



# David Little Livestock Range Management Endowment

AT THE UNIVERSITY OF IDAHO

## **2019 Project Progress Report:**

### ***Use of Plateau for control of cheatgrass and reestablishment of rangeland species seeded in spring or fall***

**By Carmen Willmore, Rob Sharpnack, Patti Hurley, Barbara Messick and Daniel Romano**

**BACKGROUND:** Cheatgrass (*Bromus Tectorum*) is one of the most widespread invasive annual grass species in Idaho. In 1993, cheatgrass was found on 3.3 million acres of public land in the Northern Great Basin desert (Oregon, Idaho, Nevada, California and Utah) with more than 76 million acres of public land at risk for invasion by cheatgrass and other invasive annual grasses (Hall, 1994). Cheatgrass has been able to overtake these desert landscapes because of its ability to invade disturbed ecosystems and out-compete native perennial grasses. Because cheatgrass is an invasive species it has very few natural control mechanisms, leaving it unchecked in the vast rangeland ecosystems of south central Idaho.

Historically range fires have occurred at intervals of 20-50 years in Southern Idaho. However, in more recent years the invasion of cheatgrass has changed the cycle to 2-10 years. And in the summer of 2017 alone, over 100,000 acres of Lincoln County was burned in range fires, the largest of which was the Mammoth Fire burning over 50,000 acres in a few days' time. Following a large fire event land managers that apply the herbicide Plateau will typically wait to re-seed until the next fall. However, this delays when livestock can re-enter the area for grazing and land owners are interested in knowing if they can re-seed the spring following a Plateau application and what implications this may have on the long term use of the land for livestock grazing. Our research is designed to investigate the use of the herbicide Plateau and seeding following herbicide application.

## **HYPOTHESIS or OBJECTIVES:**

The objective of this research was to determine methods of preventing cheatgrass invasion and reestablishing dryland range pasture following a range fire event. Note the intended use of *Pseudomonas fluorescens* was unable because the commercial production of the bacteria was stopped in the summer of 2017. Because of this the experimental design changed to look at the use of Plateau prior to spring or fall range plantings.

Objective 1: Determine what affects reseeding the spring following a Plateau application has on desirable range species.

Hypothesis 1: Reseeding the spring following a Plateau application will have a lower success of seed establishment than reseeding the following fall, but will still be successful.

Objective 2: Determine if reseeding is more successful in the spring or fall following a Plateau application or no Plateau application.

Hypothesis 2: Reseeding is most successful following a Plateau application, as Plateau will suppress invasive annual grasses such as Cheatgrass from competing with the desirable species planted.

**PROCEDURES:**

Two sites within Lincoln County were identified in the spring of 2017 and were established on October 16, 2017.

Site A: Evaluate use of imazapic herbicide (Tradename – Plateau) use, with a spring and fall seeding after application.

5	2	1	3	4	3	4	2	1	5
1	2	3	4	5	6	7	8	9	10
3	1	5	4	2	1	2	4	5	3
11	12	13	14	15	16	17	18	19	20

Figure 1. Plot map of Site A. Treatments are as follows: 1- Plateau + Spring Planting, 2- Plateau + Fall Planting, 3- No Plateau + Spring Planting, 4- No Plateau + Fall Planting, 5- Control.

Site B: Case Study - Evaluate Plateau use after a range fire with a spring and fall seeding. This site is 40 acres in size and was burned in August 2017 during the Mammoth Fire. The initial Plateau treatment was applied on October 17 and a portion of the site will be planted in spring 2018 and fall 2018.



Image 1. Application of Plateau by county weed supervisor, Terry Ruby, on Site B on October 17, 2017, two months after the Mammoth Fire.

## PRELIMINARY RESULTS:

In the fall of 2019, percent composition measurements were collected from the research plots at site A. Results are shown in Table 1. Percent composition was measured by randomly selecting 3 locations within each plot, placing a 1-meter frame in the location and visually determining the percent composition of annuals, perennials and other plant species.

**Table 1.** Percent composition measured October 16, 2019.

	Treatment	Annual	Perennial	Other
<i>P</i> <sup>1</sup> + <i>Spring</i> <sup>3</sup>	1	43%	18%	39%
<i>P</i> + <i>Fall</i> <sup>4</sup>	2	40%	23%	37%
<i>NP</i> <sup>2</sup> + <i>Spring</i>	3	89%	6%	5%
<i>NP</i> + <i>Fall</i>	4	88%	2%	10%
<i>Control</i>	5	89%	8%	3%

<sup>1</sup> P= Plateau treatment applied on October 16, 2017.

<sup>2</sup> NP = No plateau applied in Fall 2017.

<sup>3</sup> Spring planting occurred on April 3, 2018

<sup>4</sup> Fall planting occurred on November 7, 2018.



Image 2. Collecting composition data October 2019.

## OBSERVATIONS:

In the first year of data collection it was observed in the plots treated with Plateau in the fall of 2017 had the highest percentage of perennial grasses (18% and 23%, spring and fall planted) which was primarily crested wheat grass. These plots also had the lowest percentages of annual grasses (43% and 40%) which was primarily cheat grass. Additionally, these plots had the highest percentage of other plant species in the plots, most of which consisted of kochia weeds. In the plots not treated with plateau the establishment of desirable perennial grasses was less at only 6% in the spring and 2% in the fall following the plateau application.

Preliminary conclusions show that when Plateau is applied in the fall there is a greater suppression of annual grasses allowing a higher concentration of perennial grasses. It would also be recommended that when applicable spring seeding following a plateau application the fall before is acceptable. Though the spring planted plots were slightly lower than those planted the next fall there was only a 5% difference between them. This is good information for land owners and managers who may need to reseed in a short period of time to prevent annual grasses from invading a threatened area. As this data only represents one growing season since the seeding effort these results are preliminary and will be monitored for the next ten years to evaluate the long-term effects of this treatment and reseeding.

## NEXT STEPS:

Based on these early observations additional plots will be established in the fall of 2019 to further research the use of plateau on establishing desirable perennials following a fire event at the Neher Park in Shoshone, ID. After an additional 3 years of data collection the results of the initial study will be published in an extension publication to aid producers in their reseeding efforts. Additionally, this project will be presented at local and regional producer meetings.