

Broadleaf weed control in home lawns

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Broadleaf weeds are some of the most common and bothersome pests in lawns. One of the most effective methods for controlling broadleaf weeds is by employing good cultural practices which promote a healthy actively growing turf. Weeds are opportunistic plants that will invade when conditions are not favorable for turfgrass. A healthy dense turf is the most effective way to control weeds. Following are some practical methods that will help produce a healthy dense lawn:

- Maintain your mowing height between 3.0 and 3.5 inches.
- Mowing should be frequent enough to remove only 1/3 of the turfgrass leaf at one time. This means you may have to mow once or twice a week in the spring, but every two weeks during the summer.
- Deep and infrequent watering is important because daily, light irrigation promotes shallow rooting. Irrigation should be applied to wet the soil to the depth of turfgrass rooting and reapplied at the first signs of drought stress (when turfgrass turns bluish gray color or footprints remain in turf after walking).
- Fertilizer should be applied at a rate of 2 to 4 pounds nitrogen/1000 ft²/year when turfgrass is actively growing. In our region, active cool-season turfgrass growth occurs in the spring from April through early June and again in the fall from September to November. Between 60 - 100% of the annual nitrogen should be applied in the fall, usually September and again in November after the final mowing. Minimize fertilization in the spring and summer to avoid excess growth. Encouraging growth in the

spring and summer will increase mowing frequency, reduce root growth, and quickly consume storage reserves.

- Many broadleaf weeds originate and thrive in the shade, eventually spreading to other parts of the lawn. Grow shade-tolerant turfgrasses such as fine fescues and selectively prune tree branches to maximize the hours and amount of sun that reaches your lawn.

Furthermore, certain environmental conditions or management practices will favor one weed species over another. The resulting weed populations can help to identify the underlying conditions which resulted in weed invasion and less than ideal lawns. Table 1 lists several indicator weed species and the environments in which they are typically found.

Where are the weeds coming from?

- The seeds from broadleaf weeds exist in the soil seed bank and can remain viable for up to 30 years.
- Many broadleaf weeds can produce thousands of seeds per year, and these seeds can move with the wind and invade lawns miles away (Figure 1).
- Inexpensive grass seed can be contaminated with broadleaf weed



Figure 1. Weed seed can float on wind currents for miles.

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- seed which can invade your lawn.
- Poor quality topsoil or compost can contain broadleaf weed seed.

Herbicide control

The most common broadleaf weed herbicides contain two or three of the following individual active ingredients: 2,4-D, MCPP, and dicamba. By applying multiple active ingredients, a wider range of broadleaf weeds can be controlled compared to when using a single active ingredient. To ensure proper control and safety always read, understand and follow all herbicide label directions.

- Spot-apply herbicides when only a few weeds are present rather than treating the entire lawn. Apply just enough to wet the leaf but not to the point that the herbicide is dripping off the leaf.
- Best control is achieved when applied to young actively growing weeds.
- Herbicide control is less effective and turf safety decreases when weeds are treated under low soil moisture.
- Always apply herbicides on a calm, clear day when air temperatures are between 50 and 85F. Temperatures higher than 85F increase the chance of turf damage on cool-season grasses and avoid applying to buffalograss when temperatures exceed 75F.
- If it rains within 24 hours of herbicide application, it may be necessary to reapply if results are not obvious after 10 days.
- Granular herbicide/fertilizer combinations usually have to be applied to wet foliage in order to stick to the leaf surface and be absorbed.
- Most preemergence crabgrass herbicides will not prevent perennial broadleaf weeds (dandelions, etc.) from infesting a lawn.

- Do not apply herbicides over new turfgrass seedlings until the grass has been mowed at least three times, but check the individual label to be sure.
- Delay reseeding bare area caused by weed removal until after soaking rain or irrigation.
- Wait to apply an herbicide to newly sodded areas for 4 to 6 weeks.
- Avoid mowing treated areas for at least 2 days before and after the treatment.
- Always read and follow label for specific precautions, proper safety clothing to be worn during use, and re-entry intervals for humans and pets.

Control of perennial broadleaf weeds

Perennial broadleaf weeds continually grow from one year to the next. The aboveground vegetation may die back each winter, but the following spring new growth is produced from belowground roots or rhizomes. Perennials will also reproduce



Figure 2. Many perennial weeds have extensive root systems like the tap root of dandelions. Herbicides will translocate throughout the weed better when applied in the fall than when applied in spring, thus resulting in better control in the fall.

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from seed each year. Dandelion, white clover, and ground ivy are examples of perennial turf weeds.

In the fall as perennials prepare for winter, energy reserves are moved from the leaves down to the roots. If herbicides are applied at this time the herbicide will also be translocated to the roots resulting in more effective control (Figure 2). This is why fall herbicide applications are far more effective than spring applications for controlling perennial broadleaf weeds. Even applications well into October are very effective by the following spring (Hanson and Branham, 1998; Reicher and Wiesenberger, 2007; Wilson and Michiels, 2003).

