

TOM D. WHITSON
UW Extension Weed Specialist

UNIVERSITY
OF WYOMING
Cooperative Extension Service

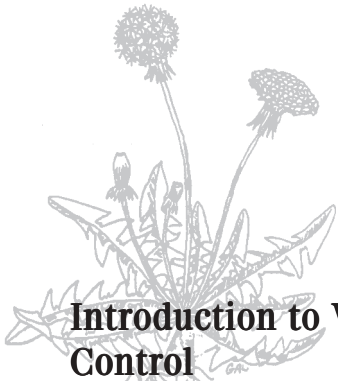
B-909R
June 2003

UNIVERSITY OF WYOMING

Senior Editor: Vicki Hamende, College of Agriculture, Office of Communications and Technology
Graphic Designer: Tana Stith, College of Agriculture, Office of Communications and Technology

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Glen Whipple, Director, Cooperative Extension Service, University of Wyoming, Laramie, Wyoming 82071.

Persons seeking admission, employment, or access to programs of the University of Wyoming shall be considered without regard to race, color, religion, sex, national origin, disability, age, political belief, veteran status, sexual orientation, and marital or familial status. Persons with disabilities who require alternative means for communication or program information (Braille, large print, audiotape, etc.) should contact their local UW CES Office. To file a complaint, write the UW Employment Practices/Affirmative Action Office, University of Wyoming, P.O. Box 3434, Laramie, Wyoming 82071-3434.



Introduction to Weed Control

Effective weed control around the home is the result of careful planning and effective management. Gardens, flowerbeds, and borders are not naturally weed free, so a well-planned weed control program must be used from the time of planting. Successful weed control can be completed with or without herbicides. Herbicides are often used as a tool to allow landscapers and gardeners to have more free time. When homeowners have time to weed by hand, it can be a very satisfying accomplishment.

When herbicides are chosen to help in weed control, careful selection of products must be made. Herbicides are classified into five categories depending on when and how they are used: selective, non-selective, pre-plant incorporated, pre-emergence, and post-emergence. Some herbicides will control all plants (non-selective) while others control certain plants such as

broadleaf weeds in lawns (selective). Some control only annual weeds while others are useful in the control of perennials as well as annuals. Some must be applied before planting and should be incorporated into the soil with a sprinkler or tillage operation (pre-plant incorporated). Some can be applied after planting a garden or flower bed but before the plants emerge (pre-emergence) while others should be applied after plants are in various growth stages (post-emergence).

Herbicides are manufactured in various formulations and concentrations depending on the way they are to be used. Liquid formulations or sprays are distributed as emulsible concentrates (EC or E) or liquid flowable (L or LF) while powdered or granular formulations are marketed as wettable powders (W or WP), dry flowable (DF), water-dispersible granules (DG), water-soluble pellets (SP), or herbicide-coated particles such as dry fertilizers or pellets.

How a herbicide moves into and controls a plant must be considered when making a selection. The first group of herbicides includes those that are **soil active** and may be either selective or non-selective. These herbicides are taken up by either germinating seedlings or by the roots of perennial plants and trees. Herbicides that have long soil residuals can injure trees and shrubs and should usually be avoided. Those that control germinating seedlings and are soil active for less than one growing season are preferred. The second group includes those herbicides that are only **foliar active**. Control can be either selective or non-selective depending on the herbicide chosen. Plants that are susceptible to foliar-active herbicides will be controlled if proper leaf contact with the herbicide occurs. The third herbicide group includes those that are **both soil active as well as foliar active**. The following table provides information about many of the herbicides available and their properties.

