Supplementation of Wheat Pasture and Bermudagrass Stocker Cattle With Silage

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Story in Brief

Ninety-six fall-weaned steer calves grazed wheat pasture and subsequently bermudagrass and were fed no supplemental feed (treatment 1) or were fed silage (treatments 2, 3 and 4) in amounts slightly in excess of what they would consume daily. Stocking rates on wheat pasture were about 2, 2, 1.5 and 1 acres/steer for treatments 1 through 4 respectively, and 1, 1, .75 and .5 acres bermudagrass/steer. Mean daily silage intakes of steers of treatments 2, 3 and 4 on wheat pasture were 1.77, 3.27 and 4.66 lb dry matter (DM) and 6.82, 6.98 and 7.33 lb DM on bermudagrass. Daily gains of steers during the December to March grazing period on wheat pasture were 2.04, 2.03, 1.81 and 1.53 lb. The decreased gains of steers of treatment 4 would be partially due to very low amounts of available wheat forage (i.e., about 10 percent of treatment 2) during the mid-winter and early spring grazing periods. Gains of steers of all treatments on bermudagrass were similar. Results indicate that steers substituted silage for bermudagrass forage, and that silage should not be fed continuously to stocker cattle on bermudagrass. Use of silage only during periods of low bermudagrass availability appears to be one means of adding stability to bermudagrass stocker enterprises.

Introduction

Average daily gain is a key figure that affects the profitability of stocker cattle enterprises. Wheat forage is high quality, and gains of stocker cattle on wheat pasture were potentially good. However, gains of stocker cattle on wheat pasture are frequently decreased due to (1) inadequate amounts of fall and/or winter wheat forage and (2) stockers being "out of feed" because of snow and/or ice cover of wheat forage. Identification of sound feeding programs for wheat pasture stockers, therefore, has the potential of increasing total beef production from wheat pasture and adding *stability* to wheat pasture stocker operations.

It is sometimes more profitable to graze-out wheat rather than harvest a grain crop. If 2.5 and .67 acres of wheat will provide forage for a 400 lb steer from November 15 to March 15 and during the graze-out period, respectively, only about 27 percent of the area grazed during the fall and winter would be needed during the graze-out period. Stocker operators who elect to carry cattle through a graze-out program would need to purchase additional cattle or be able to carry more cattle during the November 15 to March 15 period. One approach would be to feed silage on wheat pasture throughout the wheat

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pasture grazing period, and increase stocking rate during the November 15 to March 15 period. Feeding silage to wheat pasture stockers would have an additional advantage in that a relatively high quality feed would be available to sustain gains during periods of snow and/or ice cover of wheat pasture. At present, hay is commonly fed during snow and/or ice cover of wheat forage; and, at best, stocker weights are probably only maintained.

Large fluctuations in forage production also represent a major management problem in bermudagrass stocker programs. A project was begun in the fall of 1981 with the following objectives:

1. Determine the effect of feeding silage to stocker cattle grazed on wheat and subsequently bermudagrass pasture on:
   A. Stocker weight gains and total beef production per acre.
   B. Quantity of forage produced, and quality of available forage.
   C. Wheat and bermudagrass forage intake.
   D. Total ration (wheat or bermudagrass forage alone or forage *plus* silage) utilization.
2. Economics of producing beef on wheat and bermudagrass pasture alone or wheat and bermudagrass pasture plus silage.

Cattle performance data obtained during the first year of the project are reported herein.

