SMOOTH BROME
(*Bromus inermis*)

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Description: Smooth brome, also referred to as Hungarian brome, Austrian brome, Russian brome, and awnless brome, is a member of the Poaceae or grass family. Smooth brome is a strongly, rhizomatous, sod-forming perennial grass that can reach heights up to 4 feet. Culms of the plant are smooth and have an erect to decumbent growth form. Basal and stem leaves are numerous, flat, somewhat firm, glabrous, 3 to 5 inches long, and approximately 1/8 to 1/2 inch wide. Leaves may have a distinctive W-shaped water mark on the leaf blade. Sheaths are glabrous and round. Ligules are less than 1/8 inch long, membranous, and lacerate. Inflorescence is a loosely contracted panicle that is 4 to 8 inches long, only moderately open, with the upper branches often ascending while lower branches are reflexed. Spikelets are four to ten-flowered, pale green to slightly purple-tinged in color, 3/4 to 2 inches long and 1/16 to 1/4 inch wide. Glumes are acute, the lower is one-nerved and 1/8 to 1/4 inch long, the upper is three-nerved and 1/4 to 1/2 inch long. Lemmas are awnless or are short-awned up to about 1/16 inch long. Anthers are linear, orange-yellow in color, and 1/8 inch in length.

Plant Images:


W-shaped water mark

Spikelets

Panicle

Distribution and Habitat: Smooth brome is native to Eurasia and now occurs from the northeast United States, south to Tennessee, west to the Pacific Coast, south to northern and central New Mexico and Arizona, north to Alaska, and throughout Canada. The plant occurs in a wide range of soils but prefers deep, fertile, well-drained silt loam or clay loam soils. The plant is drought-resistant and can tolerate spring flooding conditions. Smooth brome is often planted as a forage species that can escape to forests, prairies, fields, lawns, roadsides, railroad right-of-ways, and lightly disturbed areas.

Life History/Ecology: Smooth brome is a cool season, perennial grass that can spread by seed and rhizomes. Germination is primarily in early spring, but can occur in the early fall if soil moisture is adequate. The plant primarily begins to grow in early spring in mid- to late March and stem elongation occurs from March to April. The boot stage of the plant is reached in mid- to late May and plants are fully headed with blooming occurring by mid June. A single plant can produce from 50 to over 100,000 seeds that begin to ripen in June and August. Seeds can remain viable in the soil for up to ten years. Smooth brome also reproduces through rhizome development that begins between three weeks and six months after germination.

History of Introduction: Smooth brome is an introduced grass from Europe, China and Siberia that is now considered to be naturalized in the United States. Smooth brome was first introduced in the United States in 1884, by the California Experiment Station. The plant is widely planted as a forage species and is now found in the northeastern United States, northern Great Plains, the Pacific Coast, and Alaska. In North Dakota, smooth brome is widely distributed throughout the state and most likely occurs in most if not all of the counties.

Effects of Invasion: Smooth brome is an aggressive, competitive species that can exclude and replace highly desirable plant species. The plant is widely seeded as a forage or cover crop that can become extremely persistent, forming a dense sod that reduces biodiversity.

Control:
Management objectives for smooth brome control should involve prevention, containing populations, and eradicating established populations. Management of smooth brome is a difficult proposition since 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 smooth brome. 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 of smooth brome can remain viable in the soil for up to ten years and the plant can continue to spread by tillers and rhizomes.

Mechanical - Cutting smooth brome at the boot stage may be effective if conducted while the flowering head is still enclosed within the sheath of the plant. In Minnesota, smooth brome was reduced after plants were cut during the boot stage when the plant had reached a height of 18 to 24 inches in late May. Cutting smooth brome during hot, moist weather, followed by a dry period may favor control methods. A study in Saskatchewan suggests that cutting smooth brome just before the plant changes from the vegetative to early elongation of the reproductive stage will be more effective. Plants that were cut at 1 1/2 inches had greater injury than plants that were cut at taller heights. Repeated cutting or mowing throughout the growing season may keep root reserves of smooth brome at low levels that can reduce the vigor of the infestation. Prescribed burning may reduce smooth brome if repeated annually in mid to late spring. A prescribed burn conducted in late April only inhibited smooth brome and did not severely damage the infestation. In Nebraska, research plots were burned at three different smooth brome growth

stages: tiller emergence in late March, tiller elongation in mid May, and heading in late May. The fall after the prescribed burns, burns that had been conducted at the tiller elongation and heading growth stages had reduced smooth brome tiller density by 50% compared to the control. This study was extended to consider burning at the flowering stage of smooth brome in mid-June which was effective in suppressing smooth brome. Prescribed burns need to be repeated for several consecutive years because a single burn would allow smooth brome to make a partial to full recovery the following year.

Chemical - Several herbicides are available to control smooth brome. Picloram, dicamba, glyphosate, and imazapic have all been successful. Pronamide, imazapyr, bromacil, and simazine have also been used to control smooth brome. However, most herbicides are not specific to the plant.

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

Biological - No insect biological control agents are currently available for control of smooth brome. The plant is palatable and can provide excellent forage for livestock. The early growth stage of smooth brome is highly palatable to cattle and domestic sheep but palatabilty and nutritional quality may drop after the flowering growth stage. Smooth brome may provide palatable forage in the fall after the grass greens up. However, smooth brome can tolerate grazing and will continue to persist.

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Smooth brome, spikelets, and panicle photographs courtesy of J. C. Schou, Biopix.dk

W-shaped water mark photograph courtesy of Purdue University Agronomy Extension.