Commonly Used Herbicides for Home Landscapes

Pre-Emergence Weed-Control Herbicides					
Common Name	Trade Name(s)	Formulator or Manufacturer	Herbicide Activity (Type)	Use	
benefin	Balan	Dow AgroScience	soil active (selective)	Controls annual weeds in established lawns.	
benefin + trifluralin	Team	Dow AgroScience	soil active (selective)	Controls annual weeds in established lawns.	
DCPA	Dacthal Crabgrass and Weed Preventer Weed and Grass Preventer Garden Weed Preventer Dacthal SG Crabgrass and Spurge Preventer	Ambac Fertilome Ortho Clean Crop Pax	soil active (selective)	Controls annual weeds in gardens and established lawns.	
oryzalin	Surflan	Dow AgroScience	soil active (selective)	Controls annual weeds in ground covers, nursery stock, and ornamentals.	
pendimethaline	Halts Crabgrass Preventer Turf Builder + Halts	Scotts Scotts	soil active (selective)	Controls germinating seedling weeds in established lawns.	
dichlobenil	Casoron Gordon's Barrier 50W Dichlobenil Herbicide	Uniroyal PBI Gordon	preemergence (selective)	Controls germinating seedling weeds in established trees and in ornamentals.	
siduron	Tupersan	Scotts	soil active (selective)	Commonly mixed with fertilizers to control annual grasses in newly established and established lawns.	
trifluralin	Treflan	Dow AgroScience	soil active (selective)	Controls germinating annual weeds around landscape ornamentals.	

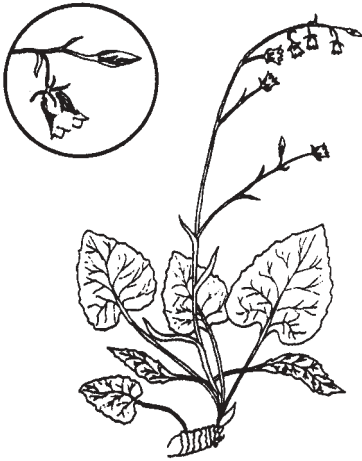
Post-Emergence Weed-Control Herbicides

Common Name	Trade Name(s)	Formulator or Manufacturer	Herbicide Activity (Type)	Use
ammonium sulfamate	Killer - Stump Killer	Ferti-lome	foliar active (non-selective)	Controls unwanted woody species.
dicamba combined with 2, 4-D OR combined with MCPP and 2,4-D	Banvel Systemic Weed Killer Super D. Weedone Spot Dandelion Control Lawn Weed Control Trimec Lawn Weed Killer Spot Weed Killer Weed and Feed Weed Killer and Lawn Fertilizer Weed Out Chickweed, Spurge, and Oxalis Killer D	BASF, Ortho Ferti-lome Clean Crop Scotts Scotts American Hi-Yield American Ferti-lome Ferti-lome Ortho	soil and foliar active (selective)	Controls hard-to-kill broadleaf lawn weeds. Can kill ornamental plants and shrubs growing near treated areas.
fenoxaprop-ethyl	Acclaim	Bayer	foliar active (selective)	Controls annual and perennial grasses in certain turf grasses.
fluzafop	Grass-B-Gon	Ortho	foliar active (selective)	Controls certain annual and perennial grasses near ornamentals.
glyphosate	Fence and Grass Edger Knockout and Roundup L&G Roundup Leenup Killzall Weed Wrangler	Ortho Lily Miller Monsanto Ortho Hi Yield Clean Crop	foliar active (selective)	Controls annual and perennial weeds growing away from desirable plants.
MCPP	Chickweed and Clover Control	Ortho Ferti-lome	foliar active (selective)	Controls broadleaf annuals and perennials from turf grasses.
MAA (MSMA) (DSMA) (Methanearsonic Acid)	MSMA Crabgrass Killer Daconate, Bueno Weed-Hoe CrabGrass and Dandelion Killer	Green Light Co. Lawn and Garden Products, Inc. Ortho	foliar active (selective)	Controls annual and perennial grasses in established turf.

