

PERFORMANCE OF STOCKERS GROWN ON PRAIRIE OR BERMUDAGRASS HAY WITH 40 OR 25% PROTEIN SUPPLEMENTS

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Story in Brief

Forty-two, 5-month-old English crossbred steers were weaned on August 4, 1992 and placed directly in drylot. In Trial 1, steers were provided prairie hay free-choice and fed supplements containing either 2 lb/day of soybean meal (40% CP); 4 lb/day of soybean meal/corn/soybean hulls (25% CP); or 4 lb/day of soybean meal/corn/wheat midds (25% CP). Trial 2 was conducted immediately following trial 1 with Bermudagrass hay fed instead of prairie hay. During trial 1 (56 days), daily gains were 1.29, 1.57 and 1.52 lb for the 40% and 25% crude protein groups, respectively. During Trial 2 (56 days), daily gains were .69, 1.10 and .96 lb for the 40% and 25% crude protein supplements, respectively. The starch content of the corn/middlings combination is greater than for corn/soybean hulls and suggests that sufficient starch was fed to reduce hay digestion and/or intake.

(Key Words: Stockers, Supplements, Protein, Energy.)

Introduction

Assembling calves for wheat pasture grazing usually requires that calves be assembled some weeks to months before the calves are turned out to wheat. During the holding period, it is desirable for the calves to gain at least enough weight to offset interest, feed and overhead costs and to maintain good health. In many cases, native grass or bermudagrass (hay or standing forage) must provide the majority of nutrients. Supplements that could economically produce 1 to 1.5 lbs of daily gain would be valuable to stocker operations. The goal of these trials was to evaluate performance of young stocker calves maintained on prairie or Bermudagrass hay and fed supplements containing 40 or 25% crude protein. Two 25% protein supplements were studied in order to evaluate different combinations of common Oklahoma feed ingredients. One

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contained soybean meal, corn and wheat middlings and the other contained soybean meal, corn and soybean hulls.

Materials and Methods

Trial 1

Forty-two, 5-month-old English crossbred steers were weaned on August 4, 1992 and placed directly in drylot at the OSU Lake Carl Blackwell Range near Stillwater. All weights were taken after overnight withdrawal from feed and water. On the day of weaning, calves were weighed and allotted to three treatment groups: 2 lb/day of soybean meal; 4 lb/day of Soybean meal/corn/soybean hulls or 4 lb/day of soybean meal/corn/wheat midds. Composition of each supplement is shown in Table 1. All supplements supplied 200 mg/head/day of Rumensin.

Calves were maintained in a single pen with free-choice access to round bales of native grass hay (5% crude protein). Five mornings each week, steers were sorted into replications or 4 or 5 steers and fed their supplements in small pens, the amounts prorated for 5-day/week feeding. Supplements were usually consumed within one hour and calves were returned to their hay pen at that time. The 5-day/week feeding schedule was used because it fits the labor constraints of many producers. The trial lasted 56 days. Data were statistically analyzed using feeding replication as the experimental unit.

Table 1. Composition of supplements.

	Soybean meal	Soybean meal/corn/soybean hulls	Soybean meal/corn/wheat midds
Soybean meal, %	93.3	37.1	30.7
Rolled corn, %		37.9	25.2
Wheat middlings, %			37.4
Soybean hulls, %		18.3	
Cane molasses, %	4.4	4.4	4.4
Limestone, %	2.2	2.22	2.2
Rumensin, mg./lb	50	25	25
Protein in supp, %	40	25	25

Trial 2

This study commenced the day trial 1 was ended. Calves remained on the same supplement treatments as in trial 1 but Bermudagrass hay (8% CP) was substituted for native hay. The study lasted 56 days.

