



CHALLENGING

Wyoming Restoration Challenge seeks to knock out invasive grass

Beth Fowers and Brian Mealor

It seems oddly appropriate a plant known as a strong competitor for early spring moisture is inspiring a competition in which teams restore a cheatgrass-dominated pasture.

Cheatgrass (*Bromus tectorum*) is a non-native annual grass that has flourished in the West since the late 1800s. The invader affects millions of acres of western rangelands by reducing plant diversity, altering productivity, and fueling large-scale fires early in the season because it matures and dries well before native grasses.

Hundreds of studies have examined cheatgrass management, yet there is still no consistent, cost-effective method or series of treatments to restore cheatgrass-dominated systems to a more desirable state.

The Wyoming Restoration Challenge started in April 2015 to give teams an opportunity to see what practices could restore a cheatgrass-dominated site at the University of Wyoming's James C. Hageman Sustainable Agriculture Research and Extension Center (SAREC) near Lingle to a more diverse, productive pasture. The site experienced long-term, heavy grazing and dominance by cheatgrass and annual kochia with limited perennial grasses and shrubs.

Team members can use any legal (see below) method to manage cheatgrass and other weeds to restore the area to meet management goals for livestock grazing and wildlife habitat. Having each team work on plots in the same field allows side-by-side comparison of various methods and encourages discussion and interaction among team members of diverse backgrounds and experiences.

Objectives are:

- 1) To evaluate various methods for restoring degraded pasture infested with cheatgrass and other annual weeds and to share information about those methods and performance in this setting,
- 2) To build awareness of the importance of managing invasive weeds in general,
- 3) To increase land managers' knowledge of techniques for



Cheatgrass dominated the challenge area.

CHEATGRASS



restoring weed-dominated pastures, and

4) To encourage friendly competition among teams and have fun.

Thirteen teams randomly drew for field plots and created treatment plans based on the starting condition of their areas. Some teams had to deal with problematic weeds like Russian knapweed, while other teams started with a higher proportion of remnant desirable grasses.

Teams can use any practice to restore their plots as long as they are used appropriately and within legal restrictions (such as according to herbicide labels, prescribed burning regulations, and appropriate animal use).

This flexibility led to a variety of approaches, but they can be grouped into six basic categories: fire, mechanical (mowing, tilling), chemical (herbicide), seeding/competition (both cover crops and permanent species mixes), grazing, and “weed-suppressive” bacteria.

All teams have combined multiple methods to restore their sites.

The competition continues until summer of 2017 when final results will be decided based on six criteria related to the land-use goals:

1. Cheatgrass reduction,
2. Desirable species productivity,
3. Diversity,
4. Costs of implementation,
5. Scalability, and
6. Education and outreach.

Change over time has been observed by monitoring vegetation each

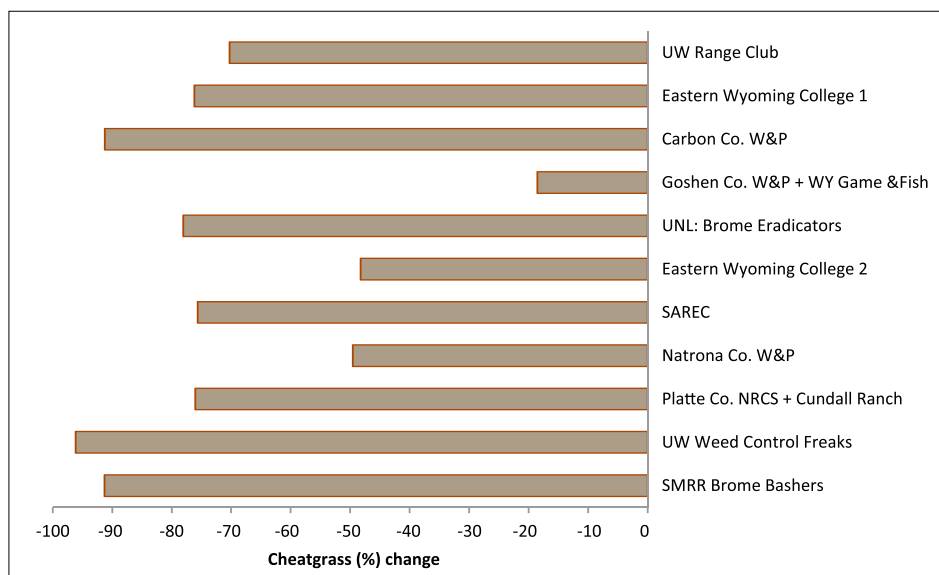


Figure 1. Change in cheatgrass canopy cover from pretreatment (April 6, 2015) to July 12, 2016. Greater negative change is desirable because that shows reduction in cheatgrass.