Post-Emergence Weed-Control Herbicides (continued)				
Common Name	Trade Name(s)	Formulator or Manufacturer	Herbicide Activity (Type)	Use
sethoxydim	Poast	BASF	foliar active (selective)	perennial grasses in various ornamental and wood species.
triclopyr	Brush-B-Gon	Ortho	foliar active (selective)	Controls most wood plants.
2, 4-D	Weed-B-Gon Dandelion and Lawn Weed Killer Weedone DP, Four Power 2, 4-D Weed Killer	Ortho	foliar active (selective)	Controls broadleaf annual and perennial species in turf grasses.
Total Vegetation-Control Residual Herbicides (Not recommended for ornamental weed control in lawns or gardens)				
Common Name	Trade Name(s)	Formulator or Manufacturer	Herbicide Activity (Type)	Use
bromacil	Hyvar X and XL	Dupont	soil and foliar active (non-selective)	Controls all vegetation including trees.
diuron	Krovar Karmex Direx Diuron	Dupont Griffin Griffin Platte	soil and foliar active (non-selective)	Controls all vegetation including trees.
prometon	Pramitol triox	Platte Ortho	soil and foliar active (non-selective)	Controls all vegetation including trees.
sulfometuron	Oust	Dupont	soil and foliar active (non-selective)	Controls all vegetation including trees.
terbacil	Sinbar	Dupont	soil and foliar active (non-selective)	Controls all vegetation including trees.

Summary of Uses of Listed Herbicides

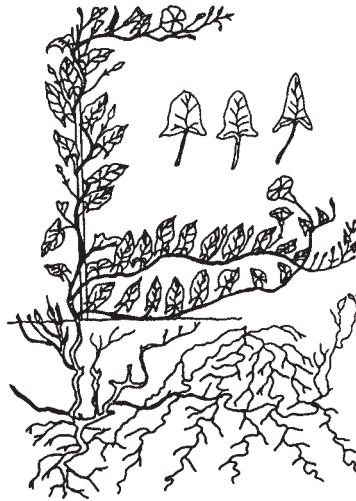
Herbicide	Perennial Woody Ornamentals	Annuals and Herbaceous Perennials	Vegetable Gardens	Turf	Non-Selective
benefin				x	
benefin and Trifluralin				x	
DCPA			x	x	
oryzalin	x	x			
pendimethaline				x	
dichlobenil	x				
siduron				x	
trifluralin	x			x	
dicamba				x	
fenoxaprop-ethyl				x	
fluazifop-butyl	x	x			
glyphosate					x
MCPP				x	
MAA				x	
sethoxydim	x	x			
triclopyr					x
2, 4-D				x	
bromacil					x



Creeping Bellflower

Campanula rapunculoides [L.]

Creeping bellflower, sometimes called bluebells in Scotland, has become a serious problem in lawns throughout Wyoming. It escapes from adjacent flower gardens and can form dense clusters of leaves which completely take over a lawn. It is a perennial which spreads through seeds and underground rootstocks. Upper rough, egg-shaped leaves taper to a long point. Lower leaves are heart shaped and have notches near the petiole (leaf stalk). Flowers are bright blue to violet.

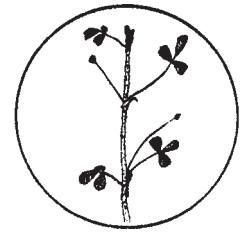


Field Bindweed

Convolvulus arvensis [L.]

Field bindweed, found commonly in tilled soil areas, is a deep-rooted perennial growing from an extensive underground root system. Stems are prostrate, one to four feet long, forming dense, tangled mats. Leaves are similar in shape to arrowheads with sharp lobes at their bases. Flowers are about one inch across, are funnel or trumpet shaped, and range in color from white to pink.

This introduced perennial is widely distributed in all cultivated areas of Wyoming and is commonly found near ditch banks and in waste areas. Healthy and rapidly growing turf grass is a good competitor with field bindweed and should be used in combination with herbicides for best control.



Black Medic

Medicago lupulina [L.]

Black medic is not a common lawn weed but where present may form coarse, unsightly mats of vegetation resembling small clover plants. Three leaflets emerge from approximately the same point of the long petiole (leaf stalk). The leaflets, covered with fine hairs, are slightly toothed at the tip. Bright yellow flowers form a dense head, and the seeds closely resemble those of alfalfa.

