

LAWN WEED CONTROL FOR WASHINGTON STATE HOMEOWNERS

EB0607



COOPERATIVE EXTENSION
WASHINGTON STATE
UNIVERSITY

CHEMICAL CONTROL PRODUCTS FOR TURFGRASS WEEDS FOR HOMEOWNERS

WEED	ACTIVE INGREDIENT ^{1,2}
Dandelion, false dandelion, plantain, pigweed, lambsquarters	2,4-D dimethylamine 2,4-D dimethylamine + MCP* dimethylamine 2,4-D dimethylamine + MCP dimethylamine + dicamba dimethylamine Mixtures with triclopyr
Speedwell (creeping Veronica)	No homeowner products available
Clovers, chickweed, pearlwort, yarrow, knotweed, English lawn daisy§	Mixtures with triclopyr 2,4-D dimethylamine + MCP dimethylamine 2,4-D dimethylamine + MCP dimethylamine + dicamba dimethylamine Triclopyr
Henbit, buttercup	Mixtures with triclopyr 2,4-D dimethylamine + MCP dimethylamine + dicamba dimethylamine 2,4-D dimethylamine + MCP + 2-(2,4-DP) dimethylamine
Crabgrass <i>preemergence</i>	dithiopyr pendimethalin prodiamine benefin + trifluralin
Annual bluegrass <i>preemergence</i>	benefin dithiopyr pendimethalin prodiamine benefin + trifluralin
NONSELECTIVE SPOT TREATMENT Bermudagrass, bentgrasses, perennial weedy grasses, (tall fescue, quackgrass, orchardgrass, ryegrass, timothy, velvetgrass)	glyphosate glufosinate
Moss	ferrous sulfate
Algae	Mancozeb chlorothalonil

¹ Active ingredient names only due to rapidly changing product names and formulations.

² For weeds not listed here, check Hortsense at <http://pep.wsu.edu/hortsense>

* MCP may also be listed as mecoprop.

§ Repeat applications required for English daisy.

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Weeds can detract from your lawn's appearance, even if it is properly fertilized, irrigated, and mowed. Almost any lawn weed problem can be solved by using a combination of management practices and chemical methods. You can learn to identify various weeds and plan an effective and economical weed control program for your lawn.

Preventing Weeds in New Lawns

Weed seeds are found in all topsoil. These seeds will germinate with your lawn seed. Broadleaf weeds can ordinarily be selectively removed safely with herbicides after the lawn is 8 to 10 weeks of age. Annual and perennial weedy grasses are difficult to remove selectively after the lawn is established. Always remember that strong turfgrasses compete with weeds and will aid in their control. Plant high quality lawn seed and practice good fertilization and management programs.

Management Practices

Newly seeded turf areas may appear to be severely infested with a number of annual weeds. With good fertility, frequent mowing, and proper watering practices, most of these annual weeds normally soon disappear. If they still persist 2 months after seeding, it may be wise to use control recommendations. Under no conditions should selective herbicides be used on turf before it is at least 2 months old.

Weed Control in Established Lawns Using Herbicides

Time and money for control of turf weeds may be wasted unless proper management practices are followed. The first prerequisite to weed control is to use proper fertility, watering, and mowing practices. Quite often this is all that is needed to maintain weedfree turf, as thick, healthy grass provides competition for weeds.

Herbicide Recommendations

At the time of printing these products were registered for use in Washington. However, recommendations for the use of certain pesticides are subject to frequent change because of research on their use and new regulatory requirements. Check with your county Cooperative Extension agent or state specialist, or with your State Department of Agriculture for current herbicide registrations. Pesticide label and registration information is also available online via the PICOL Label Database; see URL <http://picol.cahe.wsu.edu/>.

If weeds should appear despite good management, chemical weed control can be important. Keep in mind, however, that weed killers are plant killers. To avoid damage to desirable plants, always carefully follow label directions. Spot treatment and low pressure sprayers are good options. Some herbicides are selective between plant types and some are not. The effectiveness of specific herbicides depends on air and soil temperature, moisture, weed type, and stage of growth.

Measuring Herbicides

Herbicides are sold in liquid, powder, and granular forms. Proper application begins with accurate measurements.

LIQUIDS. Liquid herbicides are available in several strengths. The amount of actual herbicide in the product will be stated on the label as "pounds of active ingredient per gallon" or as "acid equivalent." The remaining fluid is carrier and wetting agent.