Experimental Procedure

Fifty-six fall-weaned Hereford and 40 Brahman crossbred steers (1/4 Brahman and 3/4 Hereford and Angus) with mean weights of 369 and 534 lb, respectively, were randomly allotted (within breed) to 4 treatments of 24 steers each in a randomized complete block design with 2 blocks of wheat pasture. The steers were grazed on wheat pasture followed by bermudagrass. Treatments were as follows:

Treatment:	1	2	3	4
Silage:	-	+	+	+
Acres wheat pasture/steer:	2	2	1.5	1
Acres bermudgrass/steer:	1	1	.75	.5

During December 2, 1981 to March 25, 1982 (wheat pasture phase) and May 21, 1982 to September 3, 1982 (bermudagrass phase) steers of treatments 2, 3 and 4 were fed silage slightly in excess of what they would consume each day. Wheat silage, harvested in the soft-dough stage of maturity, was used initially. Corn silage was fed beginning July 19, 1982 because of a shortage of wheat silage. Silage was not fed during the wheat pasture graze-out period (March 26 through May 20, 1982), and steers of all treatments grazed a single wheat pasture within each block. Stocking rate during the wheat pasture graze-out period was about .6 acres/steer.

Hay was fed to steers of treatment 1 during periods of snow and/or ice cover of wheat pasture. Because of the mild winter, it was necessary to feed hay only one day (February 9, 1982).

Silage consumption was measured daily and samples were taken twice each week for analyses. Initial, intermittent and final shrunk live weights (over-night stand without feed or water) of the steers were measured to coincide with major changes in climatic growing conditions for wheat.

Available forage of all pastures was estimated by hand-clipping 3 randomly selected one-half square meter plots of each pasture 4 times during the grazing period on wheat and 5 times on bermudagrass.

Results and Discussion

Silage consumption and amounts of available wheat forage during the period of feeding wheat silage on wheat pasture are shown in Figures 1 and 2, respectively. Daily silage consumption of steers of treatments 2, 3 and 4 was about 2.5 lb DM/head through the week of January 18. Consumption of silage by steers of treatments 3 and 4 increased markedly during the week of February 8 when available wheat forage was, respectively, only about 440 and 75 lb DM/head on February 8. These forage availabilities are equivalent to about 293 and 75 lb wheat forage DM/acre for treatments 3 and 4, respectively. For perspective, 6-inch tall wheat forage, planted on 12-inch row spacings, will yield about 500 lb forage DM per acre. Therefore, wheat of pastures of treatment 4 was extremely short at this time.

Gains of steers of treatments 1 and 2 were similar (Table 1) during the December to March grazing period on wheat pasture, whereas daily gains of steers of treatment 3 were .22 lb less. Daily weight gains of steers of treatment 4 were 0.5 lb lower than steers of treatment 1 and 2. The decreased gains of steers of treatment 4 were partially attributable to the low wheat forage availabilities (i.e., about 10 percent of treatment 2) during the late January

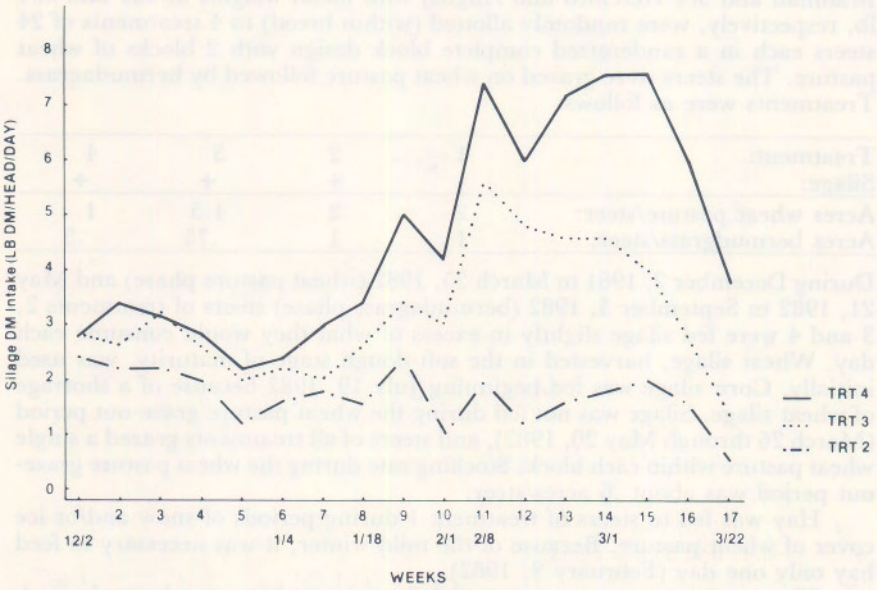

Figure 1. Silage consumption (pounds DM/steer/day) of steers on wheat pasture. Mean DM and crude protein contents and IVDMD of wheat silage were: 35.3, 9.2 and 51.0%, respectively.

