

2007

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Recommended Citation

Epp, M.; Barnhardt, B.; Bryant, A.; and Blasi, Dale A. (2007) "Dried distiller's grains improve the performance of beef cattle intensively grazing early summer bluestem pasture," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 1. <https://doi.org/10.4148/2378-5977.1557>

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Dried distiller's grains improve the performance of beef cattle intensively grazing early summer bluestem pasture

Abstract

Distiller's grains are byproducts of the production of ethanol from grains and are an excellent source of protein and energy for cattle. The most prevalent use of distiller's grains is in the finishing beef production sector. There is limited research available that has evaluated effectiveness of distiller's grains as a supplement for grazing beef cattle. Digestible protein content in grass begins to decrease in midsummer, resulting in lower average daily gains. The objective of this study was to measure the daily gain of yearling steers supplemented with different levels of dried distiller's grains while grazing doublestock Flint Hills pastures.

Keywords

Cattlemen's Day, 2007; Kansas Agricultural Experiment Station contribution; no. 07-179-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 978; Beef; Cattle; Dried distillers grain; Yearling steers

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DRIED DISTILLER'S GRAINS IMPROVE THE PERFORMANCE OF BEEF CATTLE INTENSIVELY GRAZING EARLY SUMMER BLUESTEM PASTURE

M. Epp, B. Barnhardt, A. Bryant, and D. Blasi

Introduction

Distiller's grains are byproducts of the production of ethanol from grains and are an excellent source of protein and energy for cattle. The most prevalent use of distiller's grains is in the finishing beef production sector. There is limited research available that has evaluated effectiveness of distiller's grains as a supplement for grazing beef cattle. Digestible protein content in grass begins to decrease in midsummer, resulting in lower average daily gains. The objective of this study was to measure the daily gain of yearling steers supplemented with different levels of dried distiller's grains while grazing double-stock Flint Hills pastures.

Experimental Procedures

Three hundred forty-six steers (573 lbs \pm 51.0 lbs) were used to evaluate performance of dried distiller's grains in an intensive Flint Hills grazing system (250 lbs/acre for 90 days). The dried distiller's grains were exclusively sorghum grain, pelleted for improved handling and shrink characteristics. All steers were backgrounded at a commercial yard between 30 and 45 days before arrival at the Beef Stocker Unit, Kansas State University, Manhattan, KS.

A single grazing period was used from May 1 to August 3, 2005. Pastures consisted of warm-season perennial grasses with big bluestem (*Andropogon gerardii*) and Indian-grass (*Sorghastrum nutans*) dominant forage species, as well as subdominant forage species

of little bluestem (*A. scoparius*) and sideoats grama (*Bouteloua curtipendula*). The following four treatments were randomized over 16 pastures: No supplementation (CON), and sorghum dried distiller's grains supplemented at 0.25% (LOW), 0.50% (MED), and 0.75% (HIGH) of body weight (dry matter basis; Table 1). The dried distiller's grains were 34.6% crude protein and 8.8% crude fat (dry matter basis). Supplemental treatments were fed once daily from June 15 through August 3 in feed bunks located in each pasture. Cattle weights were estimated based on projected average daily gain of 1.8 lb/day from May 1 through June 14 (45 days). Supplements were adjusted every two weeks based on projected ADG of 2.0 lbs/day during the supplement period (June 15 through August 3). Free-choice mineral with a sub-therapeutic dose of oxytetracycline for control of foot rot and pinkeye was provided to all steers until mid-June. Salt in block form was provided to all cattle throughout the entire grazing period. On August 4 the steers were shipped to a commercial feedyard where final weights were taken. Steers were sorted into one of four pens according to dried distiller's grains treatment received on pasture. Grazing and feedyard performance were calculated for each treatment group (Table 2).