Use all liquid herbicides according to the manufacturer's directions. The following equivalents can be helpful in making accurate measurements:

- 3 teaspoons equal 1 tablespoon or 15 milliliters
- 2 tablespoons equal 1 fluid ounce or 30 milliliters
- 1 cup equals 8 fluid ounces or 237 milliliters

DRY HERBICIDES. Powdered or granular herbicides are marketed as mixtures of active ingredients and inert ingredients. The active

ingredient is given as a percentage of the total weight of the product. Powders are applied in a liquid solution or suspension. Granulars are applied “as is” with no further dilution or mixing with water or oil.

Applying Herbicides

Granular herbicides can be applied with a calibrated fertilizer spreader. Use the manufacturer’s recommendations for spreader settings. Herbicides in liquid solutions can be applied by using pressure sprayers, sprinkler cans, or hose applicators.

PRESSURE SPRAYERS. Pressure sprayers are designed to provide a constant volume of spray at a specified pressure and through a specified spray tip (nozzle orifice). Output at the nozzle is governed by the pressure in the tank (pounds per square inch) and the size of the orifice (opening) in the nozzle.

Size of the individual droplet is determined by the pressure-orifice relationship. High pressure and small orifices result in small droplets or fog. Pressure under 30psi with large orifice tips insures general operating safety. The greater the volume used at a given pressure, the larger the droplets and the safer the practice.

Commercial applicators control pressure, orifice size, and ground speed, and can therefore apply herbicides accurately. Knapsack or hand sprayers do not normally have a pressure gauge or calibrated nozzle tips, so accurate application may be difficult. Spray a measured area with water and determine the rate of application before using a hand sprayer to apply herbicides.

SPRINKLER CANS. A sprinkler can may be used if the amount of water applied is not too great. Calibrate sprinkler cans to the area for the best results. Before applying the water-herbicide mixture, make a trial run with water for calibrating the sprinkling can to the area treated.

HOSE-TYPE APPLICATORS. Although an improvement over the sprinkler can, hose-type applicators are often the source of physical drift due to fluctuation in city water pressure. Lack of positive control makes them the least desirable of pressure sprayers. They use a large volume of water, but will produce a more desirable and uniform coverage than sprinkler cans.

Wash the applicator with detergent and water immediately and thoroughly after each use. This will reduce danger of contamination and extend the useful life of the equipment.

OTHER APPLICATORS. Two other applicators are worthy of mention and do outstanding jobs of weed control in lawns. The MeterMiser is a calibrated wheel action sprayer with a 5-gallon capacity tank that will uniformly treat approximately 5,000 square feet. It is hooded and shielded to prevent contact with non-target plants, allowing the operator to spray close to other non-target plants when necessary. There is no pressure; hence, there is no vaporization and minimal drift.

The second applicator is marketed as the “Herbi” and operates on a spinning disc theory by a series of flashlight batteries. Extremely small amounts of material such as 2 liters will cover areas from 17,000 to 35,000 square feet depending on the size of nozzle used. The “Herbi” covers a swath of approximately 4 feet and does an excellent job of weed control. Due to the very small amount of spray material, it is difficult to tell where one has been unless the turf is sprayed in the morning when dew is present to indicate where the operator has passed. Further, the spinning disc can project herbicides onto non-target plants unless the operator exercises extreme care. It is an excellent weed control tool and especially adapted to larger turfgrass areas.

Precautions

SELECTING THE RIGHT CHEMICAL. Be sure that you use herbicides recommended for the pests you want to destroy. If you are not sure about the identity of certain weeds, ask your county Cooperative Extension agent. The most effective chemical for a specific weed problem is not always the most practical one because it may cause damage to nearby plants. In certain areas, regulations set down by the State Department of Agriculture must also be considered. Check with your county Cooperative Extension agent.

PREVENTING VAPORIZATION. Danger from vaporization gets worse as temperatures rise above 60°F. Heat converts herbicides to gases which can move from one yard to another with only slight air currents. For safety, use low volatile esters or nonvolatile formulations such as amines, solubilized acids, and emulsifiable acids. Read the package labels or consult with herbicide dealers.

AVOIDING PARTICLE DRIFT. Droplets carrying herbicide particles may drift if pressure is excessive or if the spray is directed into the air.

