

Whole vs Rolled Soybean Winter Supplementation For Fall Calving Beef Heifers Grazing Native Tall Grass Prairie

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Story in Brief

Fifty-one fall calving bred heifers were used to determine the effects of feeding whole or rolled soybeans during winter on weight and body condition score change. Heifers were blocked by age and stratified by weight, then allotted to one of two supplement treatments. Treatments were: (1) whole soybeans, and (2) rolled soybeans. The supplementation period was January 16 through April 12, 2002 (86 d). Heifers were group fed 3.5 lbs/head on Monday, Wednesday, Friday and Saturday. Measurements were taken to monitor weight and body condition score change. There were no significant differences in weight or condition score changes between the two treatments. Therefore, we conclude that it is not necessary to process soybeans when used as a winter supplement for beef cows in similar conditions.

Key Words: Soybeans, Beef Cattle, Feed Processing, Winter Supplementation

Introduction

It is well documented that beef cattle require supplemental protein when grazing dormant native tall grass prairie forage (Steele et al., 2002). The specific amount of supplemental protein required is dependent on forage quality, stage of production, and production level among other factors. Soybeans have proven to be a good source of energy and protein in beef cattle rations and supplements (Albro et al., 1993). Beef cattle producers may have the opportunity to include soybeans into their feeding programs when the soybean market is depressed. However, supplementation costs would be significantly reduced if processing of the soybean seeds could be bypassed. This study was designed to determine the effects of processing soybeans when used as a winter supplement for gestating beef heifers while grazing abundant dormant native pasture.

Materials and Methods

The value of processing whole soybeans was evaluated in a trial involving gestating fall calving beef heifers. The trial was conducted at the Range Cow Research Center, located west of Stillwater, Oklahoma. Fifty-one heifers were stratified by weight within age group, then assigned within the weight strata to one of two treatments. Twenty-seven of the heifers were predominantly Angus or Angus x Hereford and were approximately 24 mo of age. The remaining twenty-four heifers were of South Devon x Angus x Hereford breeding and were approximately 18 months old. The two treatments were: (1) 2 lbs/d of whole soybeans (WSB), and (2) 2 lbs/d of rolled soybeans (RSB). The soybeans used for this study were graded US # 2 and weighed 54 lbs. per bushel. Chemical composition of the soybeans is shown in Table 1. Heifers were group fed 3.5 lbs/head on Monday, Wednesday, Friday and Saturday in portable feed bunks.

All heifers were managed as a contemporary group and exposed to Angus bulls prior to initiation of this study. Heifer weights and body condition scores (1-9 scale) were recorded after overnight withdrawal from feed and water on days 0 and 86. Initial heifer weight and body condition score was 782 ± 72 lbs. and $5.27 \pm .45$, respectively.

The supplementation period was initiated on January 16 and continued through April 12, 2002, for a total of 86 d. Heifers were sorted by treatment and maintained in adjacent 80-acre pastures, for an approximate stocking rate of 3 acres per animal. Average initial forage availability was approximately 2,500 lbs per acre. The two groups were rotated between pastures bi-weekly to insure similar forage quality and availability between treatments. Forage quality was estimated by hand plucked samples obtained from three randomly designated areas from each pasture on days 0, 42, and 86 (Table 1). Heifers were provided ad libitum access to prairie grass hay (5% CP) for a total of ten days during inclement weather when forage was covered by snow or ice. Rolled soybeans were processed through an eighteen-inch corrugated roller at the OSU feed mill. The roller was adjusted to a width capable of splitting the soybeans. The breeding season had ended by the time the experimental supplementation period began, so pregnancy was not considered to be affected by the treatments.

	Soybeans	Forage, Jan. 16	Forage, Feb. 25	Forage, April 12
Dry matter	88	91	92	93
Organic matter	92	94	94	93
Crude protein	43	6.3	5.4	4.7
Acid detergent fiber	11	42	44	45
Neutral detergent fiber	15	75	77	77

Data were analyzed using least squares analysis of variance (SAS, 1985) with age, treatment and the age x treatment interaction included in the model.

Results and Discussion

Heifer performance is summarized in Table 2. Weight and body condition score changes were not significantly different between treatments. Body condition score change was very similar, with both groups averaging a .25 loss over the 86-d period. It is apparent that unprocessed soybeans are an effective winter protein source for maintaining pregnant beef heifers grazing dormant tall grass prairie. Processing the soybeans did not influence heifer performance in this study.

	Treatment ^a		
	WSB	RSB	SE
Heifers per treatment	25	26	
Initial weight	779	781	13.3
Initial BCS	5.3	5.3	.1
Final Weight	769	777	13
Final BCS	5.1	5.0	.1

Weight change, lbs	-10	-4	5
BCS change	-.23	-.29	.09

^a WSB = Whole Soybeans, RSB = Rolled Soybeans

Literature Cited

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