Weeds Commonly Found Around the Home



Annual Bluegrass

Poa annua [L.]

Annual bluegrass thrives best during cool weather. Germination of the seed occurs in fall and early spring. The plant matures, develops seeds, and then dies in early summer, leaving unsightly brown areas in the lawn. Annual bluegrass is often lighter green than Kentucky bluegrass.

Repeated mowing that cuts off the ends of the stems causes annual bluegrass to branch more near the ground surface. The plant then sets its seed below mowing height, giving the lawn an unsightly appearance.

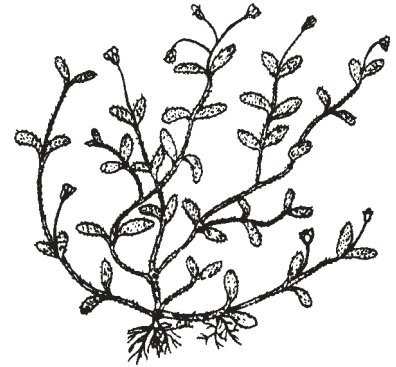
Since annual bluegrass can only be produced from seed, the key to control is twofold: prevent seed production and keep seeds that are in the soil from germinating and establishing new plants. If an infestation is small, the plants can be loosened and removed by hand. Raking a lawn before mowing tends to lift the branches upright, and they are more likely to be cut off by a mower.



Skeletonleaf Bursage

Ambrosia tomentosa (Nutt.)

Skeletonleaf bursage is a perennial growing up to 18 inches tall with extensive creeping roots. Stems are branched, and leaves are alternate. Leaves are dark green on the surface and have leaf undersides covered with fine hairs, giving them a silvery-gray color. Leaves are coarsely toothed and deeply segmented. Flowers are inconspicuous and green, hanging in terminal clusters. This native perennial reproduces from creeping rootstocks and seed. Flowering and seed production occur from June to August.



Perennial Chickweed

Cerastium vulgatum [L.]

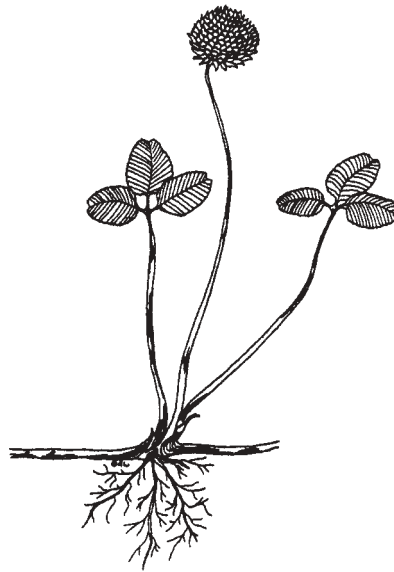
Perennial chickweed may infest ornamental planting or lawns which are growing on unfertile or heavily watered soils. It spreads through seeds and creeping rootstocks. The prostrate stems from a mat and may eventually crowd out desirable grasses. It is easily distinguished from common chickweed by its dark green, very hairy, lance-shaped leaves. Its flowers are similar to common chickweed but have longer and less deeply notched white petals.



**Annual or Common
Chickweed**

Stellaria media [L.]

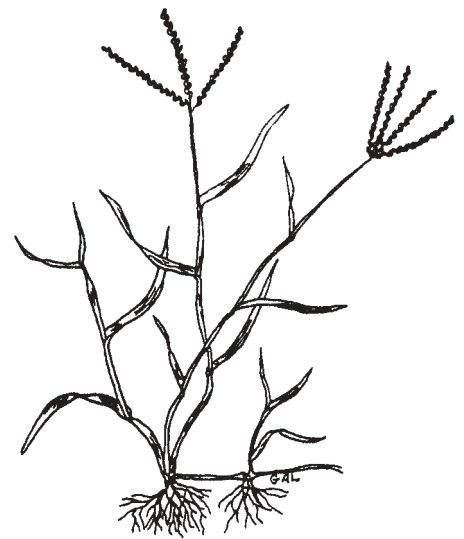
Common chickweed, an annual, is usually found in areas that are shaded such as around shrubs, flowers, or buildings. These areas are often moist and overwatered. The plant spreads through seeds and rooting at the stem joints. Common chickweed can easily be distinguished from perennial chickweed by the bright green, smooth, heart-shaped leaves. Small, white, star-shaped flowers are produced throughout the growing season and continue flowering in protected areas during mild winters.



