applications may be necessary.
Weedy clump grasses such as tall fescue in lawns.	dalapon, glyphosate	Use for spot treatment only when grass is growing vigorously. Resod or reseed where clump grasses are killed.
Some annual grasses, including annual bluegrass and crabgrass in established lawns.	isoxaben	Must be applied before the weeds germinate; will not control perennials.
Annual grasses in perennial ornamentals.	napropamide, oryzalin, oxadiazon	Apply in early spring before weed seed germination. Oxadiazon may be used only on Kentucky bluegrass and perennial ryegrass lawns. Apply only when grass foliage is dry.
GRASSLIKE SPECIES		
Yellow nutsedge in established lawns.	bentazon	Apply to actively growing yellow nutsedge under good soil moisture conditions. Do not mow 3 to 5 days before or after application. Repeat applications may be necessary.
MOSS		
Lawn moss in established lawns.	soluble iron compounds, cryptocidal soaps	Repeated applications over 3 or more years may be necessary.
LAWN RENOVATION		
Lawn grass destruction for renovating old, weedy lawns or changing grass type.	glyphosate	Repeat application each time new growth appears until no plants appear for 6 weeks under warm, moist conditions.

Note: Generic common names are used as a guide only; you must verify that the label permits the intended use.

quent applications at 3-month intervals and reduced rates maintain herbicide activity in the soil to prevent weed seed germination.

The postemergence herbicide endothall is effective for controlling annual bluegrass if used in combination with preemergence herbicides. Repeated applications of endothall are usually necessary.

Crabgrass, barnyardgrass, foxtails, longspine sandbur and other warm-season annual grasses

Positively identify weedy annual grasses before treating them in order to avoid wasting time and chemicals treating perennial grasses or nonsusceptible annuals. Contact your county Extension office for weed identification.

Preemergence control — Preemergence herbicides are effective for controlling crabgrass, barnyardgrass and foxtails if they are applied before these grasses germinate (Tables 2 and 4). In areas where annual grasses are problems every year, apply chemicals when soil temperatures reach 50° to 55°F, the average temperature necessary for germination of these weedy grasses. Watch the yellow forsythia bushes, which bloom at about this time. Follow all preemergence herbicide applications with watering to wash the chemicals into the surface soil where germination occurs. To avoid disturbing the herbicide in the soil, dethatch before making the preemergence herbicide application. Once you observe these weedy grasses, it is too late for preemergence control that season.

Postemergence control — Annual grasses are difficult to control once they have infested turf and produced a crop of seed. Selective postemergence control is easier to achieve when the weeds are small (not larger than the 5-leaf stage). Only organic arsenical herbicides (MSMA, DSMA,

Table 3. Susceptibilities of some broadleaf weeds to selective postemergence lawn herbicides.

Common name	Latin name	2,4-D	dicamba	MCPP	MCPA	bromoxynil	DCPA	triclopyr
PERENNIAL WEEDS								
bindweed, field	*Convolvulus arvensis*	S-I	S	I	—	R	R	—
buttercup, creeping	*Ranunculus repens*	S-I	S-I	I	I	R	R	—
chickweed, mouseear	*Cerastium vulgatum*	I-R	S	S-I	—	—	R	—
clover, white	*Trifolium repens*	I	S	S-I	I	—	R	S
daisy, English	*Bellis perennis*	R	S	I	—	R	R	—
daisy, oxeye	*Chrysanthemum leucanthemum*	I	I	I	—	R	R	—
dandelion, common	*Taraxacum officinale*	S	S	S-I	S-I	R	R	S
dandelion, false	*Hypochoeris radicata*	S	I	R	—	R	R	—
healall	*Prunella vulgaris*	S-I	S	S-I	—	—	—	—
ivy, ground	*Glechoma hederacea*	I-R	S-I	I	—	R	R	S
plantain, broadleaf	*Plantago major*	S	R	I	I	—	R	—
plantain, buckhorn	*Plantago lanceolata*	S	R	I	I	—	R	—
sorrel, red	*Rumex acetosella*	I-R	S	R	—	R	R	—
spurge, leafy	*Euphorbia esula*	I	I	R	R	R	R	I
thistle, Canada	*Cirsium arvense*	S	S	S	S	R	R	—
violet, wild	*Viola* spp.	I-R	I-R	I-R	—	—	R	S
yarrow, common	Achillea millefolium	I	S	I-R	—	—	R	—
BIENNIAL WEEDS								
carrot, wild	*Daucus carota*	I	S	I	—	—	—	S
chicory	*Cichorium intybus*	S	S	S	—	—	R	—
thistles, biennial	*Cirsium* spp.	S-I	S	I	I	—	R	—
ANNUAL WEEDS								
chickweed, common	*Stellaria media*	R	S	S-I	—	—	S	S
clover, hop	*Trifolium* spp.	I	S	S-I	I	—	R	S
clover, subterranean	*Trifolium subterraneum*	I	S	I	I	—	R	—
cranesbill	*Geranium carolinianum*	S-I	S	S-I	—	—	R	—
henbit	*Lamium amplexicaule*	I-R	S	I	—	S	—	—
knotweed, prostrate	*Polygonum aviculare*	I-R	S	I	—	S	R	S
lambsquarters, common	*Chenopodium album*	S	S	S	S	S	S	—
medic, black	*Medicago lupulina*	I-R	S-I	I	—	—	R	S
mustard, wild	*Brassica kaber*	S	S-I	I	S	S	R	—
pearlwort	*Sagina procumbens*	I-R	S	S	—	—	—	—
pigweeds	*Amaranthus* spp.	S	S	S	S	S	S-R	—
pineappleweed	*Matricaria matricarioides*	I-R	I	I	—	—	R	—
purslane, common	*Portulaca oleracea*	I	S	R	I	—	S	—
shepherdspurse	*Capsella bursa-pastoris*	S	S	S-I	S	S	R	—
speedwells	*Veronica* spp.	R	R	R	—	—	I-R	—
spurge, prostrate	*Euphorbia supina*	I	S-I	I	—	S	S	—
woodsorrel, yellow	*Oxalis stricta*	R	I	I-R	—	—	—	S

