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EFFECTS OF SUPPLEMENTAL GROUND GRAIN SORGHUM DURING GRAZING OF ENDOPHYTE-INFECTED TALL FESCUE ON GRAZING AND SUBSEQUENT FEEDLOT PERFORMANCE OF STEERS

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Summary

Sixty-three crossbred steers (740 lb BW) were used to evaluate the effects of energy supplementation during grazing of endoplyte-infected tall fescue and on their subsequent feedlot performance. Grazing ADG was .53 lb/d for control (no supplementation) vs. .81 and 1.21 lb/d with .25% and .5% of BW as ground sorghum (GS), respectively. Grazing supplementation did not affect (P > .10) feedlot performance. Steers receiving .25% GS were 2.3% and 6.2% more efficient (P < .07) during the feedlot phase than 0% and .5% GS steers, respectively. The .5% GS steers were 3.8% less efficient (P < .07) during the feedlot phase than the 0% GS steers. Steers receiving grazing supplementation had increased (P < .07) adjusted backfat measurements and less desirable (P < .02) yield grades than non-supplemental controls. Supplementing steers grazing endophyte-infected fescue at .25% of BW with ground grain sorghum improved feedlot feed conversion compared to no supplementation and supplementing at .5% BW.

(Key Words: Sorghum Grain, Steers, Grazing Performance, Feedlot Performance, Fescue, Endophyte.)

Introduction

Cattle grazing endophyte-infected fescue frequently show signs of fescue toxicosis or 'summer slump' and are often discounted when purchased by feedlots. Various management practices have been applied to help relieve the problems. One possibility is to provide supplemental energy as grain to grazing cattle, thus diluting the toxins. This study was designed to investigate the effects of supplemental ground sorghum grain (GS) during grazing of endophyte-infected fescue on the subsequent feedlot performance of beef steers.

Experimental Procedures

Grazing Phase. Ninety steers that had been previously vaccinated against IBR, BVD, PI_3, 5 strains of leptosporosis, and 7 clostridial strains were co-mingled for 7 days on an endophyte-free fescue, bromegrass, and native grass (45 acre) pasture at the Southeast Kansas Branch Experiment Station, Parsons, KS. Initial full weights were measured on May 8 and 9. Steers were also vaccinated against pinkeye and BRSV, dewormed with levamisole, tagged with insecticide ear tags, and randomly allotted by weight into nine lots of seven head each.

Steers were then transported to one of nine 5-acre tall fescue pastures and assigned to either control (0%) or .25% or .5% of BW as GS per head daily. The remaining 27 head were used as needed to control excess forage on the experimental pastures.

The pastures were grazed from May 9 until July 3 using a put-and-take grazing system to ensure uniform forage availability across pastures. Water and mineral blocks containing monensin were provided freechoice.

Interim weights were taken on May 29 and

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June 20 with GS adjusted accordingly. The cattle were weighed on the morning of July 3 and moved to the previously grazed 45-acre mixed grass pasture for a 7 d period. Final full pasture weights were measured on July 9 and 10, and the cattle were moved to a local stockyard and fed prairie hay during the day. That evening, all ninety steers were transported to the Southwest Kansas Research-Extension Center, Garden City, KS for the feedlot phase of the trial.

Feedlot Phase. Cattle arrived by 5:30 am on July 11 and were individually weighed off the truck, than Tiguvon® (Fenthion) was administered. Steers were divided into groups of 10 head and placed in feedlot pens with fresh bromegrass hay and water overnight. On July 12, the second initial weight was obtained, and all 90 steers were implanted with Compudose 200®. Steers were sorted into seven head per pen to maintain grazing phase treatment replications.

All steers received a starter ration on July 12 and were brought up to full feed of a steam-flaked corn finishing diet over 13 days. On July 24, cattle were revaccinated against IBR, BVD, PI_3, 5 strains of leptosporosis, and dewormed with Valbazen® (Albendazole). Deccox® (Decoquinate) was fed (180 mg/head/day) for 33 days, then removed from the ration. Rumensin® (Monensin) and Tylan® (Tylosin) were then fed for 7 days at 150 and 90 mg/head/day, respectively. Monensin was subsequently increased to 300 mg/head/day for the remaining feedlot period.

