USE OF SILAGE IN WHEAT PASTURE AND BERMUDAGRASS STOCKER PROGRAMS

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Story in Brief

Ninety-six fall-weaned steers averaging 425 lb were placed on wheat pasture and subsequently bermudagrass. Steers of treatment 1 received no silage, while those of treatments 2, 3 and 4 had ad libitum access to sorghum silage on pasture. Initial stocking densities on wheat pasture were 2.25, 2.25, 1.69 and 1.12 acres per steer and .8, .8, .56 and .38 acres per steer for treatments 1 through 4, respectively, on bermudagrass. Mean intakes of silage dry matter (DM) by steers on wheat pasture were 1.46, 1.64 and 2.40 lb DM for treatments 2, 3 and 4, respectively. Silage was fed on bermudagrass only when amounts of bermudagrass became limiting. Silage was fed for 6 and 99 days with mean DM intakes of 8.14 and 6.67 lb per head per day for treatments 3 and 4. Daily gains of steers on wheat pasture and bermudagrass were not different ($P>.05$) among treatments. Use of supplemental silage in wheat pasture and bermudagrass stocker programs allowed stocking densities to be doubled and gains of cattle to be maintained during periods of inadequate forage availability.

(Key Words: Wheat Pasture, Bermudagrass, Stocker Cattle, Silage.)

Introduction

Rate of weight gain of stocker cattle is of primary importance to the stocker cattle operator. Gains of cattle grazing wheat pasture and bermudagrass are potentially good. However, these gains may be depressed because of inadequate amounts of available forage. In addition, performance of cattle on wheat pasture may be limited because of snow and(or) ice cover. A sound supplementation program using silage might alleviate these problems. The silage could serve as a substitute during periods of bad weather or serve to stretch existing forage supplies during periods of inadequate growth. Therefore, a study was initiated in the fall of 1981 to investigate the effects of silage supplementation on performance of stocker cattle on wheat pasture and bermudagrass. The primary objective of the study was to attempt to add stability to the existing forage supply by using silage. The data herein represent the third year of the study. Data from years 1 and 2 were reported by Ford et al. (1983) and Phillips et al. (1984).

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Materials and Methods

Wheat Pasture

Twenty-four Hereford, 40 Hereford x Angus and 32 Limousin cross steers averaging 425 lb were randomly allotted (within breed by weight) into 2 blocks of 48 steers, with each block consisting of 4 treatments. Treatment 1 served as the control and received no silage, while steers of treatments 2, 3 and 4 had ad libitum access to sorghum silage on pasture. Stocking densities were 2.25, 2.25, 1.69 and 1.12 acres per steer for treatments 1 through 4. On December 7, initial availabilities of forage DM were 875, 1112, 674 and 600 lb/hd for treatments 1 through 4. Because of the large amounts of forage that were initially available to the steers, silage supplementation began on January 9 and continued through March 19 (68 days). The silage had a mean dry matter, crude protein and in vivo dry matter digestibility of 24.7 percent, 9.5 percent of DM and 53.4 percent, respectively. During days of snow and ice cover, steers of treatment 1 received old world bluestem hay. Approximately 6.7 lb/hd/day were fed for 9 days.

During the wheat pasture grazeout period (March 21 to May 23), steers of all treatments were combined within blocks and allowed .6 acres/steer. During the grazeout period, no supplemental silage was fed. Forage availability was estimated throughout the wheat pasture grazing period by hand clipping 3 one-half square meter plots at selected times to coincide with major changes in climatic conditions.

Bermudagrass

The same steers used for the wheat pasture phase were subsequently grazed on bermudagrass. All steers remained in their assigned treatments from the wheat phase. Initial stocking rates for treatments 1 through 4 were .8, .8, .56 and .38 acres of bermudagrass per steer.

During the bermudagrass phase (May 23 to September 11), steers in each treatment followed a rotational grazing system in which each pasture was divided by electric fencing into two paddocks. Cattle grazed a single paddock until the bermudagrass became limiting and then were subsequently rotated between paddocks until the forage supply of both paddocks became low. At this point steers were given access to both paddocks. The objective of the rotational grazing was to keep the available forage between 1 to 4 inches tall. If the available forage of ungrazed pastures became too abundant and the cattle could not maintain the pasture, the ungrazed pastures were mowed and baled as hay.

Silage was fed to steers in each treatment only when the available forage became limiting. Silage was fed to steers in treatments 3 and 4 for 6 and 99 days, respectively. Bermudagrass never became limiting in treatment 2. Hence, no silage was fed.

