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EC74-188 Know and Control : Downy Brome

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know and control

DOWNY BROME



Extension Service
University of Nebraska-Lincoln College of Agriculture Cooperating with the
U.S. Department of Agriculture and the College of Home Economics
J. L. Adams, Director

know and control Downy Brome

C. R. Fenster and G. A. Wicks^{1/}

Downy brome (*Bromus tectorum* L.), a native of Europe, has become established throughout Nebraska. It is one of the most serious weeds in western Nebraska. It is especially troublesome in alfalfa, winter wheat-fallow rotation, continuous winter wheat, rangeland, waste areas, roadsides, shelterbelts, fence rows and railroad rights-of-way.

Downy brome is known by a variety of names. Common names in addition to downy brome are cheatgrass, cheatgrass brome, downy brome grass, military grass, wild oats, downy chess and cheat.

This weedy annual brome is a constant threat to winter wheat, alfalfa and rangeland. Under certain climatic and field conditions, it can seriously curtail production of winter wheat. At Alliance and North Platte, a moderate infestation of downy brome reduced wheat yields 30 percent and a heavy infestation 80 percent. Overgrazed grassland lends itself to invasion of downy brome and greatly reduces the economic returns of the grassland.

Downy brome depends largely on surface moisture for growth. At maturity, plants are a serious fire hazard. They burn rapidly and create intense heat.

The plant is a strong invader and competitor of other plants. Before seed heads emerge, downy brome is a palatable grass. However, as it matures, it becomes very unpalatable.

Description

Downy brome is a winter annual or early spring annual reproducing by seed. The plant usually begins growth in the fall of the year or early spring. Vernalization is necessary for production of seed. The plant tillers profusely and overwinters in a rosette stage. In early spring, the plant continues to tiller, joints and sets seed. The

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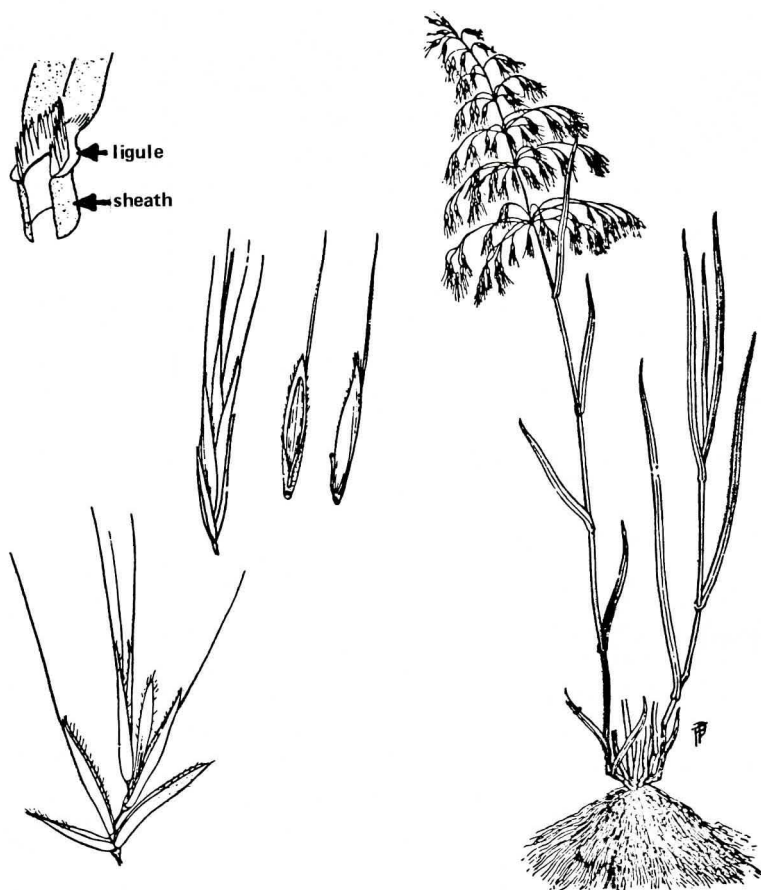
plant grows from 6 to 24 inches tall. Height depends on available moisture, fertility and plant competition. At time of emergence, leaves are about 1/32 of an inch wide and a brownish-green color. As the plant and seed reaches maturity, it turns a purplish-tan color.

