Kansas Agricultural Experiment Station Research Reports

Volume 0
Issue 1 *Cattleman's Day (1993-2014)*

Article 464

1999

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WHEAT BRAN AND SECOND CLEARS AS SUPPLEMENTAL ENERGY SOURCES FOR BEEF COWS GRAZING WINTER PASTURE

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Summary

Ninety spring-calving Hereford × Angus cows grazing low-quality, tallgrass-prairie forage during the winter were fed 5 lb/day of a supplement containing combinations of wheat bran (high in digestible fiber) and second clears (high in starch). The by-product combinations accounted for 47 to 49% of each supplement, as follows: 1) 100% wheat bran; 2) 67% wheat bran, 33% second clears; and 3) 33% wheat bran, 67% second clears. Cow performance was measured by changes in body weight and body condition score. The combinations of wheat bran and second clears had no significant effects on cow performance, calf birth weights, calf performance, or cow pregnancy rates.

(Key Words: Cows, Forage, Wheat, By-Product.)

Introduction

Supplemental protein is imperative for efficient utilization of low quality range forage. Recent research at Kansas State University also implies that the type of supplemental protein is important. Degradable intake protein (DIP) is that portion of crude protein degraded by ruminal microorganisms and is essential for efficient utilization of low-quality forage. However, even when DIP needs are met, additional energy may be required to achieve desired levels of performance. Our objective was to evaluate the ability of two wheat-milling by-products to provide additional supplemental energy to range beef cows.

Experimental Procedures

Wheat bran is high in digestible fiber, and second clears is a low grade flour that is high (>75%) in starch. A cow performance study was conducted during the winter of 1997-98 on the impact of feeding supplements with various combinations of wheat bran and second clears. Supplements were fed to spring-calving cows grazing low-quality, tallgrass prairie. Ninety Hereford × Angus cows were weighed and body condition scored on December 2, 1997. Their initial body weight averaged 1218 lbs, and initial average body condition score was 5.3. Cows then were sorted by weight and body condition and assigned randomly to one of three pastures. Within pasture, cows were assigned randomly to one of three treatments with different supplements, each fed at 5 lbs/ day. Wheat-milling by-products accounted for 47 to 49% of each supplement, as follows: 1) 100% wheat bran; 2) 67% wheat bran, 33% second clears; and 3) 33% wheat bran, 67% second clears. Each supplement contained about 40% soybean meal as a source of supplemental DIP. The cows were gathered and sorted into their respective treatments daily and were group-fed their supplements. Group was the experimental unit. Cows were weighed and body condition-scored again on January 6, on February 6, and within 48 hours after calving. Calf birth weights also were taken within 48 hours after calving.

[1]Consolidated Nutrition, Omaha, NE.

Results and Discussion

Using high fiber (bran) versus high starch (second clears) wheat by-products as supplemental energy sources had little effect on cow performance. Losses in body weight (Table 1) and body condition (Table 2) through calving were similar across the wheat by-product combinations. Similarly, calf birth weight and performance and cow pregnancy rate (Table 3) were not affected by treatments. Results of previous work indicate that the supplemental soybean meal provided adequate DIP to maximize intake and digestion of low-quality, tallgrass prairie forage. Apparently once DIP needs are met, the carbohydrate source does not greatly affect cow performance.

Table 1. Influence of Wheat-Milling By-Product in Supplements on Beef Cow Weight

	Treatment[a]				Contrasts[b]	
Item	BRAN	BRSC	SCBR	SEM	L	Q
No. of cows	30	30	30			
Initial wt., lb	1230	1217	1217	13.79	.55	.71
Period weight changes, lb						
6 Dec - 6 Jan	-.37	-2.17	-8.50	4.47	.27	.70
6 Jan - 6 Feb	16.83	12.83	12.93	5.23	.63	.76
6 Feb - calving	-173.46	-170.43	-169.23	9.33	.76	.94
Cumulative weight changes, lb						
6 Dec - 6 Feb	16.47	10.67	4.43	7.68	.33	.98
6 Dec - calving	-157.03	-159.77	-164.80	14.29	.72	.95
Ending wt., lb	1077	1057	1053	19.18	.42	.76

[a]The by-product portions of the supplements were: BRAN=100% Bran; BRSC=67% Bran, 33% Second clears; SCBR=33% Bran, 67% Second clears.
[b]L=Linear; Q=Quadratic.

Table 2. Influence of Wheat-Milling By-Product in Supplements on Beef Cow Body Condition

	Treatment[a]				Contrasts[b]	
Item	BRAN	BRSC	SCBR	SEM	L	Q
No. of cows	30	30	30			
Initial BC score	5.30	5.29	5.30	.03	1.0	.84
Period BC changes						
6 Dec - 6 Jan	.23	.14	.13	.07	.37	.72
6 Jan - 6 Feb	-.19	-.16	-.22	.06	.78	.55
6 Feb - calving	-.36	-.38	-.29	.07	.52	.58
Cumulative BC changes						
6 Dec - 6 Feb	.03	-.02	-.09	.08	.32	.90
6 Dec - calving	-.33	-.39	-.38	.04	.34	.46
Ending BC score	4.98	4.90	4.92	.05	.40	.47

[a]The by-product portions of the supplements were: BRAN=100% Bran; BRSC=67% Bran, 33% Second clears; SCBR=33% Bran, 67% Second clears.
[b]Contrasts: L=Linear; Q=Quadratic.

Table 3. Influence of Wheat-Milling By-Product in Supplements on Pregnancy Rate and Performance of Calves

	Treatment[b]				Contrasts[c]	
Item	BRAN	BRSC	SCBR	SEM	L	Q
Pregnancy rate, %	97	97	97			
Birth wt, lb	91.6	91.2	92.8	2.67	.76	.78
Calf ADG[a], lb/d	2.3	2.3	2.3	.03	.54	.19

[a]ADG=Average daily gain.
[b]The by-product portions of the supplements were: BRAN=100% Bran; BRSC=67% Bran, 33% Second clears; SCBR=33% Bran, 67% Second clears.
[c]L=Linear; Q=Quadratic.