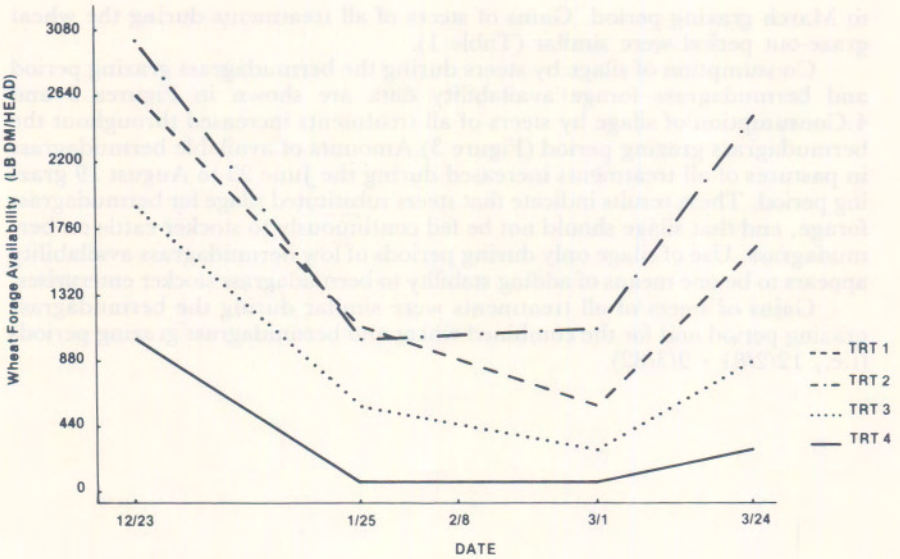

Figure 2. Wheat forage availability (pounds DM/steer).

Table 1. Daily weight (wt) gains of steers

	Treatment			
Grazing phase	1	2	3	4
Number of steers:	24	23*	23*	24
Wheat pasture				
Initial wt of steers, lb	443	442	442	431
Daily gain of steers, lb				
12/2/81-3/25/82 (113 days)	2.04[a]	2.03[a]	1.81[a]	1.53[a]
3/26/82-5/21/82[b]				
(Graze-out period, 57 days)	1.96[a]	1.91[a]	2.08[a]	2.19[a]
Bermudagrass				
Initial wt of steers, lb	785	780	765	728
Daily gain of steers, lb				
5/22/82-9/3/82 (105 days)	1.11[a]	1.12[a]	1.23[a]	1.05[a]
Wheat pasture and bermudagrass				
12/2/81-9/3/82 (275 days)	1.67[a]	1.66[a]	1.64[a]	1.48[a]

*One steer died of respiratory disease at beginning of wheat pasture grazing phase.
[a]Means are not different (P > .05).
[b]Silage was not fed during wheat graze-out period.

to March grazing period. Gains of steers of all treatments during the wheat graze-out period were similar (Table 1).

Consumption of silage by steers during the bermudagrass grazing period and bermudagrass forage availability data are shown in Figures 3 and 4.Consumption of silage by steers of all treatments increased throughout the bermudagrass grazing period (Figure 3).Amounts of available bermudagrass in pastures of all treatments increased during the June 23 to August 19 grazing period. These results indicate that steers substituted silage for bermudagrass forage, and that silage should not be fed continuously to stocker cattle on bermudagrass. Use of silage only during periods of low bermudagrass availability appears to be one means of adding stability to bermudagrass stocker enterprises.

Gains of steers of all treatments were similar during the bermudagrass grazing period and for the combined wheat and bermudagrass grazing periods (i.e., 12/2/81 - 9/3/82).