Clover

Trifolium spp.

Clover may be considered a desirable or undesirable plant in lawns depending on personal preference. The most common species found in lawns is white clover (*Trifolium repens*). It is a perennial that spreads through seeds and above-ground rooting stems. Its leaves are characterized by three leaflets arising from approximately the same area on the petiole (leaf stalk). Flower heads arise from leaf-stem attachment (axils) along the stem. Flowers are white to pink.

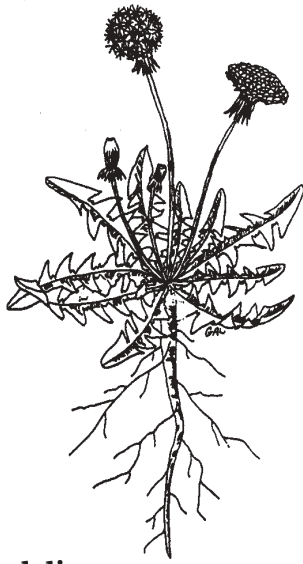


Crabgrass

Digitaria sanguinalis [L.] Scop.

Crabgrass is common in lawns and gardens in lower elevations in Wyoming. However, large quantities of commercial crabgrass killer are purchased for control measures even where this pest does not grow. Positive identification of this weed should be made before applying control measures. Crabgrass is an annual that spreads by seeds and stem rooting at the lower joints. The stems are erect or slightly prostrate. Leaves are 2 to 4 inches long, c to 2 inch wide, and covered with hair. Racemes (flower stalks), two to 10 in number, branch off near the top of the stem. Flowering parts are grayish brown to purple in color.

Pre-emergence (before seeds germinate) treatments provide the most effective control and result in less chance of damage to the bluegrass. Several effective fertilizers plus crabgrass-control herbicide mixtures are available.



Dandelion

Taraxacum officinale (Webber in Wiggers).

Dandelion is probably the most common lawn weed found in Wyoming. This perennial can spread through seeds or through lateral crown shoots from fleshy, deep taproots. A dandelion may produce bright yellow flowers in protected areas in early spring and often continue flowering until autumn frost.

Cutting off the plant below the crown will control the weed, but this is a very tedious and time-consuming job. Herbicidal treatments offer the most convenient means of elimination. A dandelion is susceptible to 2, 4-D sprays and can be effectively controlled with this herbicide. Early spring treatments are not effective at the higher elevations in Wyoming because the temperature is not conducive to active plant growth and chemical activity. Fall treatment provides consistently better control. Both, however, are advisable during the first year of treatment. Afterwards, treatment can be reduced to a single application each fall as needed.



Goosegrass

Eleusine indica [L.] Gaertn.

Goosegrass is common to lawn areas in some sections of Wyoming. Goosegrass may look like crabgrass at first glance; however, it differs since it has a flat stem and does not take root at the lower joints of the stem. It is an annual grass that reproduces by seeds. Flowers and seed are produced in two rows along one side of the stem.



Ground, Creeping Ivy

Glechoma hederacea [L.]