Note: S = susceptible; I = intermediate (may require several applications for control); R = resistant; — = not specified.

AMA) and fenoxaprop-ethyl are currently available for this purpose (Tables 2 and 4).

Herbicides for perennial grasses

Perennial grass weeds (quackgrass, bermudagrass, tall fescue, redtop, smooth brome) are extremely difficult to eradicate from desirable perennial lawn grasses because of their similar characteristics. Although some selective herbicides are available to remove certain perennial grasses from lawns without injuring or killing the desirable grasses, they fail to remove perennial weeds that are common in the Northwest (Table 4).

Leaves of perennial bunchgrasses such as orchardgrass can be wiped with glyphosate. The bunchgrasses will eventually die, but so will adjacent and intermingled lawn grass. Replace the bunchgrass with a desirable type.

Creeping perennial grass weeds in lawns can be controlled by treating the entire infested area with the nonselective, translocated herbicide glyphosate. For best results, apply glyphosate only when there is good soil moisture and grasses are growing actively. Do not apply glyphosate when rainfall is expected within 6 hours after application because its effectiveness will be reduced. Often a single treatment is not sufficient. To ensure complete control, wait until vegetation in the treated area has turned brown then check for green vegetation. If any weedy grass has survived, treat it.

Areas treated with glyphosate can be reseeded 7 days after application even though the weeds may not die for 2 to 4 weeks. To replant, either replace dead sod with live sod, or broadcast the seed directly on the sod and rake it into the surface or water it in with rain or irrigation water. If the existing sod is on rough ground, till and level the soil before seeding. Reseed during the cooler days of spring or early fall, not in the hot, dry summer months.

Herbicides for lawn moss

Lawn moss causes thinning of desirable grasses. It generally develops in neglected lawns under conditions of continuous shade, wetness, soil acidity or compaction. Long-term control of moss can be achieved only if these cultural conditions are corrected, allowing development of dense turf.

Table 4. Susceptibilities of grass weeds to selective lawn herbicides.