All pastures were fertilized with 50 lb of nitrogen (as urea) on May 8, June 18, and August 8. Additionally, all pastures were mowed following the initial grazing to remove senescent cool season annual grasses.

Results and Discussion

Wheat Pasture

Silage dry matter intakes of steers and forage availabilities are presented in Figures 1 and 2. During the week of January 12, silage

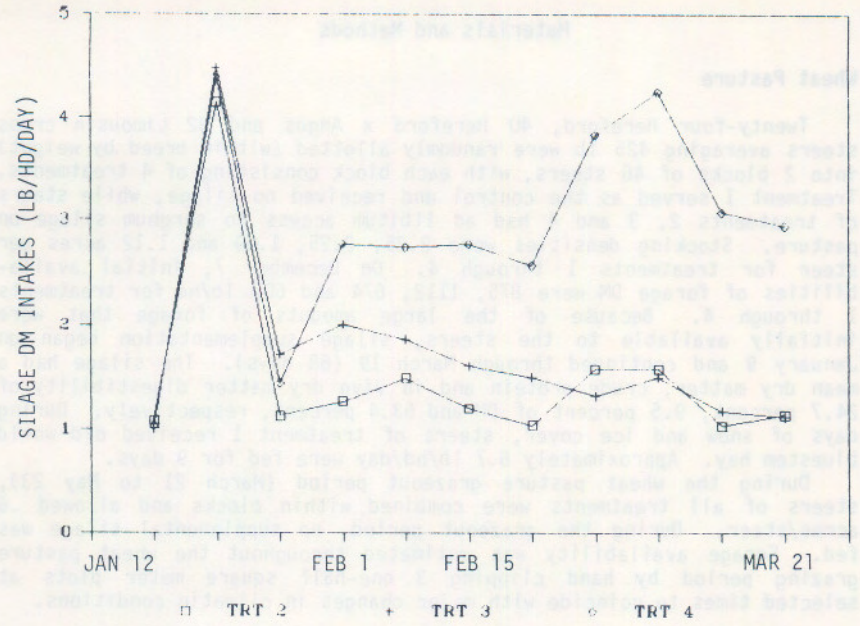

Figure 1. Silage DM intakes of steers grazing wheat pasture.

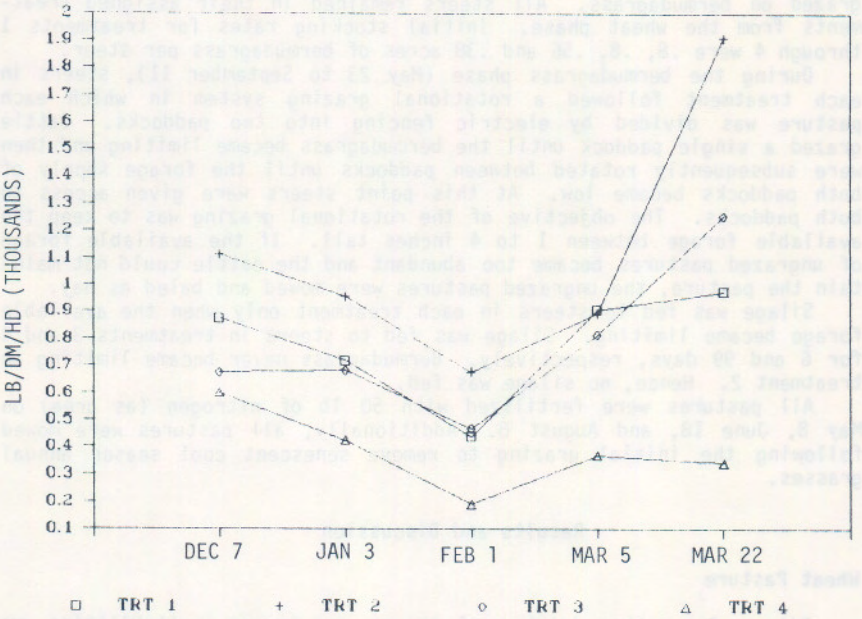

Figure 2. Availabilities of wheat forage.

consumption of steers of all treatments increased rapidly due to snow cover of wheat forage. Silage intake subsequently decreased as the snow melted. Because of extremely cold weather during the study, forage growth was depressed. Available forage for treatment 4 was lowest on February 1 when forage availability was 190 lb DM/hd (Figure 2). Steers of treatment 4 compensated by increasing silage consumption. Silage intakes of steers of treatments 2 and 3 were similar, reflecting the similarities in forage availability. Silage DM consumption ranged from .93 to 4.91 lb DM/hd/day for steers of both treatments 2 and 3 (Figure 1).