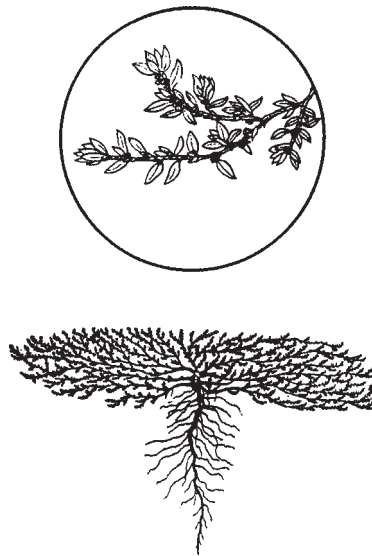
Ground ivy grows in shaded areas near trees and buildings. A perennial, it spreads through seeds and underground rootstocks. The creeping stems are smooth and square, and roots form at the lower joints. Leaves are round with scalloped edges and occur in pairs along the stem. Flowers are purple and arranged in clusters at the leaf-stem attachment (axils).



Henbit

Lamium amplexicaule [L.]

Henbit may be troublesome in thin areas of a lawn or in mulched areas of a flower garden. It is a winter annual or biennial which reproduces by seeds and rooting stems. The stems are square (four sided) and are prostrate at the base; the upper portions are erect. The upper leaves are clasping (wrapped around the stem) while the lower leaves are attached to the stem by petioles (leaf stalks). The plant produces pink to purplish flowers in early spring.



Prostrate Knotweed

Polygonum aviculare [L.]

Prostrate knotweed is often a problem near walkways, gardens, and in lawns in some areas of Wyoming. It usually infests lawns which have a thin grass stand and are in a weakened condition due to traffic or poorly watered edges. It is an annual that reproduces only from seeds. The prostrate stems spread in all directions, forming a mat. The leaves are bluish green, lance shaped, and attached to the stem at prominent knots or joints.



Common Mallow

Malva rotundifolia [L.]

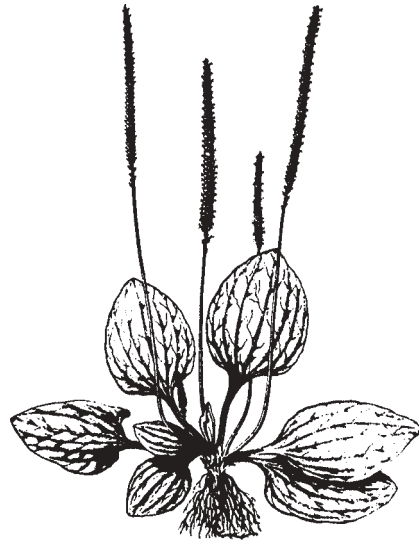
Common mallow, common in ornamental planting, often infests thin lawn areas. It can be mistaken for ground ivy at first glance because of its round leaves. Common mallow has a deep taproot, and the leaves are light green, nearly round or slightly heart shaped with toothed margins. The flowers are whitish blue, bell shaped, and produced in the leaf axils.



Orchardgrass

Dactylis glomerata [L.]

Although orchardgrass is a desirable forage species, it is considered a weed when growing in a lawn. It has become common in turf in some areas of Wyoming. This perennial grows in clumps and spreads through seeds and root shoots. Stems are 2 to 4 feet tall and are terminated by compressed spikelets (flowers). At the base of each leaf are a membranous collar and smooth auricles (without Aclaws@ such as are present on quackgrass).



Common Plantain

Plantago major [L.]

Common plantain can be found scattered throughout lawns. It is perennial and spreads by seeds and new shoots from the roots. Leathery leaves form a basal rosette which is prostrate and protects the shallow roots. Leaves are green, egg shaped, and parallel veined with all veins merging at the leaf stalk (petiole).



Purslane

Portulaca oleracea [L.]

Purslane, common in ornamental and vegetable planting, may infest lawns which are thin and improperly watered. It is an annual that reproduces by seeds. Stems are prostrate, fleshy, 22 inches long, and form a reddish mat. Leaves are very fleshy, succulent, and wedge shaped with a blunt tip. Small yellow flowers are produced in the leaf axils and give rise to an urn-shaped capsule which contains many small, black seeds.



