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Supplementing Dried Distillers Grains to Growing Calves on Smooth Bromegrass Pastures

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Summary

Steers supplemented daily with dried distillers grains with solubles (DDGS) on non-fertilized smooth bromegrass pastures gained 1.9 lb/day compared to 1.46 lb/day for cattle on both fertilized and non-fertilized pastures. The fertilized and supplemented treatments were stocked at equal densities, and the non-fertilized pastures were stocked at 69% the density of the other two treatments. At a lower stocking rate, the non-fertilized pastures showed poorer forage production, but equal cattle performance compared to the fertilized pastures. The supplemented pastures showed slightly decreased forage production compared to the fertilized pastures, but at the same time showed increased cattle performance. Each lb of DDGS replaced about 1 lb of forage. DDGS improved steer and pasture performance when supplemented daily on smooth bromegrass pastures.

Introduction

Dried distillers grains with solubles (DDGS) increased weight gains and decreased forage intake by cattle (2007 Nebraska Beef Report, pp. 10-11). Previous research has estimated DDGS will replace 0.27 to 0.79 lb of forage for every lb supplemented (2007 Nebraska Beef Report, pp. 12-14). Also, grazing cattle supplemented with DDGS will have excess nitrogen in their diet, which will be excreted on the pastures in the form of urea and may replace N fertilizer. The objective of the current experiment was

to measure both cattle and pasture production under different grazing and cattle/pasture supplementation strategies.

Procedure

Forty-five yearling steers (686 ±33 lb) were used in a randomized complete block design to evaluate cattle gain and pasture production with different supplementation and management strategies on smooth bromegrass pastures. Yearling steers were stocked at 4 AUM/acre on pastures fertilized with 80 lb N/acre (FERT) and on non-fertilized pastures supplemented with 0.6% of body weight DDGS (DM) fed daily (SUPP). Non-fertilized pastures (CONT) were stocked at 69% of the FERT and SUPP pastures, or 2.76 AUM/acre. Pasture was the experimental unit and was replicated 3 times. Pastures were grazed from April 24 to Sept. 26, 2008. Through the duration of each cycle and within pasture (block) and treatment, cattle were rotated through 6 paddocks. In cycles 1 and 5, cattle occupancy time was 4 days/paddock. Cattle were moved every 6 days in cycles 2, 3, and 4. Cattle were weighed after each cycle and limit fed for 5 days before initial and final body weights were taken. Weights after each cycle were based on a 4% pencil shrink to account for rumen fill. Diet samples were col-

lected in one paddock/treatment at the mid-point of each cycle utilizing six ruminally fistulated steers. Forage dry matter (DM), crude protein (CP), and *in vitro* dry matter digestibility (IVDMD) were then evaluated. Following the pasture trial, cattle were moved into the feedlot and exposed to a diet of 50% high-moisture corn (HMC), 40% wet corn gluten feed (WCGF), 5% wheat straw, and 5% meal supplement (DM).

Results

Steers on SUPP pastures gained 1.9 lb/day over the entire grazing season, more than either the FERT or CONT cattle ($P < 0.01$; Table 1). FERT cattle gained 1.48 lb/day and CONT cattle gained 1.44 lb/day ($P = 0.6$). Increases in BW for SUPP cattle were probably due to the energy from fat and undegradable intake protein content of the DDGS (2006 Nebraska Beef Report, pp. 27-29). A quadratic response in ADG over time was measured, with the lowest gains in cycle 3 corresponding to lower digestibility of the bromegrass (Figure 1); however, IVDMD did not differ among treatments ($P = 0.25$). Crude protein was highest for FERT pastures in cycle 1 at 23.2%. Crude protein then decreased to 11.8% by cycle 5 for all treatments ($P < 0.01$). Forage production showed a quadratic

(Continued on next page)

Table 1. Pasture and feedlot performance of steers grazing smooth bromegrass.