Keep the spray close to the ground and use minimum height and pressure for thorough coverage.

Use Herbicides Safely

Herbicides contribute to healthy, attractive lawns when label directions and precautions are followed carefully. If used improperly, pesticides can be dangerous to humans and desirable plant and animal life. There are a few simple rules which every user should follow.

1. Use an herbicide only when it is needed—and be sure that it is recommended for the weed you want to control.
2. Follow directions for mixing and applying as carefully as possible. Never use a stronger concentration than is recommended.
3. Always store herbicides in their original containers. Keep them away from food and feed and under lock and key.
4. Dispose of empty containers so that they are not a hazard to humans, pets, livestock, or wildlife.



Buttercup

Weed Identification

An effective weed control program is based on proper identification of weed types. The illustrations and discussions which follow can help you identify and treat lawn weed problems.

Broadleaf Weeds Common to Established Lawns

BUTTERCUP (*Ranunculus repens*). Buttercup or creeping buttercup usually is found on wet, poorly drained soils west of the Cascade Mountains. A lawn seedbed of sandy soil will discourage buttercup seedlings.

In naturally wet areas, install drainage. If wetness is due to a compact soil surface, it may help to aerate the soil.

Buttercup is a perennial with hairy, creeping stems that root at the nodes. The three segments of the leaves are hairy and usually dark green, except for some occasional light green spots. The flowers are bright yellow and have five to seven petals, 1/4 to 1/2 inch long.

CHICKWEEDS (mouse-ear and common). These weeds are usually found in damp, shady areas. Most familiar in lawns are common chickweed (*Stellaria media*), annual mouse-ear chickweed (*Cerastium viscosum*), and perennial mouse-ear chickweed (*Cerastium vulgatum*).

Common chickweed spreads somewhat as it



Common Chickweed

Mouse-ear Chickweed

grows. The stems have a single line of hairs, and the flowers are white and star-shaped.

Mouse-ear chickweed is especially troublesome in closely mowed lawns. It grows rapidly in mild temperatures, yet survives the winter months. It quickly fills spots left by disease or mechanical damage.

Annual mouse-ear chickweed is often called “sticky chickweed.” It is hairy, spreading or erect, and larger than common chickweed. The empty seed cases, which are almost transparent and have 10 teeth, are conspicuous.

Perennial mouse-ear chickweed has creeping stems and is otherwise much like the annual mouse-ear species.

CLOVERS. A variety of clovers often grow along with turfgrasses. Although some homeowners prefer to leave them in the lawn to provide nitrogen fertility, clovers can be troublesome lawn pests.

White clover (*Trifolium repens*), hop clover (*Trifolium procumbens*), small hop clover (*Trifolium dubium*—often called Japanese clover), and sub-clover (*Trifolium subterraneum*) are found in many lawn seed mixtures. Black medic or yellow trefoil (*Medicago lupulina*), a close relative of alfalfa, is often confused with some of the clovers.

Clovers are legumes and are encouraged by phosphate, potash, and sulfur fertilizers. They can be controlled somewhat with fertilizers high in nitrogen and low in phosphorus.

Sub-clover germinates in the fall, grows rapidly in the early spring, and matures by July. Other clovers are most luxuriant during the late spring and summer.

DANDELION. Dandelion (*Taraxacum officinale*) and false dandelion (*Hypochaeris radicata*) are probably the most common lawn weeds found in Washington.

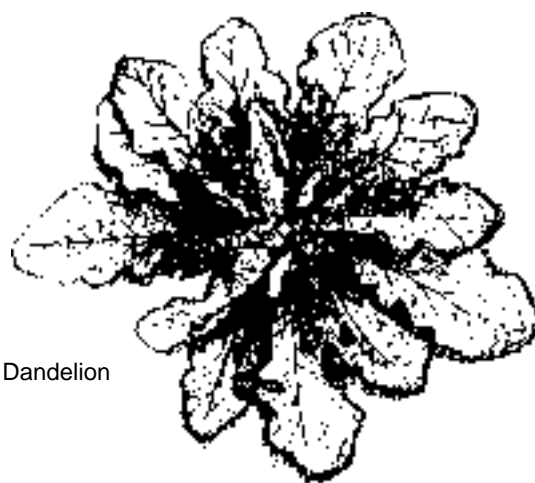
These perennials can spread by seeds or by lateral crown shoots from a fleshy, deep taproot. They have bright yellow flowers and often continue flowering until frost. Dandelion is most abundant in areas of full sunlight.