- September and October are the best months to apply a herbicide for perennial broadleaf weeds.
- Three-way herbicides (2,4-D + MCPP + dicamba), triclopyr, or fluroxypyr are most effective.

Controlling winter annual broadleaf weeds

Winter annual broadleaf weeds germinate in the fall, produce seed the following spring, and die out with the first hot temperatures of summer. Henbit, chickweed, and shepard's purse are all examples of winter annuals in turf.

- Application timing should be similar to perennial broadleaf weeds
- Spring herbicide applications are generally not necessary or effective since the weeds are near the end of their life cycle.

Controlling summer annual broadleaf weeds

Summer annual broadleaf weeds complete their lifecycle within one growing season. Summer annuals germinate in the spring, flower

and produce seed early to mid-summer, and die following the first hard frost in the fall. Common examples are spurge, knotweed, purslane and oxalis (Figure 3).

Summer annual broadleaf weeds can be difficult to control. Depending on conditions or species these weeds may germinate at multiple times during the summer and mature very quickly. As a result, a single herbicide application will only control a few of the summer annuals since the others either have not germinated or have grown too large to be controlled. In addition, summer annuals have a waxy layer on their leaves to prevent water loss, which will also limit herbicides from entering the leaves.

- For effective control apply a preemergence herbicide containing isoxaben in April to control weeds before they germinate. Since this herbicide has no effect on emerged weeds, a postemergence herbicide containing 2,4-D, MCPP, and/or dicamba should be applied for weeds that have already germinated.
- Proper cultural practices will help limit summer annuals.



Figure 3. Summer annuals like oxalis (wood sorrel) are difficult to control because they will germinate for extended periods in the summer.

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Figure 4. Hard-to-control weeds like ground ivy will spread by stolons or rhizomes out from the mother plant. Herbicides usually do not translocate effectively through stolons or rhizomes.

Hard-to-control weeds

Weeds that spread by stems such as ground ivy, thistles, or field bindweed can be extremely difficult to control. Multiple herbicide applications may be required due to the spreading nature of these weeds. Herbicides containing 2,4-D, MCPP, and dicamba can be effective in the fall. For particularly stubborn weeds, products containing triclopyr, fluroxypyr, or the newly-released aminocyclopyrachlor can be used. If bindweed is a problem, a product containing quinclorac can be very effective. If these weeds are becoming a real nuisance you may consider hiring a professional to control these difficult weeds.

While complete weed control in your lawn is never possible, practicing good turf cultural methods and applying herbicides when weed species are most susceptible you should be able to diminish the broadleaf weeds in your lawn.

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Table 1: Weeds as indicators of poor growing environments.

Acid soil: prostrate knotweed (*Polygonum aviculare*), plantain (*Plantago major*), red sorrel (*Rumex acetosella*)

Wet or poorly drained soil: mosses, common chickweed (*Stellaria media*), ground ivy (*Glechoma hederacea*), mouse-ear chickweed (*Cerastium vulgatum*), violets (*Viola species*), yellow nutsedge (*Cyperus esculentus*)

Wet Fertile Soil: curled dock (*Rumex crispus*), henbit (*Lamium amplexicaule*), yellow woodsorrel (*Oxalis stricta*)

Wet infertile soil: white clover (*Trifolium repens*)

Dry soil: black medic (*Medicago lupulina*), red sorrel (*Rumex acetosella*)

Dry infertile soil: yarrow (*Achillea millefolium*)

Compacted or heavy soil: dandelion (*Taraxacum officinale*), plantain (*Plantago major*), common chickweed (*Stellaria media*), knotweed (*Polygonum aviculare*), mouse-ear chickweed (*Cerastium vulgatum*), prostrate spurge (*Euphorbia supina*)

Soil with a hardpan or hard crust: morning-glory (*Ipomoea purpurea*), pineapple weed (*Matricaria suaveolens*)

Cultivated soil, New Seedings: Lamb's-quarters (*Chenopodium album*), plantain (several species), purslane (*Portulaca oleracea*), dandelion (*Taraxacum officinale*), chickweed (*Stellaria media*), pigweeds (family *Amaranth*), carpetweed (*Mollugo verticillata*), henbit (*Lamium amplexicaule*)

High fertility soil: pigweeds (family *Amaranth*), purslane (*Portulaca oleracea*), dandelion (*Taraxacum officinale*), lamb's-quarters (*Chenopodium album*), Henbit (*Lamium amplexicaule*), yellow woodsorrel (*Oxalis stricta*)

Low fertility soil: plantains (*Plantago species*), red sorrel (*Rumex acetosella*), white clover (*Trifolium repens*)

Shaded soil: common chickweed (*Stellaria media*), ground ivy (*Glechoma hederacea*), mouse-ear chickweed (*Cerastium vulgatum*),