	Preemergence herbicides								Postemergence herbicides		
Grass weed species	benefin[1]	bensulide	DCPA	ethofumesate[2]	isoxaben[3]	oxadiazon[4]	pendimethalin[5]	siduron[6]	DSMA/ MSMA/ AMA	fenoxaprop-ethyl[5]	endothall[7]
PERENNIAL GRASSES											
bermudagrass (*Cynodon dactylon*)	R	R	—	R	R	R	R	I	R	I	I
bluegrass, bulbous (*Poa bulbosa*)	—	—	—	—	—	—	—	—	—	—	R
bluegrass, perennial (creeping *Poa* spp.)	R	R	R	R	R	R	R	R	R	R	R
bentgrass, perennial (*Agrostis* spp.)	R	R	R	R	R	I	I	R	S	—	R
fescue, perennial fine-leaf (*Festuca* spp.)	R	R	R	—	R	I	R	R	S	R	I
fescue, tall (*Festuca arundinaceae*)	R	R	—	—	R	R	R	R	S	R	—
foxtail, barley (*Hordeum jubatum*)	—	—	—	—	—	—	—	—	—	—	—
orchardgrass (*Dactylis glomerata*)	—	—	—	—	—	—	—	R	—	—	R
quackgrass (*Elytrigia repens*)	—	—	—	—	—	—	—	—	—	—	R
ryegrass, perennial (*Lolium perenne*)	R	R	R	R	R	R	R	R	R	R	S
ANNUAL GRASSES											
barnyardgrass (*Echinochloa crus-galli*)	S	S	I	S	I	I	S	S	S	S	—
bluegrass, annual (*Poa annua*)	S	S	I	S	I	S	S	R	—	R	I
crabgrass, hairy (*Digitaria sanguinalis*)	S	S	S	S	I	S	S	S	S	S	—
crabgrass, smooth (*Digitaria ischaemum*)	S	S	S	—	I	S	S	S	S	S	—
foxtail, green (*Setaria viridis*)	S	S	S	S	I	S	S	S	—	S	—
foxtail, yellow (*Setaria glauca*)	S	S	S	S	I	—	S	S	—	S	—
ryegrass, annual (*Lolium multiflorum*)	—	—	—	—	I	—	—	—	—	—	S
sandbur, longspine (*Cenchrus longispinus*)	—	—	—	—	—	—	—	—	S	—	—
witchgrass (*Panicum capillare*)	—	—	S	—	—	—	—	—	—	S	—

Note: S = susceptible; I = partial control or suppression; R = resistant; — = not specified. All listed herbicides can be used on established turf. Only siduron can be used on new seedings.

[1]Not for Astoria bentgrass lawns or putting greens.

[2]Only for lawns of Kentucky bluegrass, creeping bentgrass, and established or new seedings of ryegrass. NOT for homeowner lawns.

[3]Only for lawns of perennial ryegrass, Kentucky bluegrass, creeping and colonial bentgrass, chewings fescue, creeping red fescue and sheep fescue.

[4]Professional use only. Not for fine fescue or bentgrass lawns.

[5]Only on Kentucky bluegrass, fine or tall fescue or perennial ryegrass lawns; may injure other lawn grasses.

[6]Only on bluegrass, fescue, perennial ryegrass or bentgrass lawns of Penncross, Seaside, Highland, Astoria, Nimisida, C-1, C-17 and C-19 varieties.

[7]Not for putting greens or fine fescue lawns.

The most effective chemicals available for moss control are cryptocidal (moss-killing) soaps such as De-Moss and soluble iron compounds such as ferrous sulfate, ferric sulfate and ferrous ammonium sulfate. They can be applied any time from late fall through spring as long as the moss is growing actively. If ferrous ammonium sulfate is applied annually at the rate of 6 to 8 ounces per 1,000 square feet for 3 years, good moss control will result and grass nutrition will improve. Use iron compounds carefully because they can stain sidewalks and other concrete surfaces.

Dethatching of moss-infested areas followed by nitrogen fertilization is nearly as effective as iron treatments for long-term control of moss. Best moss control is achieved when dethatching is followed by iron solution and fertilizer applications. Lime has no observable effects on moss for 1 year after application but may be beneficial for long-term control if soil pH is low.

Herbicides for lawn renovation

Nonselective herbicides such as glyphosate are available for lawn renovation in cases where you want to destroy all plant growth in preparation for replanting or planting to a new grass variety. A nonselective herbicide will quickly destroy deep-rooted weeds that rototilling doesn't kill. Other advantages of herbicide use over rototilling are that it will not unnecessarily deform a well-shaped or graded lawn and will not bring up dormant weed seeds from below the soil surface. See University of Idaho CIS 888, *Idaho Lawn Weed Control,* and UI EXP 565, *Establishing and Maintaining Idaho Lawns,* for more information on lawn renovation.

Further reading

CIS 731	Thatch in Lawns	25 cents
CIS 781	Laundering Pesticide Contaminated Clothing	25 cents
CIS 792	Calibration of Lawn and Garden Pesticide and Fertilizer Applicators for Homeowners	25 cents
CIS 888	Weed Control in Lawns	50 cents
EXP 565	Establishing and Maintaining Idaho Lawns	50 cents

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The authors — Robert H. Callihan is Extension weed specialist and Francis E. Northam is research associate, both in the University of Idaho Department of Plant, Soil and Entomological Sciences at Moscow. Susan M. Bell is Extension agricultural agent in Ada County, and Daniel Kidder is former Extension weeds specialist in Twin Falls.

Pesticide residues — Recommendations for use are based on currently available labels for each pesticide listed. If followed carefully, residues should not exceed the established tolerances. To avoid excessive residues, follow label directions carefully with respect to rate, number of applications, and minimum interval between application and reentry or harvest.

Groundwater — To protect groundwater, when there is a choice of pesticides, the applicator should use the product least likely to leach.

Trade names — To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

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