Quackgrass

Elytrigia repens [L.] NBevski

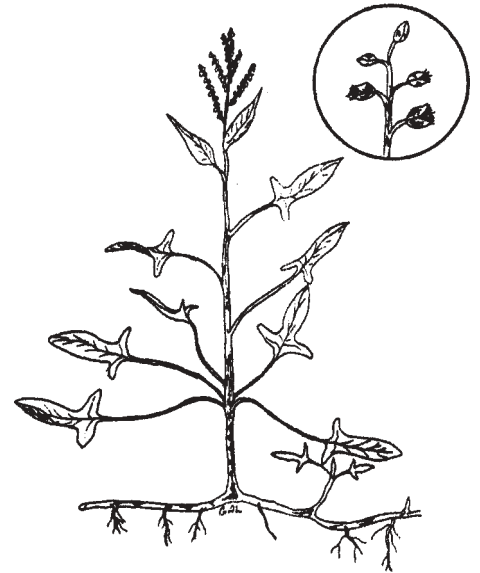
Quackgrass can be found in most areas of Wyoming. It forms coarse clumps which distract from the fine-bladed grass most desirable for lawns. It is a perennial that spreads through seeds and underground rootstocks. Stems are hollow, 1 to 3 feet tall, and terminated by a slender, wheat-like spike (flower head). Leaves are narrow, dark green, and rough on the upper surface. At the base of each leaf are a small pair of claws (auricles) and a ragged, membranous collar.



Longspine Sandbur

Cenchrus longispinus (Hack.)
Fern.

Longspine sandbur is an annual growing to 3 feet in height and occurring generally on sandy soils. It is a serious problem in lawns. Upon the plant's maturity in early summer, the seeds develop in hard, spiny burs.



Red Sorrel

Rumex acetosella [L.]

Red sorrel is not found in abundance in lawns. However, it can become a problem in some isolated areas. It is a perennial that spreads through seeds and red underground rootstocks. Leaves are arrow shaped with elongated basal lobes forming a dense rosette at the plant base. Flowers are of two types - pistillate and staminate. The female flowers are reddish while the male flowers are yellowish-green. Both flower types are borne on the same stem.



Canada Thistle

Cirsium arvense [L.] Scop.

Canada thistle is a perennial developing from deep underground and extensive horizontal roots. Stems are 1 to 4 feet tall, ridged, and branching above. Leaves are alternate and attached to erect stems without a petiole and are divided into spiny-tipped, irregular lobes. Flowers are purple with heads 2 to 3 inches across and occur in July and August.

This perennial weed is difficult to control because of the ability of its roots to regenerate. A large amount of wind-blown seed is also produced.



Yarrow

Achillea millefolium [L.]

Yarrow has become a problem in lawns in many areas in Wyoming. It is a perennial that spreads through seeds and underground stems. If allowed to grow uncut, it becomes an erect plant, but when mowed frequently it forms a low-growing, gray-green mat in the lawn. The fernlike leaves are finely divided and covered with fine hairs. The white flowers are formed in a dense, flat-topped cluster at the end of the stem.

For positive identification of weeds around the home, contact a county Cooperative Extension Service office.

Herbicide Controls and Timing for Common Lawn Weed Problems

Weed	Control	Comments
Bellflower, creeping	dicamba	Spring or fall
*Bindweed, field	2,4-D combinations	Spring or fall
Black medic	dicamba, MCP	Spring or early fall
Bluegrass, annual	DCPA, bensulide	Before seed sprouts in spring
Bursage, skeltonleaf	dicamba combinations	Early spring or fall
*Chickweed, annual or perennial	MCP, dicamba	Early spring or early fall
*Clover	MCP, dicamba	Spring or early fall
Crabgrass, annual	DCPA, bensulide, trifluralin MCMA/DSMA (arsonates)	Before seed sprouts in spring After sprouting, may yellow turf grass
Dandelion	2, 4-D	Fall more effective than spring
Goosegrass	DCPA, bensulide MSMA/DSMA (arsonates)	Spring, before seed germination After May
*Ground Ivy	2, 4-D combinations	Spring or fall
Henbit	MCP, dicamba	Early spring or fall
*Knotweed, prostrate	dicamba	Spring, summer, fall
Mallow, common	dicamba combinations	Midspring, early summer
Orchard grass	glyphosate	When actively growing
Plantain, common	2, 4-D, MCP, dicamba	Spring or fall
Purslane	MCP, dicamba	Midspring, summer
Quackgrass	glyphosate	When actively growing
Annual bluegrass	benefin, trifluralin	Apply in early spring before annual bluegrass emergence
#Sandbur, field	DCPA MSMA/DSMA (arsonates)	Before seeds sprout After sprouting, may yellow turf grass
Sorrel, red	dicamba combinations	Spring or fall
*Thistle, Canada	dicamba combinations	Spring or fall
*Yarrow	dicamba combinations	Spring, summer, or fall