Wet shaded soil: violets (*Viola species*)

Low mowing height: white clover (*Trifolium repens*)

Adapted from (Anonymous, 2011; Cella and Voigt, 2011)

Lawn Weed Control

FS 525Y

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Perennial weeds



Quackgrass



Smooth brome grass



Creeping bellflower



Ground ivy



Dandelion



Field bindweed



Wild violet



Canada thistle

Annual weeds



Crabgrass



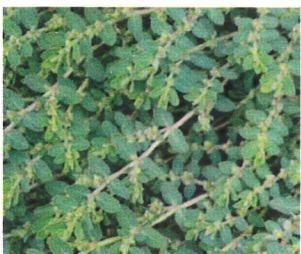
Yellow foxtail



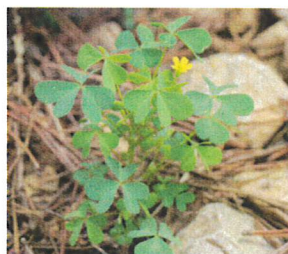
Prostrate knotweed



Chickweed



Prostrate spurge



Yellow woodsorrel (oxalis)



Broadleaf plantain



Puncturevine



South Dakota
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CULTURAL WEED CONTROL

Cultural weed control practices must be included in weed management programs to optimize control and inhibit re-infestation. A healthy, dense turf cover is the best overall defense against weed invasion. Some common cultural weed control practices include planting the most adapted turfgrass species for your environment (i.e. shade, full sun, or hot, dry conditions), maintaining a mowing height of 2.5 – 3.5 inches, watering deeply but less frequently, and proper soil maintenance including fertilization and core aeration.

HERBICIDE APPLICATION

Annual grasses: For controlling annual grasses like crabgrass or foxtail, apply crabgrass preventers prior to expected weed seed germination. These herbicides may be found in weed-and-feed products or clay-based granules and should be applied in late April or early May. Control escapes with an herbicide that contains quinclorac or methanearsonate (see below).

Annual broadleaf weeds: Many broadleaf herbicides contain dicamba, which may be taken up by tree roots if excessive rates or repeat applications are made over the tree root zone (generally 2 times the diameter of the tree crown). Broadleaf herbicides containing 2,4-D or dicamba may volatilize and the vapors may be blown to trees or garden/ornamental plants resulting in plant injury. To minimize the risk of volatilization, apply these herbicides when temperatures are less than 85°F and there is only a light breeze. Warm season turfgrasses such as buffalograss may be injured by 2,4-D if applied during hot weather (greater than 80°F).

Perennial weeds: For perennial broadleaf weeds, apply herbicides in the fall following the first light frost. Repeat herbicide applications 10 – 15 days later if necessary for difficult perennial weeds such as ground ivy or field bindweed. For perennial grasses, dig plants or spot spray base of weed with a non-selective herbicide like glyphosate (Roundup).

Always follow label directions. More information may be found at <http://plantsci.sdstate.edu/weeds/>

Poison Control Center 24 hour phone line: 1-800-222-1222

	Crabgrass	Foxtail	Quackgrass	Chickweed	Prostrate knotweed	Prostrate spurge	Puncturevine	Broadleaf plantain	Kochia	Black medic	Purslane	Yellow woodsorrel	Dandelion	Ground ivy	Canada thistle	Field bindweed	Creeping bellflower	Wild violet	White clover
Herbicide¹																			
2,4-D				S	S	C	C	S	S	S		S	C	S	S	S	S	S	S
2,4-D+dicamba+MCPP				C	C	C	C	C	C*	C	C*	C	C	C*	C	C*	S	S	C
Triclopyr				C	S	S	C	S	S	C	S	C	S	C*	S	S	S	C	C
Quinclorac	C	C								C			S			S		S	C
Methanearsonates	C	C		S								S							
Crabgrass preventers	C	C		S	S	S	S		S		S								
Glyphosate ²	C	C	C*	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

¹Trade names that may include each herbicide: Combination products that may include **2,4-D+dicamba+MCPP** (Weed-B-Gone Max, Bayer Advanced, Trimec, Weed Stop, and others), **triclopyr** (Weed-B-Gone Clover, Chickweed, and Oxalis Killer, Turflon), **quinclorac** (Drive, Weed-B-Gone Max Plus Crabgrass Control, Bayer Advanced Lawn Weed and Crabgrass Killer), **methanearsonates** such as MSMA or CaMA (Weed-B-Gone Crabgrass Killer, Bayer Advanced Weed Killer for Lawns), **crabgrass preventers** (Dimension, Scotts Halts, Tupersan, Pendulum, Team, and several other products that may include pendimethalin, dithiopyr, siduron, trifluralin, benefin, DCPA, or bensulide; apply these herbicides in spring prior to weed emergence).

²**Glyphosate** (Roundup) is a non-selective herbicide that will kill turfgrass. For spot application only.