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Cow and calf performance as affected by nitrogen fertilization and burning of bluestem pastures

Abstract

Burning and fertilizing treatments on six Bluestem pastures were evaluated by comparing performance of spring-calving cows and calves that grazed them. Two control pastures were not burned or fertilized, two pastures were burned, and two were burned and fertilized with 40 pounds of nitrogen an acre, applied aerially. Neither average daily gains of the calves nor reproductive performance of the cows differed significantly among treatments.

Keywords

Cattlemen's Day, 1975; Report of progress (Kansas State University. Agricultural Experiment Station); 230; Beef; Performance; Fertilization; Bluestem pastures

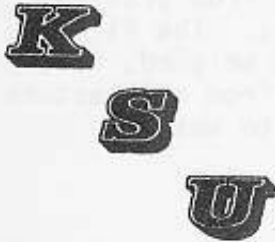
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Cow and Calf Performance as Affected by Nitrogen Fertilization and Burning of Bluestem Pastures

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L. H. Harbers, and E. F. Smith

Summary

Burning and fertilizing treatments on six Bluestem pastures were evaluated by comparing performance of spring-calving cows and calves that grazed them. Two control pastures were not burned or fertilized, two pastures were burned, and two were burned and fertilized with 40 pounds of nitrogen an acre, applied aerially. Neither average daily gains of the calves nor reproductive performance of the cows differed significantly among treatments.

Introduction

Economic conditions in the beef industry are forcing producers to find ways to improve the productivity of native range to reduce production costs. Fertilization has long been used to increase crop production, but the results have not been so favorable on native range. Fertilizing pasture has been limited because it tends to increase weeds and cool-season grasses, is difficult to apply, and has not proved economically feasible. Late-spring burning has been shown to reduce weeds and cool-season grasses on Flint Hills range. Therefore, fertilization and burning currently are being studied separately and in combination to see if they complement each other and result in increased productivity of Bluestem grass and, subsequently, of performance of animals grazing on them.

Experimental Procedure

In the fall of 1971, 72 Polled Hereford cows were assigned to three pasture treatments with culling and replacement of cows that died, were unsound, or failed to calve for two years. In the winter of 1973-74, the cows received in addition to the pasture, a cubed ration consisting of $\frac{1}{2}$ dehydrated alfalfa and $\frac{1}{2}$ milo. From November 1 to February 15, cows on pastures 1, 3, and 5 received 10.5 lb. twice a week, and those on pastures 2, 4, and 6 received 3 lbs. daily. Cows on pastures 1, 3, and 5 received 21 lbs. twice a week from February 15 to February 22; 14 lbs. three times weekly from February 22 to April 20. From February 15 to April 20 cows on pastures 2, 4, and 6 received 6 lbs. daily. Calving was from March 1 to April 30. One Polled Hereford bull was placed in each pasture from May 27 to July 26.

All pastures were treated the same as they had been the previous two years. April 24, four of the six pastures were burned. May 2, ammonium nitrate (34% nitrogen) was applied aerially at 40 lbs. of nitrogen per acre. The year-around stocking rates were 5.6 acres per cow-calf on fertilized

pastures, and 8 acres per cow-calf on burned and control pastures. Stocking rates, the same as the previous two years, were calculated from previous plot studies on herbage production under similar treatments. The first week of every month, the cows and calves were gathered and weighed, after being penned without feed and water overnight. The calves from one pasture for each treatment had access to creep feed 37 days prior to weaning. Calves were weighed and weaned October 2.

Results and Discussion

Burning or burning plus fertilizing combined did not significantly affect weaning weight or cow performance (table 9.1). Pounds weaned per acre were significantly increased by burning and fertilizing through heavier stocking rates, not increased daily gains. When cows in pastures 1, 3, and 5 were switched abruptly from 10.5 to 21 lbs. of supplemental feed twice a week on February 15, four of the 35 cows died and several others became sick. Changing treatment to 14 lbs. three times weekly proved satisfactory.

Table 9.1. Effects on Cow and Calf Performance by Burning and Fertilizing Native Bluestem Pastures, 1973-74.

	Control		Burned		Burned and fertilized	
Pasture number	1 ^a	2	3 ^a	4	5 ^a	6
Acres in pasture	64	104	104	84	84	84
Cow per pasture	8	12	12	10	15	15
Acres per cow	8	8.5	8.5	8.4	5.6	5.6
Winter feeding, 1973-74						
Nov. 1-Feb. 15, 1b/hd/wk ^b	21	21	21	21	21	21
Feb. 15-April 20, 1b/hd/wk ^c	42	42	42	42	42	42
Avg. calving date	4-12	3-30	4-2	3-19	3-23	3-15
No. of calves born alive	8	12	11	10	15	15
Avg. wt. of calves born	74	76	74	83	69	72
No. of cows open	0	1	0	1	2	0
Avg. weaning wt.	409	430	410	436	399	431
Adjusted weaning wt.	445	466	462	451	443	444
Pounds weaned per acre	51	55	45	54	71	77

^aCalves in pastures 1, 3, and 5 were creep fed a mixture of 60% dehydrated alfalfa and 40% milo 37 days prior to weaning.

^bCows on pastures 1, 3, and 5 were fed 10.5 lbs. twice a week; those on pastures 2, 4, and 6 were fed 3 lbs. daily.

^cCows on pastures 1, 3, and 5 were fed 14 lbs. three times a week; those on pastures 2, 4, and 6 were fed 6 lbs. daily.