Behavior of Steers Grazing Tall Fescue Fed Different Types of Supplements

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Story in Brief

The objective of this study was to determine grazing behavior of steers grazing K-31 tall fescue pasture infected with the endemic endophyte and fed 2 types of supplements. Sixty Angus cross steers (593 ± 5 lb) were randomly assigned to one of the following treatments: 1) no supplement (CTL), 2) a self fed liquid supplement (Pastures plus 34/6, QLF, Inc., Dodgeville, Wis.; SUP), or 3) ground corn at a rate of 1 lb as fed daily fed 3 days weekly (POSCTL). Behavioral observations were collected every hour from 0630 to 2030 h bi-monthly and classified into the following 7 categories: consuming supplement, grazing, at the mineral feeder, drinking, standing, walking, or lying. There were no differences ($P > 0.05$) among groups in percentage of time lying, drinking, or at the mineral feeder. However, the CTL group grazed longer ($P < 0.05$) than SUP or POSCTL groups. Cattle fed SUP spent a higher percentage ($P < 0.01$) of time standing than the CTL group. There were no differences ($P > 0.05$) in ADG between supplemented and CTL groups. The CTL cattle performed as well as SUP cattle due in part to a potential increase in herbage intake. Increased grazing time will most likely result in greater DMI and BW gains than expected with supplements in this forage-based system tested.

Introduction

There are 30 million acres of tall fescue in the United States, and they play a large role in cattle production in this country. Kentucky 31 tall fescue infected with the endemic endophyte has a negative effect on cattle grazing, especially in summer. The release of novel endophyte tall fescues has reduced the negative effects on cattle. The time and investment required to establish a new stand with a novel endophyte on a site previously inhabited with tall fescue infected with the endemic endophyte requires a considerable risk to the producer. Numerous supplements have been considered to cope with and limit the negative effects on cattle when grazing tall fescue infected with endemic endophyte. The purpose of this study was to access the impact of different forms of supplementation on the behavior of cattle grazing infected tall fescue.

Experimental Procedures

Sixty Angus cross steers (BW = 593 ± 5 lb) were divided into 12 groups and grazed tall fescue/bermudagrass pastures (1 steer/acre) at the Southwest Research and Extension Center located near Hope, Ark. The soil type of pastures was Una Silt Clay loam, which consists of a deep, poorly drained, level soil (slopes of 1%) on a flood plain. The pastures were composed of a mixed grass stand representative of southwest Arkansas. Treatments were randomly assigned as follows: 1) no supplement (CTL), 2) a self-fed liquid supplement (SUP; Pasture Plus 34/6 QLF, Inc., Dodgeville, Wis.), or 3) ground corn at a rate of 1 lb as fed per day fed 3 days weekly (POSCTL). Cattle were shrunk for 16 hr before the start of the trial and were shrunk and weighed every 28 d for the duration of the trial (112 d).

Cattle behavior was assessed by observing the cattle from a remote location so as not to influence their behavior. Behavioral observations were taken every hour starting at 0630 till 2030 h every other Thursday from late April to early August, 2004. Observations were classified into 7 categories: consuming supplement, grazing, at mineral feeder, drinking, lying, standing, or walking. Treatment effects were analyzed using a mixed model (SAS Inst., Inc., Cary, N.C.) with treatment as the fixed effect and pastures as a random effect. Treatment differences were separated using the following contrast statements: 1) no supplement versus the average of supplemented groups, and 2) positive control (corn) versus supplemented with liquid feed.

Results and Discussion

There was no difference in performance between supplemented, SUP and POSCTL, cattle and CTL cattle ($P = 0.98$; Table 1). Body weight and ADG did not differ ($P = 0.98$) as a result of treatment, and ADG averaged 1.15 lb for this grazing study. The rate of ADG by these cattle was similar to that reported by Beck and Gunter (2005) in a study examining the effects of implant abnormalities on ADG on these same pastures.

In May, June, and July, there was an average of an 18% reduction in grazing time for SUP and POSCTL cattle vs. CTL ($P \leq 0.01$; Table 2); however, there was only a tendency for SUP and POSCTL cattle to graze less ($P = 0.09$) in August. These data are supported by the findings of Shockey et al. (2006). They reported, in a study examining the effects of modified glucomannan in liquid feed on grazing behavior, that supplementation reduced total grazing time. Supplemented, SUP and POSCTL, cattle spent an average of 15% more ($P < 0.01$) time standing than did the CTL cattle. In May and July, POSCTL cattle spent more ($P \leq 0.04$) time standing than SUP cattle. In August, CTL cattle spent more ($P < 0.01$) time at the water tank than both POSCTL and SUP cattle, and the SUP calves were observed drinking more than POSCTL ($P = 0.01$); in other months no differences ($P \geq 0.13$) were detected.

