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Influence of supplemental grain type on forage utilization by beef steers consuming early summer bluestem

Abstract

Supplementation of early summer bluestem with low levels of corn, wheat, or sorghum grain had no effect on forage intake, forage digestibility, or total dry matter digestibility in beef steers, compared with a regimen of no supplementation. Increased total dry matter intakes for the supplemented steers reflected supplement consumption.

Keywords

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Influence of Supplemental Grain Type on Forage Utilization by Beef Steers Consuming Early Summer Bluestem[1]

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Summary

Supplementation of early summer bluestem with low levels of corn, wheat, or sorghum grain had no effect on forage intake, forage digestibility, or total dry matter digestibility in beef steers, compared with a regimen of no supplementation. Increased total dry matter intakes for the supplemented steers reflected supplement consumption.

Introduction

Intensive-early stocking has become an important and common practice among Flint Hills producers. Previous research at the Fort Hays Branch Station has shown that low levels of grain supplementation to cattle under intensive-early stocking programs may produce efficient gains. Additionally, research at Manhattan has shown that steers may be supplemented with up to 4 pounds of sorghum grain per day with only minimal effects on forage utilization. Other research, however, indicates that more rapidly fermentable grains such as corn and wheat have a greater potential for disrupting forage utilization. The purpose of this study was to determine the effects of supplemental corn, wheat, and sorghum grain on the utilization of early summer bluestem by beef cattle.

Experimental Procedures

Sixteen ruminally cannulated steers (avg. wt., 795 lbs.) of primarily Hereford x Angus breeding were randomly assigned to one of four treatments: 1) Control (no supplement), 2) corn, 3) wheat, or 4) sorghum grain supplements. All supplements were fed at 0.36% of body weight on an as fed basis. Soybean meal was added to the milo and corn supplements to equalize their crude protein contents with that of the wheat supplement. Animals were housed in individual pens. Fresh bluestem range grass, cut and chopped daily, was fed at 15% over each animal's previous 7-days average intake from June 11 to July 9, 1987. Forage and grain offered and forage refusals were weighed and sampled daily, analyzed for dry matter, and stored for future analyses. The trial consisted of a 14-day adaptation period, a 7-day intake measurement period, and a 7-day total fecal collection period.

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Results and Discussion

There was no difference (P>.10) in forage dry matter intake between the control treatment and any of the supplemented treatments (Table 10.1). Therefore, the trend toward increased total dry matter (DM) intakes for the supplemented groups are simply a result of the increased DM fed in the form of a supplement. There were no differences (P>.10) in either total DM digestibility or acid detergent fiber digestibility. These results indicate that low levels of corn and wheat, as well as sorghum grain, may be used as supplements for stocker cattle grazing early summer bluestem range without adversely affecting forage utilization. Additional research is needed to determine the efficiency with which supplemental energy is converted to tissue gain in steers grazing early summer bluestem.

Table 10.1. Influence of Supplemental Grain Type on Dry Matter (DM) Intake and Digestibility in Beef Steers Consuming Early Summer Bluestem

	Supplement				
Item	None	Corn	Wheat	Sorghum Grain	SE[a]
Forage DM intake (lb/d)	19.0	19.5	19.2	19.9	.73
Total DM intake (lb/d)	19.0	22.3[b]	22.0[b]	22.7[b]	.74
Forage DM intake (% body wt.)	2.5	2.5	2.4	2.5	.18
Grain DM intake (% body wt.)	--	0.35	0.34	0.35	--
Total DM intake (% body wt.)	2.5	2.8[b]	2.7[c]	2.8[b]	.18
Total DM digestibility (%)	51.4	54.8	56.0	52.1	2.73
Acid Detergent Fiber Digestibility (%)	41.1	43.8	40.5	39.6	4.00

[a]SE = standard error (n=4)

[b]Row means differ from control (P≤.10)

[c]Row mean tends to differ from control (P<.15)