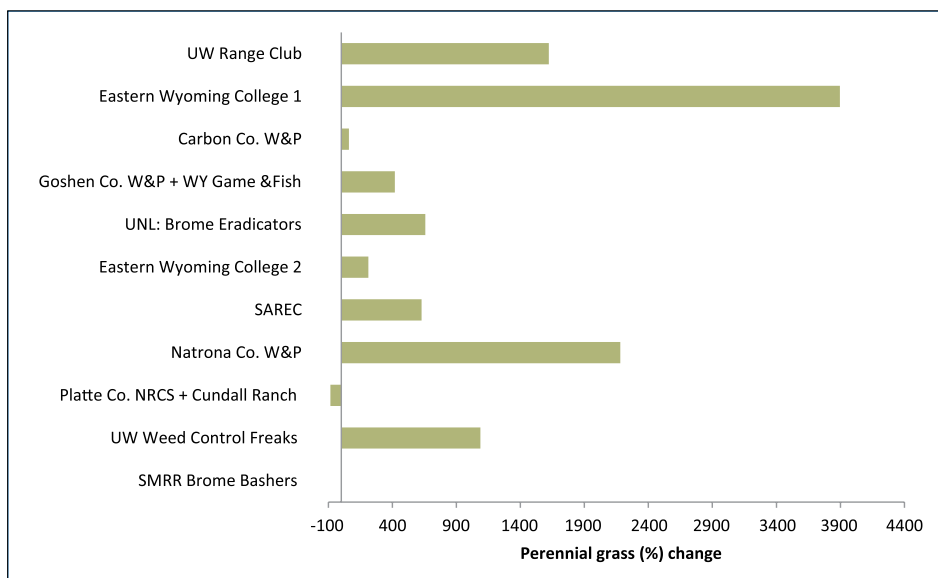


Figure 2. Change in perennial grass canopy cover from pretreatment (April 6, 2015) to July 12, 2016. Greater positive change is desirable.

year. Cheatgrass cover was reduced in all plots since the beginning of the project (Figure 1). Desirable perennial grass change varied widely across teams (Figure 2). Using the change in cheatgrass and perennial grasses since just prior to the competition allows us to account for some of the variation that existed among plots at the start of the competition.

By summer 2016, the top five teams included graduate and undergraduate students from UW, ranchers, and agency personnel from Platte County, and extension educators and specialists from Wyoming and Nebraska.

A consistent observation is that simply removing cheatgrass has not consistently resulted in improved vegetation – follow-up control of other weeds and introduction of more desirable vegetation has been necessary.

Table 1. Current rankings by judging criteria. Teams are only in order of plot number and the number within each category is the relative rank for that team.

	Education	Cheatgrass	Productivity	Diversity	Scalability
UW Range Club	3	8	2	5	3
UNL Brome Eradicators	7	4	2	5	5
Cundall Ranch/Platte County NRCS	4	6	10	1	4
UW Weed Control Freaks	2	1	9	2	10
SMRR Brome Bashers	1	2	11	8	10

While we likely won't arrive at THE SINGLE solution to cheatgrass, this challenge has helped spread information about cheatgrass, allowed a variety of groups to come together in a single place to try their ideas, and provide opportunities for discussion and learning about cheatgrass and its management.

Additional information on specific teams and their treatments can be found at www.facebook.com/WYrestorationchallenge.

WYrestorationchallenge. Plots can also be visited at SAREC.

*Cheatgrass beware. Research scientist **Beth Fowers** in the Department of Plant Sciences at the University of Wyoming, and **Brian Mealor**, director of the UW Sheridan Research and Extension Center, know where you live. Both can be reached at (307) 673-2856 at the research center in Sheridan.*



Plot 1. UW Range Club. Change in plot vegetation picture on the left is from September 7, 2015, while picture on the right is from July 8, 2016, showing a reduction in kochia and an increase in perennial grasses. Some cheatgrass is still present at the site (the light brown in the picture on the right). Actions taken by the team were cattle grazing for 10 hours on May 5, 2015, and June 10, 2015, burning August 14, 2015, and drill seeding native and introduced seed December 14, 2015. Pictures courtesy of Gary Stone.



Plot 6. UNL Brome Eradicators. Change in plot vegetation picture on the left is from September 17, 2015, while picture on the right is from July 19, 2016. Actions taken were spraying 3.5 fluid ounces Rifle D herbicide (dicamba + 2,4-D) for broadleaf weed control on May 22, 2015, mowing June 5, 2015, and July 5, 2015, spot-treating broadleaf weeds with Rifle D herbicide August 20, 2015, spot-treating for Canada thistle with Milestone October 31, 2015, broadcasting MB-906 soil amendment November 6, 2015, seeding native grasses December 8, 2015, and mowing May 26, 2016. Pictures courtesy of Gary Stone.