

Effect of Crude Protein Supplementation Frequency on Performance and Behavior of Cows Grazing Low-quality Forage

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Introduction

Decreasing the frequency of crude protein (CP) supplementation is a management practice that decreases labor and fuel costs. Research has shown that CP supplements can be fed at infrequent intervals to ruminants consuming low-quality forage, and acceptable levels of performance and nutrient utilization are maintained. Also, grazing time has been reported to decrease by 1.5 hours per day for supplemented compared with unsupplemented cows. Research from Montana has demonstrated that supplement placement can be used to modify livestock distribution. However, there is limited research evaluating the effect of CP supplementation frequency on grazing behavior of beef cows. The objectives of this study included determining whether infrequent supplementation of CP to cows grazing low-quality forage affects cow performance, grazing time, distance traveled, percentage of supplementation events frequented, and variability of supplement intake.

Experimental Protocol

One hundred twenty pregnant (approximately 60 days), nonlactating cows were used in an 84-day period (from about August 9 to November 1) in each of 3 years to evaluate the influence of CP supplementation frequency on cow performance, grazing time, distance traveled, cow distribution within pasture, percentage of supplementation events frequented, and variability in supplement intake. Three 2,000-acre pastures (40 cows per pasture) at the Northern Great Basin Experimental Range, located approximately 40

miles west of Burns, Oregon, were used to evaluate treatment effects on cow behavior. Treatments were allotted to pastures and included an unsupplemented control, daily supplementation of 2 lb of cottonseed meal, and supplementation once every 6 days with 12 lb of cottonseed meal. Cottonseed meal (43 percent CP) was provided 10 minutes after an audio cue at approximately 8:00 A.M. for each supplementation event. Four cows from each treatment (each year) were fitted with global positioning system (GPS) collars (Fig. 1) to obtain data related to distribution within pasture and grazing behavior.

Results and Discussion

Cow weight and body condition score were improved with CP supplementation and not affected by supplementation interval (Table 1). However, time spent grazing by supplemented cows was approximately 2 hours less per day than what was observed for cows not receiving supplement. Nevertheless, distance traveled per day and

distribution within pasture was not affected by CP supplementation or its frequency. Also, the number of supplementation events frequented was similar for cows receiving cottonseed meal daily or once every 6 days. Variability of supplement intake by cows was similar for those receiving cottonseed meal once every 6 days compared with those receiving it daily.

Management Implications

Infrequent supplementation of CP to cows grazing low-quality forage results in animal performance similar to that resulting from daily supplementation while decreasing time spent grazing. In addition, data suggest that CP supplementation interval has no effect on average distance traveled per day, cow distribution within pasture, or the percentage of supplementation events frequented. Infrequent supplementation is a management alternative that can help lower costs associated with CP supplementation of cows grazing native range in the northern Great Basin.

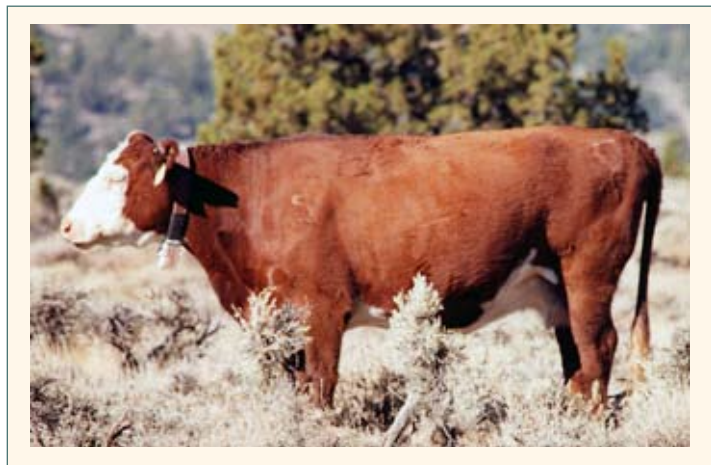


Figure 1. Cow fitted with a GPS collar used to determine grazing behavior.

Table 1. Effect of crude protein supplementation frequency on grazing behavior and performance of cows grazing native range in the northern Great Basin.

<i>Item</i>	<i>Supplementation interval</i>		
	<i>No supplementation</i>	<i>Daily</i>	<i>6 Days</i>
Initial weight, lb	1,036	1,025	1,032
Initial body condition score	4.7	4.6	4.7
Weight change, lb	37	112	95
Body condition score change	0.0	0.4	0.3
Grazing time, hours/day	9.6	7.1	7.9
Distance traveled, miles/day	3.7	3.6	3.7
Pasture distribution, % ^a	70	69	67
Supplementation events frequented, % ^b	---	66	70
Variability of supplement intake, %	---	28	28

^aPasture distribution = percentage of acres occupied per pasture by cows with global positioning system collars.

^bSupplementation events frequented = percentage of supplementation events frequented by cows with global positioning system collars.