



Managing Smooth Brome in Mixed Grass Prairie: A Long-term Commitment

NDSU photo

Zachary Johnson, Private Lands Biologist,
ND Game and Fish Department
Breanna Paradeis-Kobiela, Assistant Professor, NDSU
Rakhi Palit, Research Assistant Professor, NDSU
Edward DeKeyser, Professor, NDSU
Cami Dixon, USDI – U.S. Fish and Wildlife Service
Kevin Sedivec, Rangeland Management Specialist, NDSU

Why Care?

Smooth brome (*Bromus inermis*) is a sod-forming, invasive perennial grass that negatively impacts rangelands throughout the Northern Great Plains. Smooth brome is difficult to control and outcompetes native species, degrading habitat for wildlife and potentially impacting livestock performance. Smooth brome is productive and has moderate forage quality, but it can alter the forage cycle and reduce quality through its effects on native plants.

Causes of Smooth Brome Invasion

- Excellent competitor!** Smooth brome takes up soil nitrogen very quickly and decomposes rapidly, limiting nitrogen availability for surrounding native species and changing local nutrient dynamics.
- Early spring growth!** Smooth brome resumes growth earlier in spring than many native species, taking advantage of spring moisture and high light availability, eventually shading out native species.
- Extensive belowground reserves and growing points!** Smooth brome forms extensive buds and below-ground rhizomes that are protected and spread rapidly when resources become available.

Management

Various management techniques, including grazing, prescribed fire, mowing (especially when grazing and prescribed fire are not feasible) and herbicides have been employed to target smooth brome in the mixed grass prairies of the Northern Great Plains. Properly managed grazing and prescribed fire can be used to improve desirable species in areas invaded by smooth brome. When designing a management plan, two key considerations are how to 1) reduce smooth brome and

2) promote native species. Fostering native species can help reduce smooth brome!

It can be challenging to target smooth brome without stressing desirable cool-season plants, due to similar growing patterns. However, smooth brome's characteristic early spring growth and late fall regrowth may provide a window in which smooth brome can be targeted while avoiding impacts to desirable species. Management to promote native species can be achieved by integrating prescribed burns into properly managed grazing. However, regular monitoring will be necessary to make adjustments in response to observations.

Takeaways

Managed grazing and prescribed fire can be effective to reduce smooth brome and enhance desirable species, especially when used in combination. It is important to time grazing and/or prescribed burning to target smooth brome and mitigate stress to native species. In areas where grazing is impractical, consider mowing multiple times in a single growing season rather than leaving a smooth brome-dominated area idle for an entire growing season. Using management to target smooth brome is a long-term commitment — a single prescribed burn will not be enough to dramatically reduce smooth brome over the long term. Plan to keep an eye on desirable species and adjust your management plans to promote desirable plants while reducing smooth brome.

NDSU

EXTENSION



NDSU photo

Questions?

For more information, contact:

- [Natural Resources Conservation Service](#)
- [North Dakota State University Extension](#)
- [North Dakota Prescribed Fire Cooperative](#)

Do:

Graze smooth brome-dominated areas earlier in the growing season (April-May!), when conditions allow.

Why? Cattle will select smooth brome during early growth when it is most palatable and nutritious.

Occasionally stock above a full stocking rate (40-50% utilization).

Why? Higher stocking rates may force livestock to target smooth brome and reduce its vigor.

Graze multiple years to prevent reinvasion.

Why? Smooth brome is an excellent competitor and poised to reinvoke.



Grazing

Don't:

Wait till June to graze.

Why? Waiting too long allows smooth brome to mature, and livestock will be more likely to avoid it. Also, turning livestock out too late can favor Kentucky bluegrass, another invasive cool-season grass!

Graze too lightly (below a full rate or 40% utilization).

Why? Smooth brome resists light and moderate grazing and outcompetes desirable forage species.

Rest for an entire growing season too often!

Why? Smooth brome is very resilient and rebounds quickly following defoliation. Even allowing prairies to sit idle too long in a single growing season can be enough for smooth brome to regain its competitive edge.



Prescribed Fire

Implement prescribed burns according to a burn plan.

Why? Prescribed burning can improve forage. A complete fire that consumes the above-ground plant material and litter should be your goal.

Skip prescribed burns altogether or quit after burning a single time.

Why? Without burning, smooth brome can outcompete desirable species, and a single burn does not seem to be enough for long-term reduction.



Monitoring

Monitor your rangeland plant community and adjust management actions and timing to meet your goals.

Why? If your goal is to reduce smooth brome and improve your native plant components, you will need to keep an eye on how your management practices are meeting your goals.

Develop a plan based on calendar dates and stick to it from year to year.

Why? If you are not matching management actions to conditions in real time, smooth brome is likely to outcompete more desirable species.

NDSU Extension does not endorse commercial products or companies even though reference may be made to tradenames, trademarks or service names.

Published with support from



For more information on this and other topics, see www.ndsu.edu/extension

County commissions, North Dakota State University and U.S. Department of Agriculture cooperating. NDSU does not discriminate in its programs and activities on the basis of age, color, gender expression/identity, genetic information, marital status, national origin, participation in lawful off-campus activity, physical or mental disability, pregnancy, public assistance status, race, religion, sex, sexual orientation, spousal relationship to current employee, or veteran status, as applicable. Direct inquiries to Vice Provost, Title IX/ADA Coordinator, Old Main 100, 701-231-7708, ndsu.eoaa@ndsu.edu. This publication will be made available in alternative formats for people with disabilities upon request, 701-231-7881. 500-8-25