| | CONT | FERT | SUPP | SEM | P-Value |
|----------------------------|------|------|------|------|---------|
| <i>Pasture Performance</i> | | | | | |
| Days | 156 | 156 | 156 | | |
| Initial BW, lb | 69 | 693 | 671 | 8.8 | 0.07 |
| Final BW, lb | 915 | 924 | 966 | 5.8 | 0.01 |
| ADG, lb | 1.44 | 1.48 | 1.9 | 0.07 | 0.01 |
| <i>Feedlot Performance</i> | | | | | |
| Days | 116 | 116 | 116 | | |
| Final wt, lb | 1401 | 1383 | 1377 | 8.6 | .65 |
| Marbling | 569 | 571 | 631 | 14.6 | .04 |

response for all treatments with peak production reached in cycle 2. The FERT pastures had the greatest forage production per acre overall, while CONT pastures had the least growth, and SUPP pastures were of intermediate production. Because the CONT cattle had 45% more area, forage availability per animal was similar to that of FERT cattle. Based on the NRC model, it was estimated the cattle were consuming 18 lb of DM/day. All pastures were grazed at a similar pressure or to the same height of forage standing crop by the end of the season. Some substitution of forage by the DDGS was evidenced by data showing the SUPP pastures producing less total forage than the FERT pastures while being subjected to the same stocking rate. The SUPP cattle received about 5 lb DDGS (DM) daily. The NRC model estimated that the SUPP cattle replaced about 1 lb of forage intake for every 1 lb of DDGS supplemented. However, measuring or predicting cattle intakes on pastures is difficult.

There were no differences in BW of cattle coming out of the feedlot, although SUPP cattle had higher marbling scores than FERT or CONT cattle ($P = 0.04$; Table 1). Dried distillers grains increased steer and pasture performance when fed daily on smooth bromegrass pastures.

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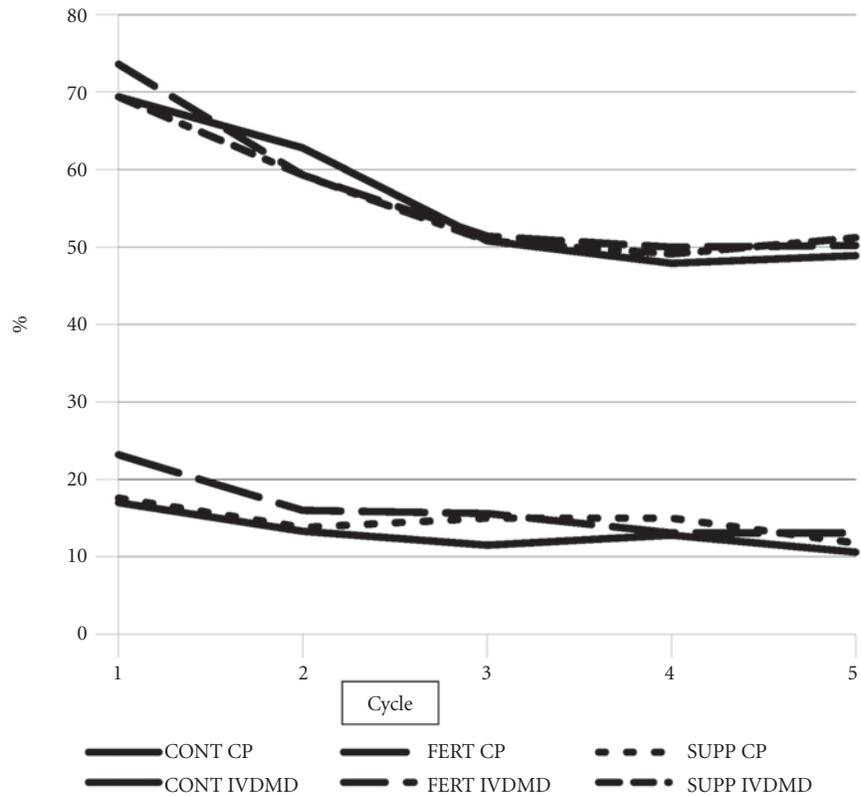


Figure 1. *In vitro* dry matter digestibility (IVDMD) and crude protein (CP) content of smooth bromegrass over time.