

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Theses, Dissertations, and Student Research in
Agronomy and Horticulture

Agronomy and Horticulture Department

4-2020

Spring Meadow Management Practices: What's a Rancher to do?

Tara M. Harms

Jerry D. Volesky

Mitchell B. Stephenson

Follow this and additional works at: <https://digitalcommons.unl.edu/agronhortdiss>



Part of the [Agricultural Science Commons](#), [Agriculture Commons](#), [Agronomy and Crop Sciences Commons](#), [Botany Commons](#), [Horticulture Commons](#), [Other Plant Sciences Commons](#), and the [Plant Biology Commons](#)

This Article is brought to you for free and open access by the Agronomy and Horticulture Department at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Theses, Dissertations, and Student Research in Agronomy and Horticulture by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Spring Meadow Management Practices: What's a Rancher to do?



Tara M. Harms¹, Jerry D. Volesky², Mitchell B. Stephenson³

¹Graduate Research Assistant, Department of Agronomy and Horticulture, Lincoln, NE, ²Range Management Specialist, UNL West Central Research and Extension Center, North Platte, NE, ³Range Management Specialist, Panhandle Research and Extension Center, Scottsbluff, NE

Key Findings

- Burning or mowing effectively removes dead plant material from meadows with no later loss in forage production.
- Burning and mowing do not interact with grazing to influence later forage production.
- Spring grazing acted independently to significantly lower end of season forage production

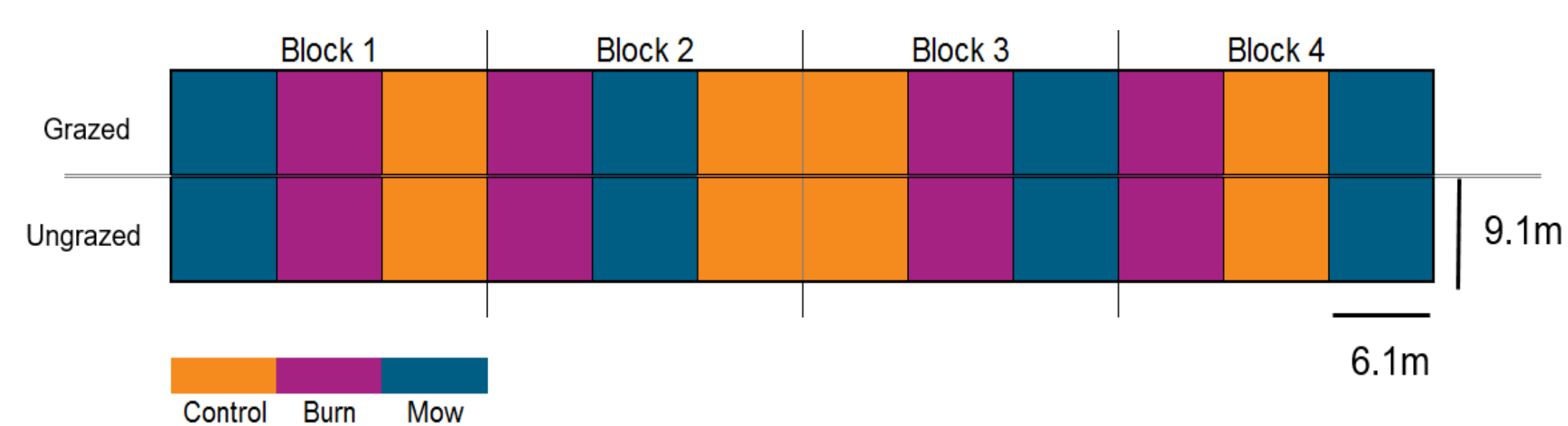
Introduction

- Subirrigated meadows are a valuable forage resource to ranching operations in the Nebraska Sandhills, being used for both hay production and livestock grazing.
- The water table of these meadows is within one meter of the soil surface during the growing season.
- In some years, wet conditions hinder meadow utilization, resulting in a buildup of standing dead and litter plant material which can lower forage production.