Interim weights were taken on Sept. 13 and Oct. 25 and final weights on Nov. 19 and 20. Carcass characteristics were obtained after a 24 h chill.

Results and Discussion

Grazing Phase. Steers receiving 0% GS gained 33 lbs during the 62 d grazing phase for an ADG of .53 lb (Table 1). The .25% GS steers gained an additional .28 lb/d for a total gain of 50 lb per head. Steers consuming .5% of BW as GS had an ADG of 1.21 lb, resulting in an additional 42 lb of gain compared with the 0% group. Grain consumptions were 0, 105, and 215 lb for the 0, .25, and .5% GS grain supplement treatments, respectively.

Feedlot Phase. Cattle experienced an average transit shrink of 7.4% (Table 1). Steers receiving 0% GS shrank .5% more than those fed .25 or .5% GS. However, the 0 and .5% GS steers both gained 520 lb during the feedlot phase. Steers receiving .25% GS gained 12 lb more ($P > .10$) than those fed 0 and .5% GS. Feedlot dry matter intake and ADG were not affected ($P > .10$) by pasture treatments. However, steers receiving .25% of BW as GS required 2.3% and 6.2% less feed per unit gain ($P < .07$) during the feedlot phase compared with 0% GS and .5% GS steers. The .5% GS steers were 3.8% less efficient ($P < .07$) than the 0% GS steers. Combined ADG was not affected ($P > .10$) by pasture treatments.

Hot carcass weight (avg 764 lb), rib-eye-area (avg 12.8 $in.^2$), KPH (avg 2.74%), marbling score (choice -), and dressing percent (avg 63.2%) were not affected ($P > .10$) by pasture treatments. Supplementation increased ($P < .075$) adjusted backfat by an average of .09 in. and decreased ($P < .02$) yield grade by an average of .45% (Table 1).

Table 1. Pasture, Feedlot, Combined Performance, and Carcass Characteristics of Steers Receiving Ground Grain Sorghum Supplements when Grazing Endophyte-Infected Tall Fescue

Item	Pasture Grain Level, % of BW 0	.25	.5	SE[a]
Pasture Phase[b]				
Initial wt, lb	743	738	740	2
Final wt, lb	776[d]	788[d]	815[c]	8
Pasture Gain, lb	33[d]	50[cd]	75[c]	9.9
Daily Gain, lb	.53[d]	.81[cd]	1.21[c]	.16
Grain Consumption,total lb	0	105	215	
Feedlot Phase[b]				
Initial wt, lb	716	731	756	8
Final wt, lb	1236	1263	1276	16
Feedlot Gain, lb	520	532	520	
Dry Matter Intake, lb/d	22.6	22.6	23.5	.5
Daily Gain, lb	3.94	4.03	3.94	.08
Feed to Gain	5.74[d]	5.61[c]	5.96[e]	.04
Combined Total[f]				
Total Gain, lb	553	582	595	
Average Daily Gain, lb/d	2.53	2.72	2.75	.096
Concentrate Intake, lb/d	20.50	21.04	22.43	
Carcass Characteristics				
Hot Carcass wt., lb	748	763	780	14.6
Rib Eye Area, in.^{2}	13.1	12.4	12.9	.24
Adjusted Backfat, in.	.39[d]	.47[c]	.49[c]	.029
KPH, %	2.7	2.8	2.8	.11
Marbling Score[f]	5.0	5.1	4.9	.14
Dressing Percent	62.9	62.8	63.6	.36
Yield Grade	2.7[g]	3.2[h]	3.1[h]	.13

[a]Standard Error of Means.
[b]Pasture Phase - 62 days. Feedlot Phase - 132 days.
[cde]Treatment means are different, P < .10.
[f]Select = 4 to 4.9 Choice minus = 5 to 5.9.
[gh]Treatment means are different, (P < .05).