

CHEATGRASS

(*Bromus tectorum*)

Description: Cheatgrass, also referred to as downy brome, is a member of the Poaceae or grass family. Cheatgrass is an annual or winter annual grass that can range in height from 4 to 30 inches tall. Seedlings are bright green with conspicuously hairy leaves. Stems are erect, slender, and glabrous or slightly hairy. Foliage and seedheads of mature plants often change color from green to purple to brown or tan as the plant dries. A single cheatgrass plant can be comprised of 1 or 2 tillers or as many as 20 tillers. Inflorescence is dense, slender, usually drooping, 1-sided, and 2 to 6 inches in length. Spikelets are nodding, slender, and $\frac{3}{8}$ to $\frac{3}{4}$ of an inch long. Inflorescence of the plant has 5 to 8 florets per spikelet. Long straight awns are attached to florets that are $\frac{3}{8}$ to $\frac{5}{8}$ inches long and are usually purple at maturity.



Cheatgrass

Plant Images:



Lingule



Panicle



Spikelet

Distribution and Habitat: Cheatgrass is native to the Mediterranean region and is now widely distributed throughout North America. The plant is common on sites that have deep, loamy soils, south facing slopes, and 12 to 22 inches of annual precipitation that peaks in late winter or early spring. However, cheatgrass can also thrive in areas that receive as little as 6 inches of annual precipitation such as salt desert shrub communities or more than 25 inches of annual precipitation in high elevation coniferous forests. Cheatgrass is primarily found along roadsides, railroads, waste areas, pastures, rangelands, and croplands.

Life History/Ecology: Cheatgrass is an annual or winter annual that reproduces solely through seed production. Seedlings germinate in the fall or winter at very high rates as soon as moisture conditions are favorable. Cheatgrass grows rapidly until cold temperatures arrive, although above-ground growth may continue during warm or rainy conditions. The root system will often continue to develop throughout the winter. In the spring, the plant develops rapidly and produces heads in late April to early May, flowers within a week, and produces seed by mid to late June. Cheatgrass is a prolific seed producer with production ranging from 25 to 5,000 seeds per plant. Seeds may not remain viable in the soil longer than one year.

History of Invasion: Cheatgrass is native to southwestern Asia and was most likely introduced independently into North America several times in the 19th century. Seeds of the plant were mixed in with the soil used as ballast in ships traveling from Eurasia. One of the first introductions through ballast dumps was in 1850, in St. Louis, Missouri. An introduction near Denver, Colorado, originated from packing material or straw that was infested with cheatgrass seed. Cheatgrass quickly expanded through the intermountain region of the west. By 1980, nearly every county in Idaho, Wyoming, and Montana had infestations of the plant. In North Dakota, cheatgrass is widely distributed throughout the state. Occurrences of the plant have yet to be determined in a few counties in central North Dakota and the far northeast and southeast corner of the states that still have to be surveyed.

Effects of Invasion: Cheatgrass can thrive in a variety of habitats, thus the plant can quickly displace desirable plant communities, lowering plant diversity. The plant competes with desirable perennial grasses for moisture because of winter and early spring growth habits. Plant community composition can also be influenced by frequent fire cycles that occur in cheatgrass infested areas. The green feed period for foraging animals is brief during the spring and summer because the plant is only green and actively growing for approximately six to eight weeks. The livestock industry has adapted to cheatgrass, but production would be enhanced if the plant was replaced with palatable and nutritious perennial grasses. In the late spring or summer, mature seeds of cheatgrass usually contain long, stiff awns that can puncture the mouth and throat tissue of livestock, thus reducing feed intake and subsequent weight gain. Cheatgrass can also become a problem in several crops such as winter wheat.

Control:

Management objectives for cheatgrass control should involve early detection and local eradication of new infestations. Cheatgrass dominance compared to native species should be taken into consideration when deciding management strategies. Management of cheatgrass is a difficult proposition because control practices that will damage the plant may also be detrimental to native species that occupy the same area. An assessment of a particular area should be conducted prior to initiation of control measures to determine if a sufficient reserve of desirable species is available to replace cheatgrass. If not, control measures may be of limited value or require additional effort to assure revegetation of desirable species and management goals are reached. Once a management plan is implemented, areas should be monitored for several years because seeds cheatgrass is a prolific seed producer.

Mechanical - Hand pulling small infestations before seeds are produced may eliminate current seed production. However, the infestation may not be eliminated and hand pulling would have to be repeated for several consecutive years to exhaust seed bank reserves. Disking is often ineffective, unless tilled 4 to 6 inches deep in order to bury seeds and prevent germination. Disking or tillage may not be appropriate on wildlands or rangelands and would have to be repeated because equipment does not consistently cut deep enough to bury the majority of the seeds. Mowing may reduce plant production but seeds may already be viable and plants may regenerate new culms if conducted during the early growth stage. Seeds of cheatgrass can be viable before any purple coloration appears, therefore only a

short period time after inflorescences are produced is available when plants can be mowed without dispersing viable seeds. There is no single growth stage when smooth brome can be mowed that will completely kill or prevent seed production. Mowing should be repeated for several consecutive years to be effective. In one study, mowing every three weeks during the spring and summer months was as effective at controlling cheatgrass seed production as an application of glyphosate. Cheatgrass is a highly flammable species. Prescribed burns conducted in the late spring or early summer before seeds mature, may effectively control cheatgrass infestations. However, cool-season perennial grasses may be more susceptible to burns at this time. In Nebraska, a mixed-grass prairie was burned in the spring, summer, or fall. Areas that were burned in the summer or fall showed a reduction in cheatgrass. Seeds of cheatgrass were destroyed and the litter layer that was removed reduced success of seedling germination. In eastern Montana, prescribed burns were conducted in early October or early to mid-April. Fall burns caused a 70% reduction in cheatgrass compared to a 50 to 60% reduction in the spring burned plots the growing season following the prescribed burn. Burning may reduce the density of cheatgrass stands, but seeds may survive and re-establish quickly if burns are not repeated the following year. Prescribed burning may be more effective if combined with other control methods.

Chemical - Spring applications of quizalofop, fluazifop-p-butyl, sethoxydim, and glyphosate can control cheatgrass infestations. Herbicides should be repeated annually for a period of two to five years. Imazapic or sulfometuron methyl applied in the fall can effectively control cheatgrass.

Contact your local county extension agent for recommended use rates, locations, and timing.

Biological - No biological control agents are currently available for cheatgrass control, but livestock grazing may regulate infestations. Cheatgrass can be considered a valuable forage but grazing generally is not recommended as a control method. One study suggests that cheatgrass infestations should be grazed before the plants turn purple in color to prevent seed production. The study also suggested that an area be grazed twice in the spring for at least two consecutive years to control populations. However, plants that are grazed in the spring may regenerate new culms and still produce seeds. Plants that are grazed in the summer or fall may not regrow, but viable seeds will already have been produced or dispersed at this time.

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Cheatgrass photograph courtesy of Mehrhoff, Leslie J./IPANE.

Panicle photograph courtesy of J. C. Schou, Biopix.dk.

Ligule and spikelet photographs courtesy of Virginia Tech Weed Guide.