Average daily gains (Table 1) of steers of all treatments were similar, indicating that supplemental silage will maintain gains of stocker cattle on wheat pasture during periods of inadequate forage growth. Additionally, gains of steers of all treatments were not different (P>.05) during the grazeout period.

Table 1. Mean initial body weights and daily gains of steers on wheat pasture and bermudagrass.

	Treatment			
	1	2	3	4
No. of steers	24	24	24	24
Wheat pasture				
Initial wt, lb	427	428	419	426
Daily gains, lb				
12/7/83-3/21/84(105 days)	2.09[a]	2.37[a]	2.55[a]	2.33[a]
3/21/84-5/23/84(61 days) (grazeout period)	2.41[a]	2.27[a]	2.17[a]	2.56[a]
Bermudagrass				
Initial wt, lb	794	814	819	826
Daily gains, lb				
5/23/84-9/11/84(112 days)	1.23[a]	1.36[a]	1.44[a]	1.37[a]
Wheat pasture and Bermudagrass (278 days)	1.82[a]	1.94[a]	2.02[a]	1.99[a]

[a]Means are not different (P>.05).

Bermudagrass

Silage DM intakes of steers on bermudagrass are shown in Figure 3. Silage was fed only when amounts of bermudagrass became limiting and could not withstand grazing pressures. Silage was fed for 6 days (September 6 to September 10) and 99 days (June 4 to September 10) for steers of treatments 3 and 4, respectively. Bermudagrass never became limiting for steers in treatment 2. Hence, no silage was offered. Silage intakes increased steadily for steers of treatment 4 from 5.0 (July 9) to 13.8 lb/hd/day (September 10) as the amount of available bermudagrass decreased. Daily gains of steers of all treatments during both periods were similar (Table 1). Gains of cattle at the higher stocking densities were maintained with supplemental silage when available forage became limiting.

Results from this year indicate the use of supplemental silage will allow stocking densities to be increased on wheat pasture and bermudagrass without decreasing cattle performance as amounts of available

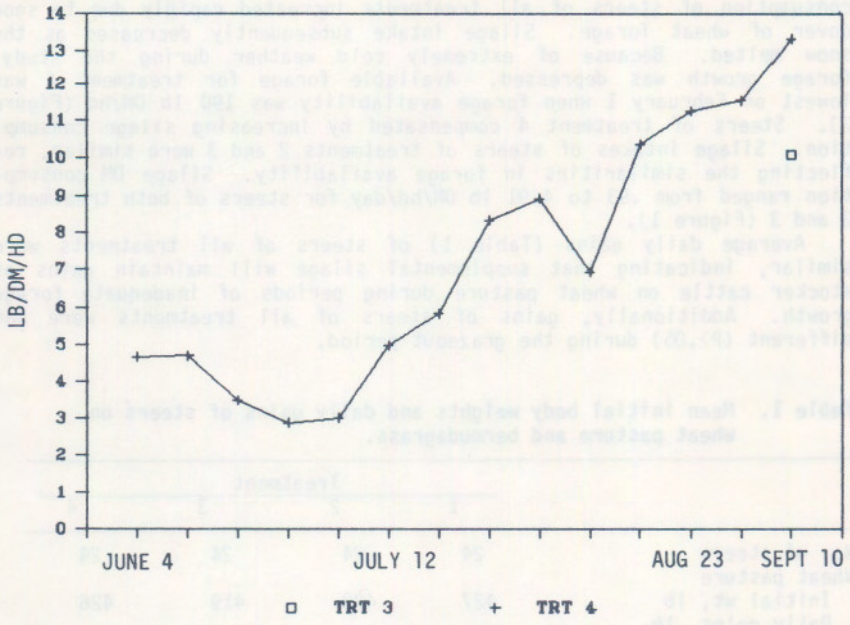

Figure 3. Silage DM intakes of steers grazing bermudagrass.

forage decrease for stocker cattle of the higher stocking densities. An economic analysis will be conducted upon completion of this project.

Literature Cited

Ford, M. J. et al. 1983. Supplementation of wheat pasture and bermudagrass stocker cattle with silage. Anim. Sci. Res. Rep. MP-114:226.

Phillips, W. A. et al. 1984. Use of silage in wheat pasture and bermudagrass stocker programs. Anim. Sci. Res. Rep. MP-116:168.