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Research Note

Influence of Supplement Form on Ewe Performance and Reproduction

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Supplementing ewes grazing dormant rangeland pastures with protein is a common practice in the Northern Great Plains. Supplement form can impact individual animal intake and performance. Ducker et al. (1981) reported that 19 % of 2,931 grazing ewes failed to consume any supplements when offered supplement in block form. Taylor et al. (2000) reported that only 2 % of ewes given pellets were non-consumers, while 35 % of those offered blocks were non-consumers. Bowman and Sowell (1997) summarized a number of ewe studies and reported that the mean coefficient of variations in supplement intake by ewes that were hand-fed pelleted supplements were significantly less than those reported for block-fed ewes. However, few studies have examined how these two-supplement forms affect ewe performance when fed under commercial conditions. The objective of this study was to compare how supplement form (pellets or cooked molasses block) influenced ewe body weight, body condition, wool characteristics, and lambing percentage.

Range ewes (n = 698, 2 to 6 years of age) were used in a 30-day supplementation study during mid-gestation to evaluate the influence of type of supplement on ewe body weight, body condition, wool characteristics, and lambing percentage. In February, ewes were allocated randomly to supplement treatments. Supplement treatments were 1) ad libitum access to a 80 % CP cooked molasses block (n = 3 50) and 2) daily feeding of a 25 % CP urea/wheat mid pelleted supplement at the rate of 114 g•ewe-1•day-1 (n = 348; Table 1). Ewes were fed a basal diet of barley straw (0. 9, 76, and 54 % CP, NDF, and ADF, respectively).

Ewes were weighed and body condition scored at the beginning and end of the supplementation period. Ewes were penned overnight without feed or water before each weighing. Body condition was based on a scale of I to 5 with a score of I designating an emaciated ewe and 5 designating an obese ewe. After the study, ewes were combined into one group, supplemented with the pelleted supplement until April, when ewes grazed native range without supplemental feed. Ewes were shorn approximately 30 days after the end of the supplementation study. Fleece weights were recorded at shearing. In addition, wool yield and fiber diameter were determined.

Body weight, body condition, and wool characteristics were analyzed using the General Linear Model procedures of SAS (1993) with ewe as the experimental unit. The model included supplement treatment with ewe age and lambing date as covariables. Lambing percentage was analyzed using Chisquare (SAS, 1993).

Based on disappearance of the block supplement, average CP intake for block-supplemented ewes was approximately 28 g CP•ewe-1•day-1. This was similar to CP intake by pellet-supplemented ewes (i.e., 114 g pellet•ewe-1•day-1 x 25 % CP = 28.5 g CP•ewe-1 •day-1). lock supplemented ewes lost body weight while pellet supplemented ewes gained body weight (P = 0.001, Table 2). There was no effect (P = 0.28) of supplement form on body condition score (Table 2) or on grease fleece weight (P = 0.69), clean wool fiber percentage (P = .91), or fiber diameter (Table 3). Finally, there was no effect (P = 0.61) of supplement form on lambing percentage (Table 2).

Body weight loss by ewes in the block treatment could possibly be explained by variation in individual intake as noted by Taylor et al. (2000) in which 35 % of the block-supplemented ewes consumed little or no supplement. Inadequate protein in the diet can lead to reduced forage intake and consequently decreased performance. We speculate that ewes consuming the pelleted supplement gained weight than ewes consuming the block supplement due to a more consistent CP intake. Although blocks and other

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forms of urea based supplements that allow ad libitum access and consumption are perceived to enhance ruminal digestion of fiber via a more constant infusion of urea than limit fed urea based pelleted supplements, Ribhani et al. (1993) concluded that digestion and microbial net synthesis by sheep is not enhanced by continuous N release in the rumen. Although block supplemented ewe had ad libitum access to supplement, pellet supplemented ewes, although limit fed, may have had better fiber digestion because of more uniform intake.

The lack of supplement form effect on body condition score, wool characteristics, or lambing percentage is consistent with results reported by Soder et al. (1995). Thomas and Kott (1995) demonstrated that forage conditions are usually the major factors that influence ewe response to winter supplementation programs.

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Table 1. Block and pellet percent composition (DM basis)[a]

	Block	Pellets
Crude protein	80.0	25.0
Crude fat	1.0	3.5
Crude fiber	5.0	7.8
Calcium	5.0	0.2
Phosphorus	4.0	0.8
Salt	4.4	0.1

[a] Provided by manufacturer.

Table 2. Body weight, body condition score, and lambing percentage of ewes fed 28 g of CP daily for 30 days either by ad libitum access to an 80% CP cooked molasses blocks or 114 g •ewe^{-1}•day^{-1} of a 25% protein pellet

	Block[a]	Pellet[b]	SE	P value
Body weight, kg				
Beginning	66.0	66.7	.48	.34
End	65.0	67.5	.53	.001
Change	-1.0	1.2	.25	.001
Body condition score				
Beginning	2.9	3.0	.04	.60
End	2.1	2.1	.03	.50
Change	-.80	-.85	.03	.28
Lambing %	131	136		.61

[a] Ewes supplemented with the 80% CP block (n = 350).

[b] Ewes supplemented with the 25% CP pellet (n = 348).

Table 3. Wool characteristics of ewes fed 28 g of CP daily for 30 days either by ad libitum access to an 80% CP cooked molasses blocks or 114 g •ewe•$^{-1}$day^{-1} of a 25% protein pellet

	Block[a]	Pellet[b]	SE	P value
Grease fleece wt, lbs	4.1	4.1	.04	.69
Clean wool fiber %	54.1	54.2	.91	.91
Base, μm	24.2	23.6	.31	.16
Mid, μm	23.9	23.8	.35	.87
Tip, μm	23.5	23.6	.34	.76

[a] Ewes supplemented with the 80% CP block (n = 59).

[b] Ewes supplemented with the 25% CP pellet (n = 60).