Removing the dandelion crowns by hand is an effective control measure.

Chemical control will eliminate those dandelions sprayed, but will have no effect on those germinating throughout the summer. Both spring and fall applications are advisable during the first year of treatment. Then treatment can be reduced to a single application each summer or when needed.



White Clover



False Dandelion

ENGLISH LAWN DAISY (*Bellis perennis*). This weed is common to moist, cool soils west of the Cascade Mountains and the high rainfall areas east of the Cascades. It usually grows in soil that is low in fertility.

Lawn daisy is a perennial with a flat-spreading habit. The leaves may be smooth or slightly hairy, and may or may not have teeth. Usually the leaves have a broad tip which narrows towards the base. The flowers are white, or pink to red, with yellow disk-shaped centers.

Chemical control will be effective if application is made before July 1. A second application about September 15 will control regrowth and prevent late weeds.

PEARLWORT (*Sagina procumbens*). This weed is a small, fine-leaved plant which spreads into a dense circular or oval patch. Infestations may be heavy on soils of low fertility. Common management practices have no apparent effect.

Pearlwort is normally an annual, but may be a perennial. It has branches from the base which sometimes sprawl to three inches. The leaves are smooth and narrow. Flower stalks are longer than the leaves, and the tiny flowers are white.

A good fertilizer program can discourage pearlwort. Small infestations can be removed with a lawn plugger or cut out with a knife.

PLANTAIN (*Plantago species*). Broadleaf plantain (*Plantago major*) and English or buckhorn



Dandelion

Buckhorn or English Plantain

Lawn Daisy



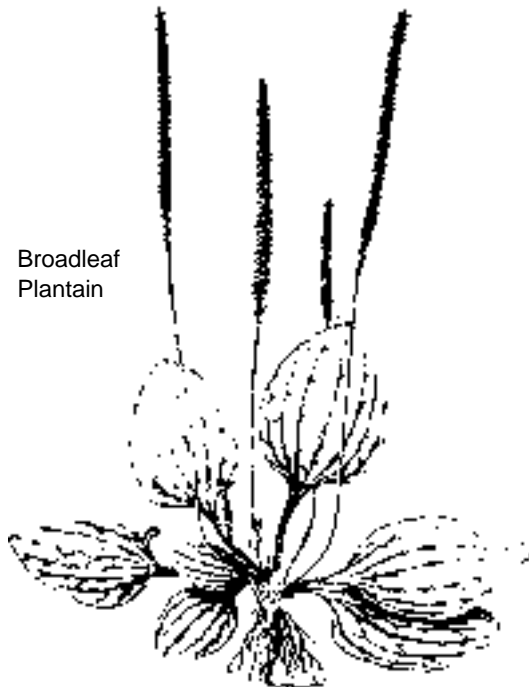
plantain (*Plantago lanceolata*) behave similarly and are widely distributed.

These perennials develop from a rosette. The leaves may be smooth or hairy, but they retain their characteristic shape. The leaf length varies from 2 to 15 inches. The dense spike or flower stalk usually is longer than the largest leaf.

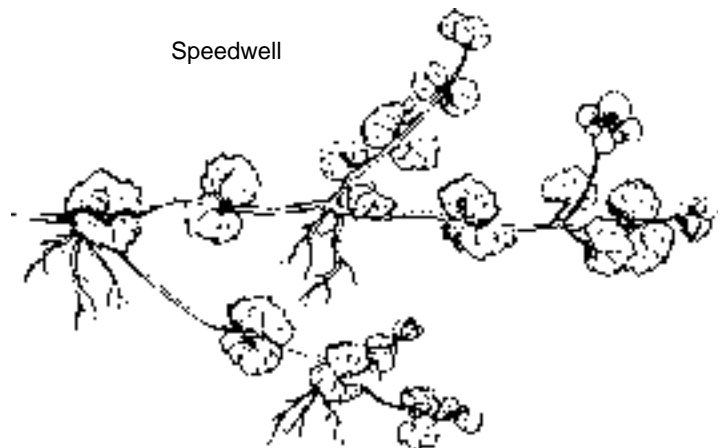
Plantain can be controlled any time during the growing season, but is most susceptible to herbicides in the late spring.