* *May need treatment.*

* *One treatment in early spring, second in early summer for best control.*

Other Weed-Control Techniques

Fabric Mulch

A number of fabric mulches or Aweed-excluding@ ground covers have made their appearance on the market in the past few years. Generally these fabrics do an excellent job of preventing weed emergence in perennial flower beds, around trees, and in other areas. For these fabrics, keep the following in mind:

- Buy only fabrics which allow for both **water and air** exchange.
- Do **not** use black polyethylene or any other plastic that does not allow air to pass through it.
- Incorporate 3 to 5 inches of organic matter and fertilizer into the top 6 inches of soil before covering.
- Fabric mulches must be covered with wood chips or other materials that will protect them from the sun. Sunlight will cause most fabrics to deteriorate rapidly.
- Do not use fabrics in areas that require cultivation such as vegetable gardens or annual flower beds.

- Do not cover the mulch with sharp gravel or other materials that might puncture it.
- Do not use fabrics in high traffic areas unless recommended by the manufacturers.
- The cost ranges between 10 cents and 20 cents per square foot for fabric mulches.
- Be sure to read manufacturers' recommendations on installation and maintenance.

Calibration of Spray Equipment

Herbicides are packaged and sold under various trade names and concentrations. It is very important to read the labels to determine the amount of herbicide to add to a sprayer before making an application. When herbicides are not applied according to manufacturers' recommendations, they often fail to control designated weeds or can cause damage to desirable vegetation such as trees and shrubs.

Know the type of herbicides being used and be careful to apply

the amount recommended at the time and stage of weed growth specified on the label. Contact a county Cooperative Extension Service educator for instructions about sprayer calibrations.

Safety While Handling and Storing Herbicides

Herbicides may cause irritation to eyes and skin. In some cases they may cause illness. Certain precautions must be taken when handling and storing herbicides. Wear rubber gloves and goggles while handling, mixing, and spraying herbicides. Wear a long-sleeved shirt and hat to protect the head and arms.

Keep herbicides locked away and removed from other pesticides and food. Keep them out of the reach of children and livestock. Empty pesticide containers should be triple rinsed before disposal.

Clean sprayers thoroughly after using. Wash spray equipment with ammonia, soap, and water. Allow it to air dry before storage. Empty granular applicators and wipe them with a lightly oiled rag before storing.

Spray Precautions

Spray when the air is calm and the temperature is below 85° Fahrenheit to reduce chemical drift and volatilization. Granular material may be applied when there is a light breeze blowing. Do not spray volatile chemicals such as 2, 4-D near susceptible plants that need to be kept alive. Remember that chemical fumes can cause severe damage or death to plants. Do not spray

other chemicals near or directly on the foliage of desired plants. Do not water treated areas until one day after spraying to assure that the chemicals have been absorbed by the plants.

Do not place soluble and residual (long-lasting) herbicides in the root zones of susceptible, desirable plants. The chemicals could be leached down and absorbed by roots, causing damage or death to plants.

Remember, it is essential to fully cover a treated area. Retreat escaped plants. Weeds which are not killed will produce seeds and spread through creeping rootstocks. This could mean more time and expense in controlling unwanted plants in the future.