Leaves—Leaf blades are flat and 2 to 6 inches long. Blades and sheath are hairy.

Roots—The root system is fibrous and relatively shallow.

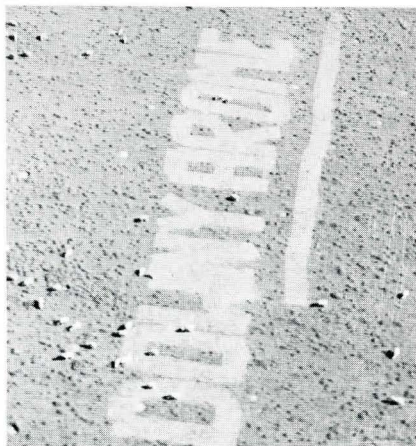
Stems—The stems are smooth, slender and erect, protruding from a much branched base.

Panicle and Seed—Panicles are 2 to 6 inches long, slender and drooping to one side. Spikelets are numerous, 5 to 8, flowered with slender straight awns, 1/2 to 3/4 inch long, each attached to a hairy,



Downy brome. Figure shows plant and enlarged spikelet, ligule area and seed.

buff-brown, narrow seed about 1/2 inch long. Seeds are light and fluffy—about 208,000 per pound. Germination of seed is usually high. Seed will remain viable for several years near the soil surface because of natural seed dormancy or unfavorable conditions for germination.



Native grass pasture badly infested with downy brome. The word "downy brome" was written by applying Atrazine.



Crested wheatgrass to the right. Note effective control of downy brome in the crested wheatgrass.

Downy Brome Control

Eliminate Seed Sources

1. Do away with weedy waste places. Roadside ditches should be tilled and cropped when possible or seeded to a competitive grass.
2. Seed perennial, cool-season grasses such as crested wheatgrass or Russian wild rye in waste areas. Good vigorous stands of grasses or legumes or grass-legume combinations are highly competitive with downy brome and other weeds. Crested wheatgrass and Russian wild rye are among the best.
3. Use good rangeland management practices. Harvest half the forage and leave half. Practice rotational grazing.
4. On cultivated fields destroy the weeds before they produce seed.

5. Plant clean seed. Downy brome seed is often found in small grain and grass seed.

Control With Tillage

1. Till stubble immediately after harvest and again before freeze-up.

2. Destroy the weeds during the first tillage operation. If weeds are not killed at this time, they are likely to develop an extensive root system, which makes them even more difficult to kill the next time over.



Rotations help control downy brome. Entire area was heavily infested with downy brome. Winter wheat-fallow rotation contained 30,000 plants per acre (foreground). Winter wheat-sorghum-fallow rotation contained 300 plants per acre (background).

3. Underground tillage tools (sweeps and rodweeders). Soil must be dry enough for downy brome to wilt within 30 minutes after tillage for good control. Shallow depth of tillage cuts a larger percentage of roots from the plant and produces greater agitation of the soil. The faster the tillage implement travels, the greater the turbulence of the soil. This is important to break soil away from the weed roots. Trash rods, upside-down harrows, spur and mulch treaders will increase weed control.



Plant fall-seeded crops at or near the optimum date of seeding and in a weed-free seed bed. At the North Platte Station, wheat in the background was rodweeded and seeded September 20th and produced 26 bu/A with a heavy infestation of downy brome. Land in the foreground was rodweeded and seeded to wheat on September 27th. The field produced 44 bu/A of wheat and was free of downy brome. It is important to have weeds controlled just prior to planting.