SPEEDWELL (*Veronica filiformis*). This weed, also known as "creeping Veronica," is adapted to moist, shady areas. However, it will also grow in open

Broadleaf Plantain



Speedwell



sunlight if the area remains moist. High fertility levels, good drainage, and sunlight will restrict its growth.

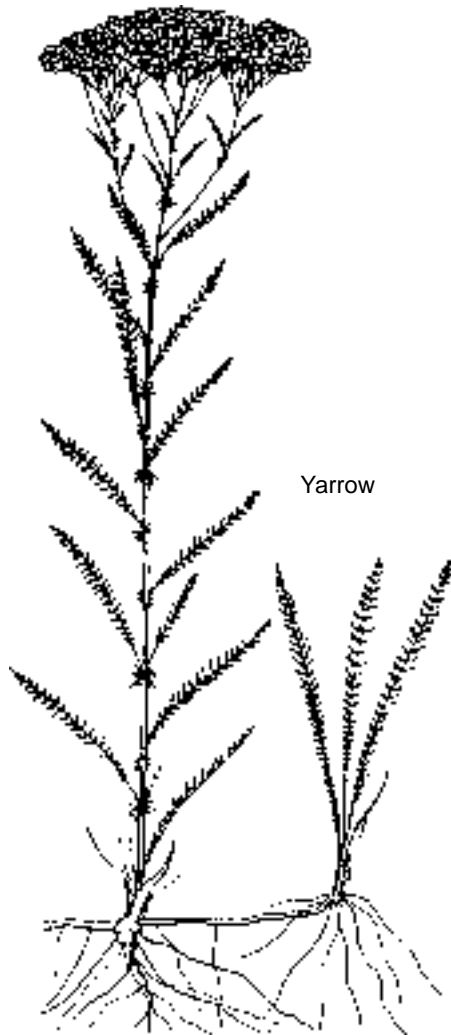
Speedwell is a perennial and produces slender stems which root at each node. The leaves are paired and stalked. The flowers develop on stalks longer than the leaves, and are blue to white with dark markings.

Apply herbicides in late spring.

YARROW (*Achillea millefolium*). Yarrow is common throughout the Pacific Northwest, but western yarrow (var. *lanulosa*) is confined to the region east of the Cascade Mountains.

These weeds often are established in poorly managed lawns which cannot compete well. They also may be present in topsoils brought in from other areas.

Yarrow is a perennial. When mowed regularly, it begins to creep outward instead of growing upright,



developing into a rosette. The leaves are fern-like and woolly, especially when young. The flowers are usually white, but sometimes are colored.

Applications of herbicides may need to be repeated to be effective.

Annual Weeds Common to Newly Planted Lawns

HENBIT (*Lamium amplexicaule*). Henbit, often called "dead nettle," has a square stem and a few pairs of longstemmed leaves. The flowers are small, purple and white, and appear as clusters between the stems and the upper leaves. This weed usually takes over the thin areas in newly seeded lawns.

LAMB'S-QUARTER (*Chenopodium alba*). Often confused with pigweed, lamb's-quarter grows from 1 to 3 feet tall. Lamb's-quarter has angular or ridged



stems that are smooth and tinged with purple. The leaves are grayish-green and appear powdery underneath. Flowers are small, greenish, and appear on the tips of the stems.

MALLOW (*Malva species*). Mallow is often called “cheeseweed,” “buttonweed,” or “wild hollyhock.” These plants are particularly troublesome in new plantings or on soils containing large amounts of barnyard manure. Mallows can be annuals, biennials, or even perennials, with branches that develop from a central crown.

The leaves are slightly lobed on the edges and are 1/4 to 2 inches in diameter. The flowers, whitish and tinged with blue, appear singly or as clusters between the leaf and the stem.

PIGWEED (*Amaranthus species*). The various pigweeds are a nuisance only in newly planted lawns. Rough pigweed (*Amaranthus retroflexus*) is a somewhat hairy annual. The roots are reddish or pink at the ground line. Leaves are single and alternate on the stem.

Prostrate pigweed (*Amaranthus blitoides*) is a smooth and somewhat succulent annual with many branches. Its stems are pale, while the leaves are shiny, deep green, and may have pale markings.



Mallow



Lamb's-quarter



Pigweed

Tumbling pigweed (*Amaranthus graecizans*) is a semi-erect annual with many branches. Leaves are pale green and may be reddish on the underside.

