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## Protein blocks for gestating beef cows wintered on bluestem pasture: soybean meal and starea compared

### Abstract

Pregnant Hereford and Angus cows wintered on native bluestem pasture were used to compare soybean-meal and Starea-containing blocks and protein supplements. Cow weight changes were similar with both supplements. Consumption of Starea supplement declined throughout the trial, while soybean meal block consumption remained constant.

### Keywords

Cattlemen's Day, 1973; Report of progress (Kansas State University. Agricultural Experiment Station); 568; Beef; Protein; Bluestem pasture; Soybean meal; Starea

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Protein Blocks for Gestating Beef Cows Wintered  
on Bluestem Pasture: Soybean Meal  
and Starea<sup>(R)</sup> Compared

E. L. Shiawoya, L. H. Harbers, J. D. Evans,  
and R. M. McKee

Summary

Pregnant Hereford and Angus cows wintered on native bluestem pasture were used to compare soybean-meal and Starea-containing blocks as protein supplements. Cow weight changes were similar with both supplements. Consumption of Starea supplement declined throughout the trial, while soybean meal block consumption remained constant.

Introduction

A previous trial comparing soybean meal, urea, and Starea in concentrate supplements for wintering range cows (KAES Bull. 557, 1972, p. 48) indicated that Starea is similar to soybean meal in maintaining cow weights during gestation and in producing calves with similar weaning weights. Those results are encouraging as urea is usually inferior to natural proteins when fed to adult ruminants consuming poor quality roughages.

Because of the interest in feeding supplements to wintering cattle in blocks rather than in meal mixtures and because the cost of protein supplements has risen so much, we compared soybean meal and Starea blocks\* as supplements for gestating cows grazing Flint Hills range.

Methods

Fifty-two pregnant cows (Hereford and Angus) were divided according to weight (1,026 lbs. average) and age (5 years) into two groups of 26 animals each. One group had access to soybean blocks; the other, blocks containing Starea, as main sources of nitrogen. Blocks were kept in open troughs. Compositions of the two blocks are given in table 1. Each 28 days the cows were weighed and rotated between the two pastures to minimize effects of grazing areas on cow weight changes. Salt and minerals were available in other boxes. Hay was fed only when snow cover prevented grazing. Cow weights and block consumptions were collected. Extra blocks were exposed only to the weather to measure that variable. Other data to be collected include calf birth and weaning weights, percentage calf crop, cow breeding dates, and percentage of cows rebred.

(R) - an extruded milo-urea processed material

\* - blocks supplied by Dr. Lyle Helmer, Far-Mar-Co,  
Hutchinson, Kansas.

### Results

When the experiment started, no ammonia toxicity was apparent in the Starea-fed group. Those animals were observed for the first hour after exposure to blocks. Of the 26 cows, two ate for only 5 minutes while most spent 25-30 minutes on the blocks before starting to graze. Starea-fed animals were driven 3/4 mile to the supplement. After eating, they stood and panted several seconds, then moved on to graze. The soybean-supplemented group was not observed.

During the first 28 days (Oct. 24-Nov. 21), both groups gained weight (table 2) -- those on soybean meal, an average of 0.39 lb/hd/day (11 lbs/hd/mo); those on Starea, an average of 0.57 lb/hd/day (16 lbs/hd/mo). Block consumption was similar; soybean meal and Starea-fed groups consumed 2.30 and 2.37 lbs/hd/day, respectively. Consumption may be lowered by using harder blocks.

Adverse weather caused both groups to lose weight the second 28 days. Consumption of soybean meal blocks was similar to the first 28 days; Starea block intake dropped to 2.02 lbs/hd/day. The first 56 days (Oct. 24-Dec. 19), cows receiving the soybean meal blocks lost 26 lbs. (-0.46 lb/hd/day); those fed Starea blocks lost 15 lbs. (-0.27 lb/hd/day).

Continued inclement weather the third period caused additional weight losses. Soybean supplemented cows lost 12 lbs. each (-0.50 lb/hd/day); those fed Starea blocks, 34 lbs. (-1.42 lbs/hd/day). Consumption of soybean blocks remained similar to that in other periods while Starea block consumption dropped to 1.36 lbs/hd/day. Hay was supplied most of that time as snow and ice permitted only sporadic grazing.

Weight losses during the 84-day trial were 38 lbs. each by soybean-fed animals and 49 lbs. each for Starea-fed ones. Such losses are expected in the Flint hills area when winter weather is severe. Depressed intake of Starea blocks may result from the consistency of extruded grains when dampened. The material becoming sticky may affect intake. A recently completed trial at the Illinois Station found similar consumption when both supplements were fed in a covered area.

Losses in block weights due to weather exposure (table 3) are not consistent but not excessive. The reason for the smaller loss of the starea block during the third period may be due to the adhesive characteristics of the extruded milo grain.

Table 1. Composition of soybean and Starea blocks fed to wintering cows.

Ingredient	Nitrogen source	
	Soybean meal	Starea
Soybean meal	48%	-----
Milo Starea-70	-----	50%
Urea	5.0%	-----
Sorghum grain	17.9%	19.9%
Cane molasses	7.5%	7.5%
Salt	12.5%	12.5%
Dicalcium phosphate	6.0%	7.0%
Trace minerals	1.0%	1.0%
Bentonite	2.0%	2.0%
Vitamin A	37,000 I.U./lb.	37,000 I.U./lb.
Vitamin D	12,000 I.U./lb.	12,000 I.U./lb.

Table 2 . Weight changes and protein block consumption by cows grazing bluestem pasture.

Indicated factor	Nitrogen source	
	Soybean	Starea
No. of cows	26	26
Avg. age (yrs.)	5.07	5.11
Avg. initial wt. (lbs)	1025	1028
Avg. final wt. (lbs)	987	979
Wt. change (lb/hd/period)		
Oct. 24-Nov. 21	+11	+16
Nov. 21-Dec. 19	-37	-31
Dec. 19-Jan. 11	-12	-34
Oct. 24-Jan. 11	-38	-49
Block consumption (lb/hd/day)		
Oct. 24-Nov. 21	2.30	2.37
Nov. 21-Dec. 19	2.27	2.02
Dec. 19-Jan. 11	2.40	1.36

Table 3 . Weight loss of blocks (lbs/mo) exposed to weather.

Period	Soybean	Starea
Oct. 24-Nov. 21	7.50	11.50
Nov. 21-Dec. 19	1.25	1.00
Dec. 19-Jan. 11	8.00	0.50