Roadside ditch full of weeds, including downy brome. Provides an excellent source of weed seed for infestation of fields.



Roadside ditch worked down and cropped.

4. When using a disk-type implement, operate it at a shallow depth (1 1/2 to 2 1/2 inches). A greater angle of the disk must be used to obtain full tillage between disks.

5. It is often necessary to follow the first tillage operation with another in one to two weeks to control the weeds that were missed the first time. This practice is also needed when land is plowed.

6. Be sure soil is dry enough for rapid wilting of weeds.

7. Perform timely tillage operations. Downy brome is a short-season plant; it must be controlled before the middle of May for western Nebraska and first of May for central and eastern Nebraska. If downy brome is not controlled before seed set, resort to more drastic tillage such as the plow.

Control With Crop Rotations

Downy brome is most troublesome in crops that make most of their growth during our cool seasons—fall and early spring. The seed germinates along with fall seeded wheat and then continues a life cycle similar to wheat until its maturity in early summer.

Planting grain crops that have different life cycles than winter wheat and downy brome will help reduce downy brome populations. Sorghum, corn, oats and millet are planted in the spring. The spring seedbed preparation should kill downy brome that germinated the previous fall or early spring. Including these crops in the cropping sequence will help control downy brome infestations.

Do not overlook a 3-year rotation such as winter wheat-millet-fallow or winter wheat-sorghum-fallow. This has proved to be as profitable as a winter wheat-fallow rotation for southern Nebraska and it gives a high degree of downy brome control.

Downy brome in alfalfa indicates poor alfalfa culture involving poor stands, low fertility or inadequate water. Downy brome lowers the quality of the first cutting of hay. Control downy brome in alfalfa by: (1) planting in downy brome free soil, (2) maintaining good vigorous stands, (3) using adapted varieties, (4) having adequate fertility—especially phosphorus in the soil, (5) applying correct amounts of water under irrigation, (6) controlling downy brome in adjacent areas, and (7) use of herbicides.

Downy brome can not compete with a vigorous growth of alfalfa. Most productive stands of alfalfa in Nebraska only last 3 to 5 years. If alfalfa stands are deteriorating, plow and reestablish. Alfalfa is a desirable crop in the rotation.

Control With Herbicides on Non-Cropland

1. Atrazine, simazine, prometone or bromacil—Apply 2 pounds per acre of active ingredient in enough water to give good coverage. Preemergence or early postemergence applications may be made in the fall or early spring. Spring applications should be made before April 10 or before the plants are two inches high. Excellent preemergence control generally results when at least one-half inch of rain falls soon after application.

Caution: At rates of 2 pounds per acre atrazine and simazine have carried over in the soil for periods in excess of one year. Prometone and bromacil generally carry over in the soil for several years.

Control With Herbicides on Cropland

Established Alfalfa: Apply simazine at the rate of 1 to 1.5 lb/A (1.25 to 1.87 Princep 80W) in fall on dormant alfalfa that has been

established at least one year. Do not use on sands or loamy sands or soils low in organic matter or crop injury may occur.

Warm-season Grasses for Seed Production: Atrazine, diuron or monuron can be applied at the rate of 2-3 lb/A in the spring or fall of the year before weeds emerge. Do not use until second year after seeding. Herbicides are less effective in heavy plant residues. Rotation of herbicides may be desirable.

Windbreaks

See NebGuide G73-33 for the use of herbicides and tree species tolerance. Contact your county agent or local SCS representative for more information.

Caution

Herbicide residues in the soil, crop safety, herbicide costs and Environmental Protection Agency regulations must all be considered before a chemical is acceptable for any weed control operation. At present there are no herbicides acceptable for selective control of downy brome in small grains or for residual control on fallow land.

Always read the herbicide label before using. Keep chemicals out of reach of children.



**"Use Crop Production
Chemicals Wisely!"**

**READ THE LABEL BEFORE
EACH USE.** Follow instructions;
heed all cautions and warnings.