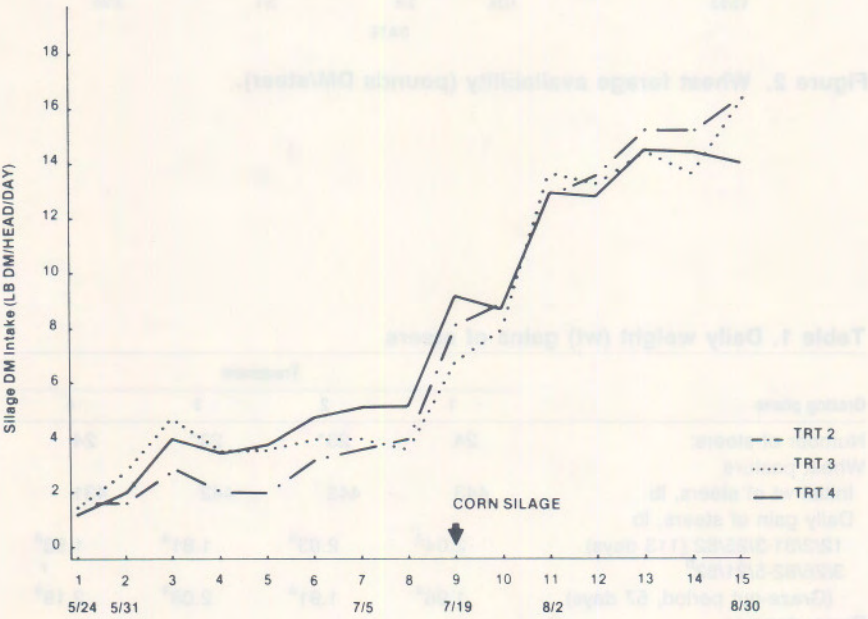

Figure 3. Silage consumption (pounds DM/steer/day) of steers on bermudagrass. Mean DM and crude protein contents and IVDMD of silages were: (wheat silage) 35.7, 9.5 and 43.8%; (corn silage) 34.0, 10.3 and 58.1%.

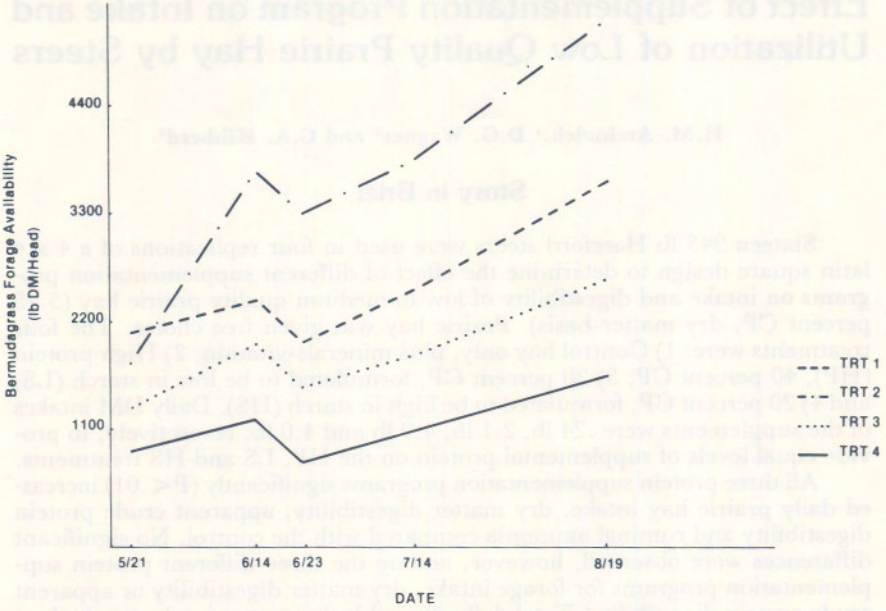

Figure 4. Bermudagrass forage availability (pounds DM/steer).

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