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Grazing Deferment Effects on Forage Diet Quality and Ewe Performance Following Summer Rangeland Fire

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Abstract

Complete rest or grazing deferment is a general recommendation to encourage vegetative recovery following fire in the western United States. However, effects of grazing deferments on animal performance have not been determined. Prescribed fires were individually applied to nine separate, 1.5-ha pastures each year (2006 and 2007) for a total of 18 pastures. Grazing was deferred until spring (16 May), early summer (19 June), or late summer (1 August) the growing season after fire. At the end of each deferment, a 70-d (2007) or 41-d (2008) grazing period was initiated. Stocking rates were consistent between treatments within year, but were adjusted between years to achieve the targeted residual biomass of approximately 300 kg · ha⁻¹. Diet quality was assessed approximately every 15 d throughout each grazing period (three pastures · period⁻¹) via collection of rumen extrusa throughout the 2-yr study. Ewe body weight was measured on and off-test for each grazing period. Diet extrusa samples for in vitro organic matter disappearance was less ($P = 0.03$) for late summer than early summer grazing periods and equal to the spring period (62.9, 64.6, and 61.0 ± 0.90%, respectively for spring, early summer, and late summer grazing periods). In vitro neutral detergent fiber disappearance decreased ($P = 0.01$) by 10.6 percentage units from early grazing to late grazing period in 2007, whereas no differences were observed in 2008. Ewe average daily gain did not differ between spring and early summer grazing periods and were greater ($P = 0.03$) than the negligible body weight gains of the late summer grazing period. Total gain was 10.9 kg · ha⁻¹ greater in 2008, and a quadratic response was measured for grazing period in 2007. Results indicate that deferment until early summer may be preferable so that stocking rates can be more accurately determined and animal performance is not diminished.

Resumen

El descanso o diferimiento del pastoreo es una recomendación común para fomentar la recuperación vegetativa después de la aplicación de fuego en el oeste de Estados Unidos. Sin embargo, no se han determinado los efectos del diferimiento de pastoreo en la performance animal. Se aplicaron quemas prescriptas individualmente a 9 potreros de 1.5-ha cada año (2006 y 2007) sumando un total de 18 pasturas. El pastoreo se difirió hasta la primavera (16 de mayo), principios de verano (19 de junio), o a finales del verano (1 de agosto) de la temporada de crecimiento posterior a la quema. Al final de cada diferimiento, se inició un período de pastoreo de 70-d (2007) o 41-d (2008). La carga animal fue consistente entre los tratamientos dentro de cada año, pero fueron ajustadas entre años para lograr una biomasa residual de aproximadamente 300 kg · ha⁻¹. La calidad de la dieta se evaluó aproximadamente cada 15 d a lo largo de cada período de pastoreo (3 potreros · período⁻¹) a través de la recolección de extrusa ruminal durante los dos años del estudio. El peso corporal de las ovejas (PC) fue medido dentro y fuera de la prueba para cada período de pastoreo. Las desaparición de la materia orgánica in vitro de las muestras de extrusa ruminal fue menor ($P = 0.03$) para el período de pastoreo de finales de verano comparado con el de comienzos de verano e igual al período de primavera (62.9, 64.6 y 61.0 ± 0.90%, para la primavera, principios de verano y finales del verano, respectivamente). La desaparición in vitro de fibra detergente neutro disminuyó ($P = 0.01$) en 10,6 unidades porcentuales desde comienzos a finales del período pastoreo en 2007, mientras que no se observaron diferencias en 2008. El promedio de ganancia diaria de las ovejas en los períodos de pastoreo de primavera y comienzos del verano no fue diferente pero fue mayor ($P = 0.03$) que las ganancias de peso de cuerpo despreciables obtenidos durante el pastoreo de finales de verano. La ganancia de peso total fue mayor en 10.9 kg · ha⁻¹ en 2008 y una se detectó una respuesta cuadrática al período de pastoreo en 2007. Los resultados indican que el diferimiento hasta principios del verano puede ser preferible para poder determinar la carga animal con más exactitud y para que el rendimiento animal no se vea disminuido.

Key Words: body weight gain, deferred grazing, grazing management, postfire grazing, summer burn

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INTRODUCTION

Historically, rangeland fires in the Northern Great Plains occurred less than 35 yr apart (Schmidt et al. 2002). Active fire suppression has disrupted the historic fire regime and lengthened fire return intervals primarily by reducing the areal extent of wildfires. Still, the majority of wildfires in the western United States occur during July and August (Higgins 1984; Westerling et al. 2003). Research on summer fire effects is limited, but early studies in the Northern Great Plains indicated

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