Usually the recommended mowing height will be satisfactory to control pigweed in a good stand of grass.

PROSTRATE KNOTWEED (*Polygonum aviculare*).

Prostrate knotweed is most common in newly planted lawns or areas where there is little growth competition.

This annual forms a wiry, green mat, and has small, yellow flowers close to the stem. The leaves are green to dull blue and sometimes have a whitish cast.

Prostrate knotweed produces many seeds which germinate early in the spring as the soil warms. At that time, the plant is easily killed with herbicides.

Weedy Grasses

ANNUAL BLUEGRASS (*Poa annua*). Annual bluegrass germinates early in the fall and is established before cold weather.

It grows vigorously through mild winters and early spring. Some annual bluegrass seedheads can be found almost any time of the year. If the sum-

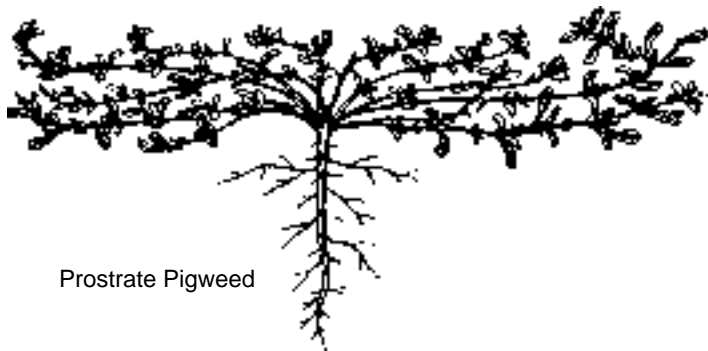
mers are mild and moisture is available, it persists as a perennial.

Its shallow root system makes it extremely susceptible to drought. It often dies and leaves brown spots in otherwise green turf. Mowing height has little effect—seedheads will form even at cutting heights of 1/8 inch.

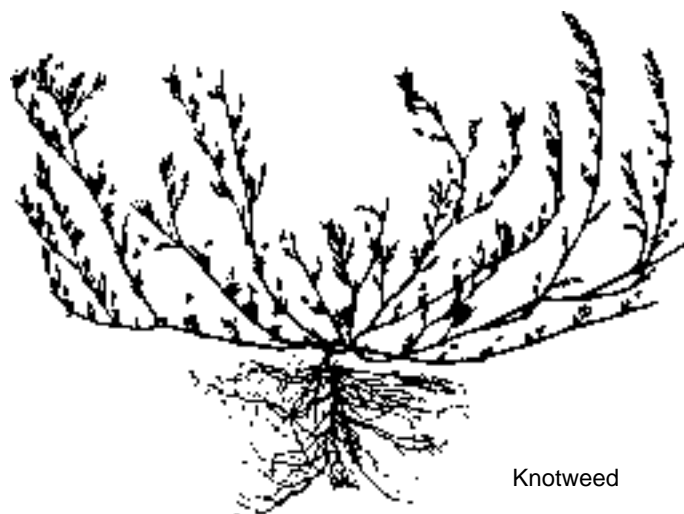
Fumigating the soil before planting new turf, or planting in the late fall will restrict development. Avoid pure plantings of Kentucky bluegrass west of the Cascades.

Follow the fertilizer recommendations for your area. Control diseases that weaken or kill desired turf species. Encourage deep root systems by providing good soil drainage and irrigating thoroughly at less frequent intervals.

CRABGRASS. Hairy crabgrass (*Digitaria sanguinalis*) and smooth crabgrass (*Digitaria ischaemum*) germinate in the spring, grow during the hot summer months, and are killed by the first frost. They are most prevalent in the interior valley regions of eastern Washington where summer night temperatures are high. They are also found in some areas west of the Cascade Mountains.



Prostrate Pigweed



Knotweed



Annual Bluegrass

Germination requires moisture, high light intensity, and uninterrupted high temperatures. Skillful management can be used to reduce infestations. Nitrogen fertilization during cool periods of the spring and fall will promote rapid growth of desirable turfgrasses. The turfgrass shades the young crabgrass seedlings and inhibits growth. Avoid daily watering and allow the surface of the soil to dry.

PASTURE GRASSES. Tall (alta) fescue, orchardgrass, timothy, and perennial ryegrass often grow in lawns and other turf areas. They form distinctive clumps that differ from the fine turfgrass in texture and color.