Objectives

- Investigate if burning and mowing are effective strategies to remove dead plant material from meadows
- Determine if burning or mowing interact with grazing to influence end of season forage production

Methods



- UNL Gudmundsen Lab near Whitman, Nebraska
- Field site was a cool-season dominated subirrigated meadow
- New study site on meadow was chosen each year
- Study years were 2017, 2018, & 2019
- Burned and mowed first week of May
- Grazed early-May to early-June
- Production estimates collected at peak standing crop in August
- Clipped 3, 0.25m² quadrants from each plot at ground level
- Sorted quadrants into live and dead vegetation groups
- Samples dried for 48 hours at 60°C then weighed

Results

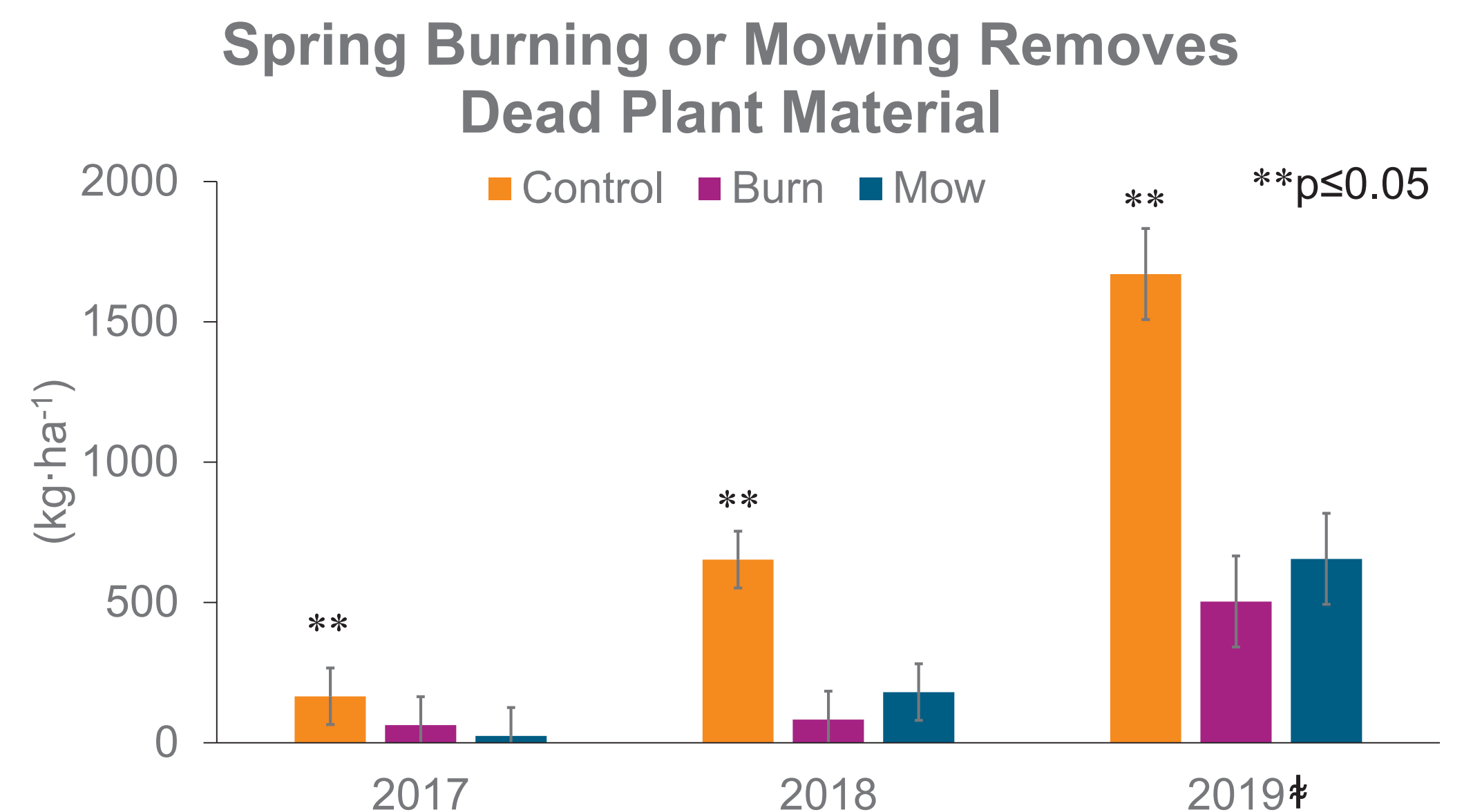


Figure 1. Total end of season dead production by treatment. † 2019 included both standing dead and litter plant material, while 2017 and 2018 included only standing dead.

