EFFECTS OF FREQUENCY OF SUPPLEMENTATION ON PERFORMANCE OF BEEF COWS GRAZING WINTER PASTURE

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Summary

One hundred twenty spring-calving Hereford × Angus cows grazing low-quality tallgrass-prairie forage during the winter of 1998 were fed a 43% crude protein supplement 2, 3, 5, or 7 days a week. Supplement was fed at 4 lb/head daily to cows supplemented daily. The other cows still received 28 lb per week but divided equally among feedings. Cumulative performance (measured by changes in body condition score and body weight) was slightly better with increased supplementation frequency. However, the magnitude of differences in body condition and body weight changes, even for the most extreme treatment comparisons, were relatively small.

(Key Words: Forage, Supplementation, Frequency.)

Introduction

Where time allows and beef cows are easily accessible, they often are supplemented daily. However, long traveling distances and scarcity of time and/or labor make less frequent supplementation attractive. Previous research at Kansas State University indicated that reducing supplementation frequency from daily to three times weekly caused only slight decreases in body weight and body condition scores. Our objective was to evaluate the impact of several supplementation frequencies on winter performance of range beef cows.

Experimental Procedures

During the winter of 1998-99, supplementation frequency was studied with spring-calving cows grazing low-quality, tallgrass-prairie range. One hundred twenty Hereford × Angus cows were weighed and body condition was scored (1 to 9 scale) on December 7, 1998. Initial condition score averaged 5.3, and initial body weight averaged 1183 lbs. Cows were stratified by body condition score and body weight and assigned randomly within the strata to one of three pastures. Within each pasture, cows were assigned randomly to one of four supplementation frequencies: 1) supplementation 2 days a week (Tuesday and Friday); 2) supplementation 3 days a week (Monday, Wednesday, and Friday); 3) supplementation 5 days a week (Monday-Friday); and 4) supplementation 7 days a week. The supplement contained 43% crude protein and was fed at 4 lbs/head daily (as-fed) to cows that received daily supplement. Cows in other treatments were offered 28 lb of supplement per week but evenly split among the supplementation events. For example, cows that were offered supplement 2 days a week received their total weekly allotment of supplement in two 14 lb portions. There was no supplement wastage even when 14 lbs of supplement was presented at once. All cows were gathered daily and sorted into their respective treatment groups regardless of their supplementation schedule. For statistical purposes, treatment group within a pasture was the experimental unit. Cows were weighed and body condition was scored again on January 8, on February 8, and

within 48 hours after calving. Calves were weighed within 48 hours after birth.

Results and Discussion

Cows lost less (linear, P=.02) body condition from trial initiation to February 8 as supplementation became more frequent (Table 1). During the same period, cows gained more (linear, P=.02) as supplementation frequency increased (Table 2). Regression equations were used to describe the relationships between supplementation frequency and changes in both body condition and body weight. For each increase in weekly supplementation frequency, body condition score improved by .05 units (i.e., re-

duced loss) and body weight increased by 4.4 lbs. However, body condition changes in the period before calving lessened the magnitude of cumulative change from the beginning of the study through calving. Calf birth weights were not affected by treatment (Table 3).

This experiment indicated that more frequent supplementation of beef cows will improve the response only slightly. The small performance differences with changing frequencies suggest that reducing supplementation frequency is a viable practice, particularly if cows enter the wintering period in reasonably good condition, and if the intervals between supplementation events are not extreme.

Table 1. Influence of Frequency of Supplementation on Beef Cow Body Condition (BC)

Item	Treatment[a]				SEM	Contrasts (P-Values)[b]		
	2-day	3-day	5-day	7-day		L	Q	C
No. of cows	30	30	30	30				
Initial BC score	5.27	5.30	5.27	5.30	.024	.61	.81	.26
Period BC changes								
7 Dec – 8 Jan	.06	.13	.16	.19	.044	.09	.56	.57
8 Jan – 8 Feb	-.44	-.34	-.29	-.27	.054	.07	.40	.64
8 Feb – Calving	-.31	-.39	-.62	-.54	.088	.06	.20	.52
Cumulative BC changes								
7 Dec – 8 Feb	-.38	-.21	-.13	-.08	.068	.02	.30	.47
7 Dec – Calving	-.73	-.63	-.75	-.66	.050	.81	.70	.11
Ending BC score	4.53	4.69	4.52	4.63	.043	.76	.80	.02

[a]Treatment: The number of days per week when supplement was offered: 2-day=2 days a week; 3-day=3 days a week; 5-day=5 days a week; 7-day=7 days a week.
[b]Contrasts: L=Linear; Q=Quadratic; C=Cubic.

Table 2. Influence of Frequency of Supplementation on Beef Cow Body Weight

Item	Treatment[a]				SEM	Contrasts (P-Values)[b]		
	2-day	3-day	5-day	7-day		L	Q	C
No. of cows	30	30	30	30				
Initial wt.,lb	1198	1168	1192	1172	12.3	.44	.97	.10
Period weight changes, lb								
7 Dec - 8 Jan	32.0	45.4	47.1	51.1	3.95	.02	.24	.23
8 Jan - 8 Feb	-12.8	-16.3	-5.0	-10.2	5.55	.44	.59	.31
8 Feb - Calving	-182.6	-182.1	-190.8	-177.8	6.91	.82	.29	.47
Cumulative weight changes, lb								
7 Dec - 8 Feb	19.2	29.0	42.2	40.9	5.55	.02	.19	.88
7 Dec - Calving	-163.9	-148.6	-148.7	-131.3	6.60	.02	.94	.22
Ending wt., lb	1032	1032	1044	1045	14.4	.44	.89	.79

[a]Treatment: The number of days per week when supplement was offered: 2-day=2 days a week; 3-day=3 days a week; 5-day=5 days a week; 7-day=7 days a week.
[b]Contrasts: L=Linear; Q=Quadratic; C=Cubic.

Table 3. Influence of Frequency of Supplementation on Birth Weight of Calves

Item	Treatment[a]				SEM	Contrasts[b]		
	2-day	3-day	5-day	7-day		L	Q	C
Birth weight, lb	85	85	87	87	2.01	.42	.82	.78

[a]Treatment: The number of days per week when supplement was offered: 2-day=2 days a week; 3 day=3 days a week; 5-day=5 days a week; 7-day=7 days a week.
[b]Contrasts: L=Linear; Q=Quadratic; C=Cubic.