Forage quality throughout the grazing period was measured using four ruminally cannulated steers via the rumen evacuation procedure. Rumens were evacuated and rinsed three times, cattle were allowed to graze for 20 minutes, rumens were re-evacuated to obtain consumed forage, and then original rumen

contents were put back into each steer. Four pastures, one from each dried distiller's grains treatment, were sampled. The sampling periods were as follows: May 24, June 28-29, and July 28-29. The same pastures were sampled each sampling period. Crude protein (Figure 1) and ADF (i.e., digestibility; Figure 2) of the forage were analyzed.

Results and Discussion

All cattle fed dried distiller's grains had a significantly greater average daily gain than unsupplemented (Control) cattle (Table 2). In general, weight gain increased as levels of dried distiller's grains increased. However, subsequent performance in the feedyard was lowest for steers fed the highest level of dried distiller's grains during the grazing period.

Implications

Supplementation of dried distiller's grains increases average daily gain of steers in an intensive grazing system; however, subsequent performance in the feedyard appears to decrease.

Table 1. Sorghum Dried Distiller's Grains Supplemented per Head from June 15 to August 3 by Treatment Level

	Treatment Level		
	Low	Medium	High
As-fed lbs	98	170	258
DM lbs	88	151	229

Table 2. Effects of Dried Distiller's Grains (DDG) on Average Daily Gain of Steers Intensively Grazing Native Bluestem Grass and Subsequent Finishing Performance in the Feedyard

DDG Treatment (% BW, DM basis)	Summer Grazing	Feedyard Performance ^e	
	ADG, lbs.	ADG, lbs.	Feed:Gain
0% (Control)	2.31 ^a	3.77	5.71
0.25% (Low)	2.53 ^b	3.58	6.49
0.50% (Medium)	2.59 ^{b,c}	3.68	5.93
0.75% (High)	2.74 ^c	3.36	6.12
SEM ^d	0.065	-	-

^{a,b,c}Differing superscripts between DDG levels vary (P<0.05). Control vs. DDG (P<0.001). Linear effect of DDG (P<0.05).

^dSEM = Standard Error of Mean.

^ePen replication of pasture treatments was not done in feedyard.

**Crude Protein of Native Grass
at Beef Stocker Unit (2005)**

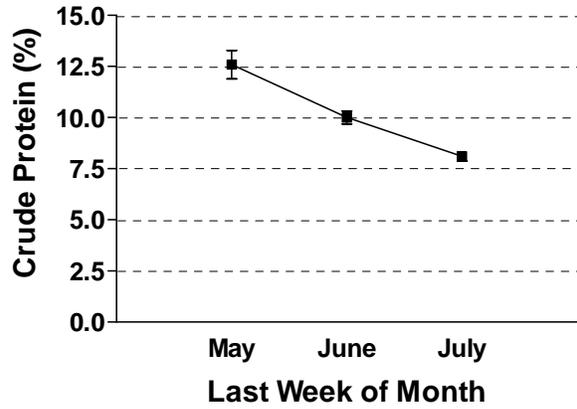


Figure 1.

**ADF of Native Grass at Beef
Stocker Unit (2005)**

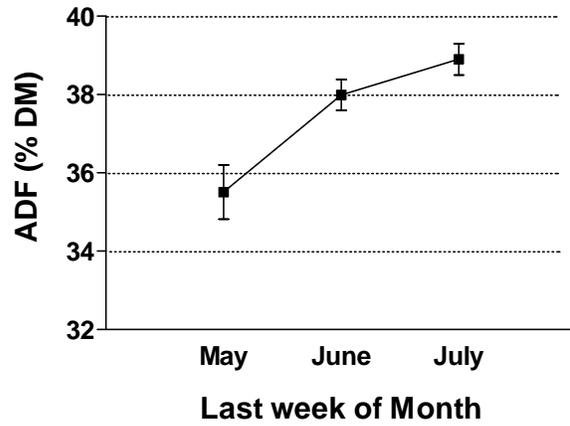


Figure 2.