Red Bluff Research Ranch Field Day

New and integrated management approaches

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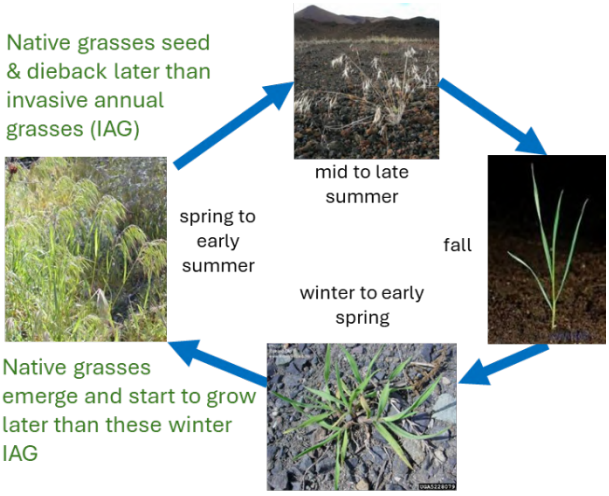
We are studying the effectiveness of different control strategies (herbicides, targeted grazing, soil amendments, seeding) for invasive annual grasses (cheatgrass and ventenata). These grasses germinate and emerge in the fall and early spring, before our native grasses. This difference in emergence and spring growth gives us a window of opportunity to manage them before the native grasses green-up.



We are testing the relatively new herbicide Rejuvra® in addition to the more commonly used Plateau®, but also different strategies such as soil amendments (e.g., NutraFix™, Edaphix; Rhyzogreen, RioGen®), targeted grazing, and restoration seeding. Producers and agencies are using these approaches but there is scant published experimental data on them, which is why we are studying them. The goal of controlling invasive annual grasses is primarily to "release" the remaining vegetation, allowing an increase in above-ground biomass (i.e., forage production) and nutrient quality of the remaining vegetation.

Our topics:

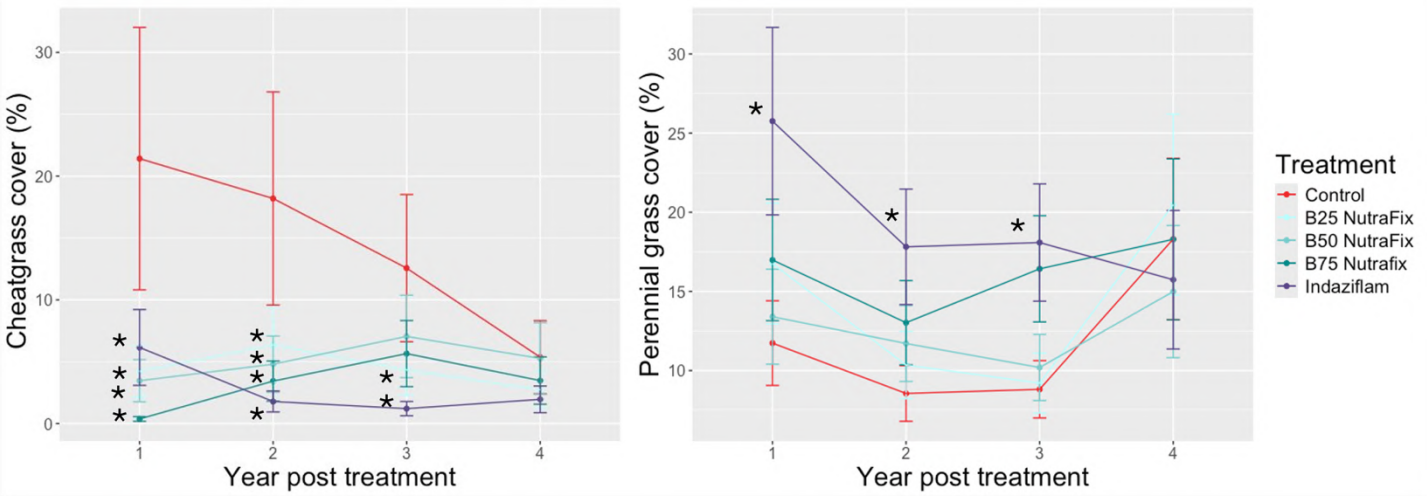
1) *Cheatgrass management in the Centennial valley.* Two consecutive fall applications of Plateau (2017-2018) controlled low density (~11%) cheatgrass for 3-4 years. Combining targeted grazing and seeding with herbicide showed no additional benefit. Native grasses and forbs did not increase in either study.

2) *Four years of using different management strategies to control cheatgrass and increase desired vegetation.* Erin will talk about the effect of different management approaches (Rejurva, NutraFix, mustard seed meal, doing nothing) combined with restoration seeding on cheatgrass and native grasses over 4 years.

3) *New study evaluating the most effective management strategies (from 2 above) to reduce invasive annual grasses and increase desired vegetation.* Claire has just started a new study looking at the better performing approaches from Erin's and other work, (Rejurva, Rejurva + NutraFix, NutraFix, Plateau, doing nothing) combined with restoration seeding on cheatgrass and ventenata. These plots are in the first growing season after treatment and will run for 3 years.

4) *Using our results we will develop a prioritization and decision framework tool to help manage invasive annual grasses and desired vegetation for ecological and economic sustainability.*

Erin's results from 2) Results from our 4-year study assessing NutraFix, indaziflam (Rejuvra), mustard seed meal and restoration seeding as cheatgrass management tools. Mustard seed meal was not an effective management approach, while it reduced cheatgrass in year 1 it increased it in year 2 - data not shown. Restoration seeding showed no noticeable differences. Studies were performed at three semi-arid rangelands, duplicated at sites, in southwestern Montana from 2020-2024.



* Signify statistically significant differences from the control plots

Results from this study inspired a new set of experiments to further explore the impacts of NutraFix in more controlled settings.

WSARE GW24-011: The research goals of this project are to improve our understanding of how the soil amendment NutraFix (boron) impacts seed germination and establishment of both native and non-native grasses as well as how it impacts forage quality of mature forage grasses.

Objective 1: *Determine the impact of boron on seed germination of three native species (bluebunch wheatgrass, Idaho fescue and western wheatgrass) and two non-native species (cheatgrass and ventenata).*

Objective 2: *Determine the impact of boron on seedling establishment of the same five native and non-native species.*

Objective 3: *Determine the impact of boron on mature native plant species biomass and forage quality grown in a greenhouse.*

Objective 4: *Determine the impact of NutraFix on, a) forage quality of the native species and b) soil nutrient availability, four years post application in a field setting.*