

CRESTED WHEATGRASS

(*Agropyron cristatum*)

Description: Crested wheatgrass is a member of the Poaceae or grass family. Crested wheatgrass is a cool-season, tufted perennial bunchgrass that can range in height from 10 to 40 inches tall. Culms of the plant are erect, hollow to pith-filled, and in a dense tuft. Leaf blades are flat, glabrous to slightly pubescent on the upper surface, 1 to 7 inches long, 1/32 to 1/4 of an inch wide, and green to dark green in color. Ligules are approximately 1/32 of an inch long and auricles are present. Spikes are flattened, dense, 1 to 3 inches long, overlapping, strongly spreading, and contain 3 to 6 flowers. Glumes are firm, keeled, and taper into a short bristle. Lemmas generally narrow to a short awn that is up to 1/4 of an inch long. Anthers are 1/16 to 1/8 of an inch long.

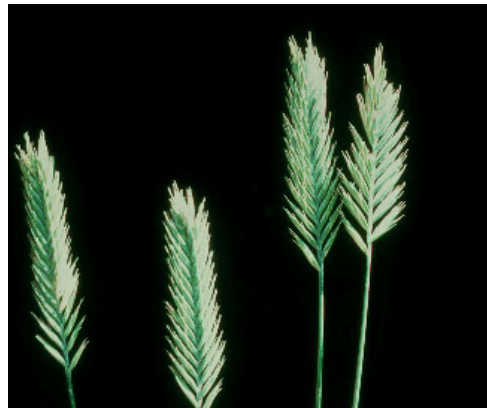
Plant Images:



Crested wheatgrass



Infestation



Spikelets

Distribution and Habitat: Crested wheatgrass is native to Russia and is now common in the northern Great Plains. Crested wheatgrass prefers areas on deep to shallow, medium-textured, moderately well to well-drained, and weakly acidic to moderately alkaline soils. The plant is limited by loose sandy soils, heavy clays, or saline soils. Crested wheatgrass is tolerant to cold and drought conditions and thrives in regions that receive about 12 to 16 inches of precipitation annually. The plant is generally planted on previously cultivated lands, revegetated rangeland, and along dry roadsides. Crested wheatgrass is also common to native prairie and other domestic grass plantings.

Life History/Ecology: Crested wheatgrass is a cool season, perennial grass that reproduces primarily through seed production but can also spread by short rhizomes. Seedlings can germinate throughout a range of temperature conditions; however, the plant will generally begin to grow in late April and flower

in mid-June. Seeds produced may remain viable in the soil for up to five years. Crested wheatgrass is also able to spread vegetatively through the production of tillers. The plant may regrow in the fall if moisture is sufficient.

History of Introduction: Crested wheatgrass is native to Russia or the desert regions of southern Siberia and is now considered naturalized in North America. The plant was introduced to North America in the 1930s, and has been planted as a forage species since. Crested wheatgrass was also seeded to reduce soil erosion on abandoned farmlands. The ability of the plant to establish and remain productive in an area for a long period of time has become a concern. In North Dakota, crested wheatgrass has been found throughout the state and has been reported in most counties.

Effects of Invasion: Crested wheatgrass has early growth characteristics that allow the plant to out-compete desirable native species for available nutrients and soil moisture. The plant also affects soil quality in native rangelands by returning less organic matter to the soil than native species. Crested wheatgrass allocates nearly twice the amount of carbon to photosynthetic tissue than plants in a blue grama ecosystem.

Control:

Management objectives for crested wheatgrass control should involve prevention, early detection, and containing established populations. Eliminating or reducing seed production and vegetative spread of established populations is also important. Seeds of crested wheatgrass can remain viable in the soil for up to five years, therefore, infestations should be monitored for several consecutive growing seasons to prevent germination of new plants. Control methods should be combined into an integrated management system for the best long-term control of the plant. Management techniques should be site specific, determined by land use objectives, extent of crested wheatgrass infestations, desired plant community, and effectiveness and limitations of available control measures. Control methods should be implemented to stress crested wheatgrass more than desirable, native species.

Mechanical - Mowing crested wheatgrass mid-season or when the plant is in the elongation stage can prevent the plant from going to seed, since carbohydrate reserves are being drawn down at this time for growth and reproductive structures. Consequently, regrowth may be minimal because carbohydrates may not be quickly replenished. Burning may be an effective control method if conducted prior to seed set and before the plant goes dormant. However, burning may only reduce the topgrowth of the plant, leaving underground tillers to survive. In North Dakota, crested wheatgrass was reduced the first year in tallgrass prairie sites, but was able to recover and was stimulated on some sites after a prescribed burn conducted in May. Prescribed burns may also adversely affect native grasses. Further research is needed to determine the effects of prescribed burns for crested wheatgrass control.

Chemical - Several herbicides are available to control crested wheatgrass, although most are not specific to the plant. Picloram, dicamba, glyphosate, and imazapic have all been successful.

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

Biological - No insect biological control agents are currently available for the control of crested wheatgrass. The plant is palatable to livestock and can provide good forage in the spring when in the vegetative growth stage. Grazing should be conducted during the elongation growth stage of the plant to control crested wheatgrass. Populations that are grazed when plants are lengthening or growing are less likely to produce seeds and may not re-grow. However, crested wheatgrass may become unpalatable as the plant matures.

References:

- Dormaar, J. F., M. A. Naeth, W. D. Willms, and D. S. Chanasyk. 1995. Effect of native prairie, crested wheatgrass (*Agropyron cristatum* (L.) Gaertn.) and Russian wildrye (*Elymus junceus* Fisch.) on soil chemical properties. *J. Range Manage.* 48:258-263.
- Rice, P. M. 2004. Fire as a tool for controlling nonnative invasive plants. [Online]. Available: <http://www.weedcenter.org/management/tools.htm#burning>. Bozeman, MT: Center for Invasive Plant Management.
- Saskatchewan Watershed Authority. 2003. Managing crested wheatgrass in native rangeland. Fact Sheet. Regina, SK. [Online]. Available: <http://www.swa.ca/Publications/documents/ManagingCrestedWheatgrassInNativeGrassland.pdf>. (October 2004).
- Sedivec, K. T. and W. T. Barker. 1998. Selected North Dakota and Minnesota range plants. NDSU Ext. Ser. North Dakota State Univ., Fargo, ND. 270 pp.
- Stubbendieck, J., S. L. Hatch, and C. H. Butterfield. 1992. North American Range Plants 5th ed. Univ. of Nebraska, Lincoln, NE. 501 pp.
- Zlatnik, E. 1999. *Agropyron cristatum*. In: Fire Effects Information System, [Online]. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis> (February 2005).
- Crested wheatgrass and spikelets photographs courtesy of Intermountain Herbarium, Logan Utah.
- Infestation photograph courtesy of Dave Powell, USDA Forest Service (www.invasive.org).