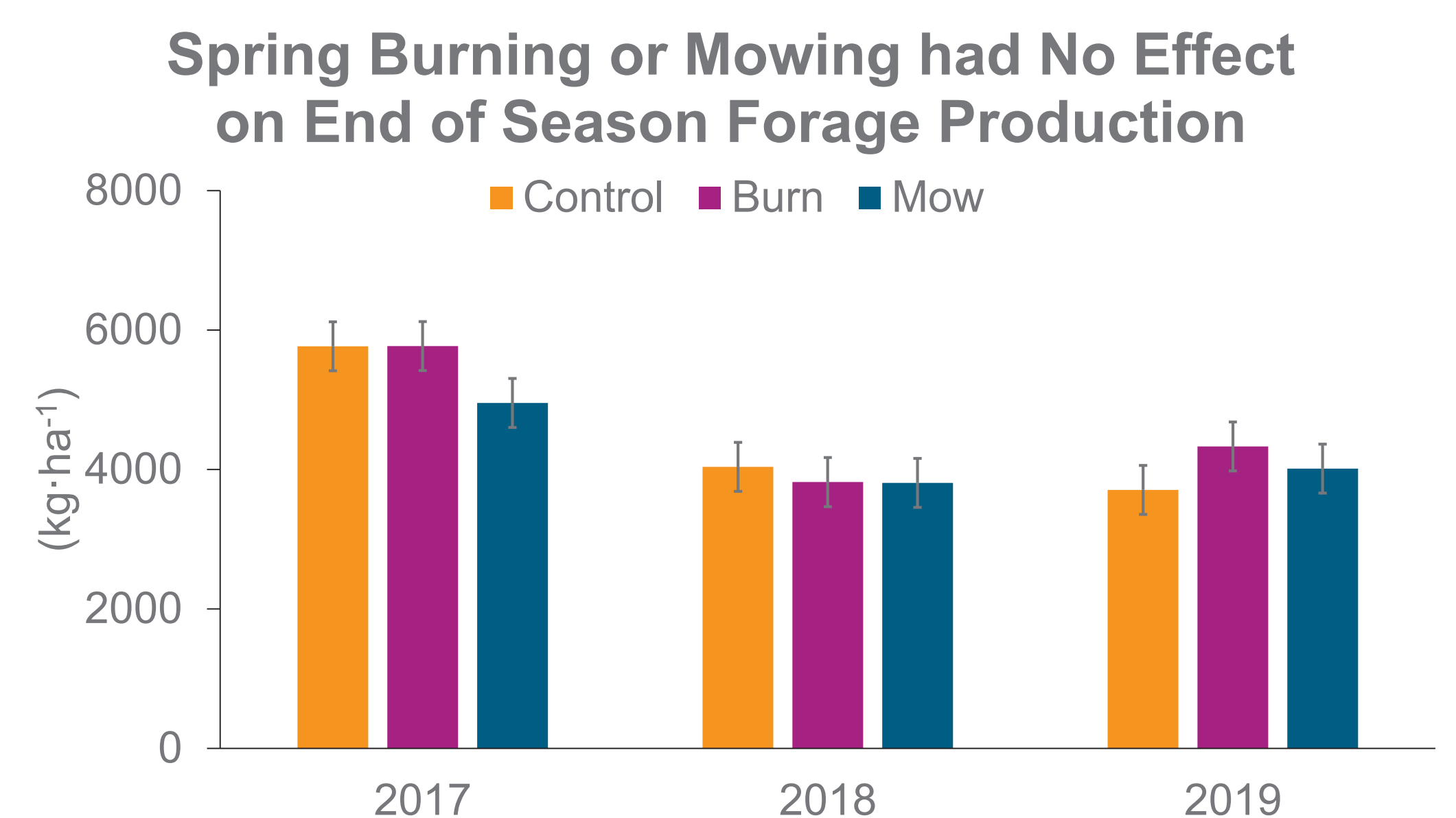


Figure 2. Spring burning or mowing did not effect end of season live forage production ($p \geq 0.05$).