Results

Trial 1

No negative control (zero supplement) was included because the gains would have been too low to be meaningful, and the 2 lb level of soybean meal is a benchmark for many producers. Gains for all groups during the first 28 days after weaning were similar (Table 2). It is likely that intakes of the 25% protein supplements group-fed at a rate of 4 lb/head may have resulted in erratic intakes during the first days after weaning. Scouring was observed with

Table 2. Performance of stocker calves fed 40 or 25% protein supplements with prairie hay.

	Soybean meal	Soybean meal/ corn/soybean hulls	Soybean meal/ corn/wheat midds
Protein in supp, %	40	25	25
Supp, lb/day ^a	2	4	4
Initial wt.,lb	423	425	425
Daily gain, lb			
1st 28 days	1.51	1.46	1.24
2nd 28 days	1.07 ^b	1.68 ^c	1.80 ^c
Total 56 days	1.29 ^b	1.57 ^c	1.52 ^c
Lb supp/lb added gain over 2 lb soybean meal			
1st 28 days	-----	-----	-----
2nd 28 days	-----	3.27	2.73
Total 56 days	-----	7.14	8.69

^a Feed amounts are shown for 7-day basis but were prorated and fed 5 days/week (Monday - Friday).

^{b,c} Means on the same row with different superscripts differ ($P < .05$).

calves from the 25% protein groups. By the middle of the 56-day study, all calves were consuming their allotted supplements in a few minutes, reducing the chance that some calves would have the opportunity to overeat. During the second 28 days, calves fed the 25% protein supplements gained 1.68 to 1.8 lbs/day, significantly faster than 1.07 lb/day for the soybean meal controls. During the 56-day trial, gains of calves fed the 25% supplements averaged slightly over 1.5 lbs/day compared to about 1.3 lbs for soybean meal. Results suggest that supplement amounts during stress periods should be limited, especially supplements containing significant percentages of grains or starchy ingredients.

Which type of supplement to use will depend on the relative price of ingredients and the value of gain. For the 56-day period, conversions of added 25% CP supplement to added gain over the soybean meal-fed calves ranged from about 7 to 8 lbs.

Trial 2

Calves were well adapted to their supplements at the time the calves were changed from native to Bermudagrass hay. During the first 28 days, calves fed the 25% protein supplements tended to gain faster than calves fed soybean meal (Table 3). Conversion efficiency for the 2 lbs of added 25% protein supplement was 5.55 for the soybean meal/corn/soybean hull formulation and 7.14 for the soybean meal/corn/wheat middlings supplement. Gains during the second 28-day period were significantly greater for both 25% protein supplements. Conversion efficiency for the second 28 days was 4.44 and 7.69 for the two 25% supplements compared to the 40% CP supplement. Calves fed the soybean meal/corn/soybean hulls formulation tended to gain faster than those fed the soybean meal/corn/wheat middlings supplement. The starch content of the corn/middlings combination was higher than for the corn/soybean hulls and suggests that sufficient starch was fed to reduce hay digestion and/or intake.

Although a direct comparison cannot be made between gains on Bermudagrass hay vs native hay because both were not fed at the same time, gains appeared to be greater for native hay. This is consistent with observations in the field.

Table 3. Performance of stocker calves fed 40 or 25% protein supplements with Bermudagrass hay.

	Soybean meal	Soybean meal/ corn/soybean hulls	Soybean meal/ corn/wheat midds
Protein in supp, %	40	25	25
Supp, lb/day ^a	2	4	4
Initial wt,	496	513	510
Daily gain, lb			
1st 28 days	.91	1.27	1.19
2nd 28 days	.48 ^b	.93 ^c	.74 ^c
Total 56 days	.69 ^b	1.10 ^c	.96 ^c
Lb supp/lb added gain over 2 lb soybean meal			
1st 28 days	-----	5.55	7.14
2nd 28 days	-----	4.44	7.69
Total 56 days	-----	4.87	6.66

^a Feed amounts are shown for 7-day basis but were prorated and fed 5 days/week (Monday - Friday).

^{b,c} Means on the same row with different superscripts differ ($P < .05$).