When infestations of these coarse grasses are light, removal by hand is recommended. The clumps can be lifted with a sharp shovel to a depth of about 4 inches, the area refilled with clean soil, and reseeded.

More extensive infestation can be spot-treated with nonselective herbicides. Follow specific directions for their use and consult your county Cooperative Extension agent before applying.

Crabgrass



Miscellaneous Weedy Grasses

BENTGRASSES (*Agrostis* species). Bentgrasses often are troublesome weeds in bluegrass and fescue plantings east of the Cascade Mountains. They will often take over entire lawns or form unsightly patches.

Bentgrasses are shallow-rooted and will not survive in dry soils.

Chemical control measures are effective if used in late summer or early fall.

BERMUDAGRASS (*Cynodon dactylon*).

Bermudagrass is a tough, wiry, warm season perennial grass that roots at the nodes similar to crabgrass or creeping bentgrasses. Many strains of bermudagrass are common today in the warm valleys of the Pacific Northwest. The grass starts as a colony, spreads outward, and eventually eliminates all other grasses and plants. It will go dormant after heavy frosts.

Spot treatment with chemicals that kill all vegetation is the only effective control. It may take more than one application of a nonselective material to get adequate control. Contact your county Cooperative Extension agent for identification of bermudagrass.

QUACKGRASS (*Agropyron repens*). Quackgrass is seldom a problem except in newly planted lawns. During this time, the quackgrass plants grow faster than turf and may cause some alarm. However, if the lawn is mowed regularly to the recommended height, quackgrass will not detract from the appearance.

Frequent close mowing causes quackgrass to die as the food reserves in the roots are used up. Continued clipping at the recommended cutting height, plus high nitrogen fertilization, will result in the elimination of quackgrass.

VELVETGRASS (*Holcus* species). The two most common species of velvetgrass found in lawns are *Holcus lanatus* and *Holcus mollis*.

Holcus lanatus is a fibrous-rooted perennial, which spreads only by seed and enlargement of the crown area. It is pale green with dense, fine hairs on the leaves and stems. West of the Cascade Mountains it grows faster than the desirable turfgrasses during fall and winter and becomes particularly apparent. Because the leaves are wider than the typical bentgrasses, fescues, or bluegrasses, they are more conspicuous.

Holcus mollis is a perennial which spreads by both seeds and rhizomes (underground stems). This species is much more difficult to kill than the fibrous-rooted type. Its general growth habit is the same as *Holcus lanatus*, except its rate of advancement is faster because of the rhizomes.

Special Weed Problems Associated with Management

ALGAE (Bluegreen types). This single-celled bluegreen plant is found in all parts of the Pacific Northwest. Where colonies are dense, the area appears black.

Algae thrive on wet, thinly turfed soils that have a high content of nitrogen and organic matter. Organic forms of fertilizers contribute to algae growth, especially during the cooler seasons. Irrigation water taken from ponds, lakes, canals, and streams contain varying amounts of algae. Algae may also be carried by birds, animals, people, and machinery.

The growth of algae can be restricted by encouraging the development of dense stands of turf and by providing good drainage. Use sandy soils which are light in density for seedbeds. Provide maximum light intensity to encourage the desirable turf species, and avoid late fall and winter applications of nitrogen fertilizer.

Keep the surface as dry as possible—drain wet soils. Two pounds of sulfur per 1,000 square feet may help.

MOSS (*Selaginella* species and others). Moss occurs extensively in turfgrasses west of the Cascade Mountains. It appears to a limited extent east of the Cascades, especially in the foothill areas of higher rainfall. Moss does not begin its annual development until early winter and reaches its peak in March.

Factors that favor moss development are: poor fertilization programs, especially when nitrogen is deficient; dry summers and inadequate sprinkling, resulting in poor turf growth; mild, wet winters; compacted soils which impede water penetration, matted or thatched turf that interferes with water penetration; and grass that has not been cut short enough.

Proper management procedures are more effective in controlling moss than chemicals. For best results, try to: provide a balanced fertilizer program; mow grass at recommended cutting height for the species; verticut or power rake the lawn to remove thatch and moss; overseed thin areas to outcompete moss; irrigate during dry periods; aerate spots where water tends to run off; and apply water only as fast as the soil will absorb it.



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Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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