Supplemented and POSCTL cattle spent less time grazing than CTL cattle. This fact may have resulted in lower forage intake and mitigated the increase in ADG for the supplemented cattle normal-

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ly express. Any benefit that was expected from supplementation was probably offset by reduced grazing time.

Implications

Herbage dry matter intake is the most important factors affecting the performance of grazing cattle and any supplementation program used should not reduce it. Decreased grazing time by grazing cattle will most likely result in lower dry matter intake and lower growth rate.

Literature Cited

Beck, P.A., and S.A. Gunter. 2005. J. Anim. Sci. 83(Suppl. 2):21. (Abstr.).

Shockey, J.D., et al. 2006. J. Anim. Sci. 84(Suppl. 1):125. (Abstr.).

Table 1. Body weight, ADG, and supplemental feed intake of steers grazing endophyte infected tall fescue supplemented with different feeds.

	Treatments[a]				*P*-value[b]	
Item	CTL	POSCTL	SUP	SE	CTL vs Supplemented	PosCTRL vs SUP
Steer BW, lb						
d 0, April 12	596	584	600	22.3	0.86	0.62
d 133, August 24	752	757	744	22.3	0.98	0.69
ADG, lb	1.2	1.2	1.1	0.17	0.98	0.69
Supplement intake, lb/d	---	1.0	4.8		---	---

[a]Control = endophyte infected tall fescue; POSCTL = 1.0 lb daily of ground corn on an as-fed basis; SUP = liquid feed from QLF, Inc. (Pasture Plus 34/6; Dodgeville, WI) with a targeted intake of 2.0 to 3.0 lb/d.
[b]Contrasts: CTL vs Supplemented = Control vs the average of the Supplemented pasture plus 34/6 and Positive control; SUP vs POSCTL = Supplemented liquid feed pasture plus 34/6 vs positive control.

Table 2. Behavior of steers grazing endophyte infected tall fescue supplemented with different feeds.

	Treatments[a]				*P*-value[b]	
Behavior/month, % of time	CTL	POSCTL	SUP	SE	CTL vs Supplemented	POSCTL vs SUP
At supplement feeder/tank						
May	0	0.2	4.1	0.55	< 0.01	< 0.01
June	0	0.2	3.4	0.83	0.06	< 0.01
July	0	0.0	2.5	0.60	0.10	< 0.01
August	0	0.0	4.7	0.70	0.01	< 0.01
Grazing						
May	56.8	49.6	43.7	2.31	< 0.01	0.08
June	59.2	51.5	44.3	3.24	< 0.01	0.13
July	57.0	49.5	43.2	3.25	0.01	0.18
August	64.0	60.3	53.0	3.44	0.09	0.14
At mineral feeder						
May	0.9	0.0	0.5	0.17	< 0.01	0.08
June	0.7	0.0	0.7	0.49	0.58	0.36
July	0.5	0.0	0.7	0.31	0.66	0.14
August	0.7	0.0	0.3	0.33	0.17	0.49
Drinking or at water tank						
May	23.2	19.3	23.9	2.60	0.62	0.23
June	27.0	24.3	27.0	3.88	0.78	0.63
July	30.0	26.8	33.2	2.85	0.99	0.13
August	11.7	4.5	6.1	1.5	< 0.01	0.01
Laying						
May	12.2	13.6	15.6	1.30	0.16	0.29
June	9.0	9.5	12.0	2.00	0.47	0.37
July	9.5	9.2	11.7	2.0	0.71	0.38
August	16.5	21.1	25.3	2.94	0.07	0.32
Standing						
May	6.4	16.3	11.3	1.46	< 0.01	0.02
June	4.2	14.5	11.3	2.24	< 0.01	0.33
July	3.0	13.8	8.7	1.72	< 0.01	0.04
August	6.3	14.2	9.7	1.6	< 0.01	0.15
Walking						
May	0.5	1.0	1.1	0.35	0.25	0.77
June	0.0	0.0	0.8	0.48	0.49	0.23
July	0.0	0.7	0.2	0.32	0.30	0.28
August	0.8	0.0	1.0	0.59	0.32	0.84

[a]CTL = endophyte infected tall fescue; POSCTL = 1.0 lb daily of ground corn on an as-fed basis; SUP = liquid feed from QLF, Inc. (Pasture Plus 34/6; Dodgeville, WI) with a targeted intake of 2.0 to 3.0 lb/d.

[b]Contrasts: CTL vs Supplemented = Control vs the average of the SUP and Positive control; SUP vs PosCTRL = Pasture Plus 34/6 vs positive control.