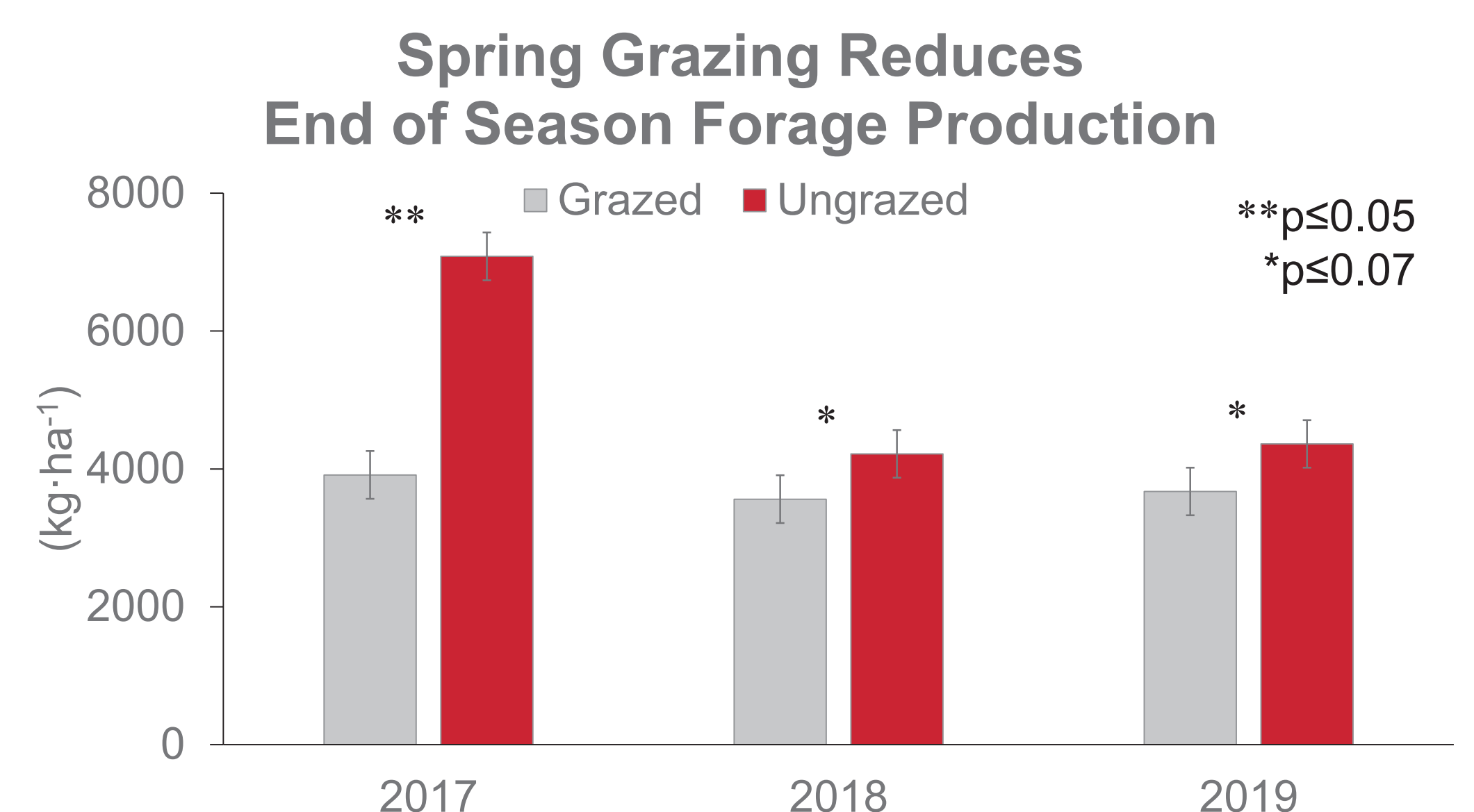


Figure 3. Total live end of season forage production of grazed and ungrazed plots.

Conclusions

- Ranchers can use burning or mowing to effectively remove dead plant material from subirrigated meadows in the Nebraska Sandhills with no later losses in forage production (Fig.1 & Fig.2).
- On the other hand, spring grazing reduces end of season forage production (Fig.3). Therefore, caution should be used with spring grazing if a rancher's goal is to maximize hay yields from meadow forage.

Acknowledgments

- The Arthur W. Sampson Fellowship Fund provided partial support for this research