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The effect of nitrogen fertilization and annual burning of bluestem pastures on cows, calves, and vegetation

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The Effect of Nitrogen Fertilization and Annual Burning of Bluestem Pastures on Cows, Calves, and Vegetation¹

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Summary

Six native Bluestem pastures and spring-calving cows were used to evaluate effects of burning and fertilizing pastures. Two pastures were controls, two were burned, and two were burned and fertilized with 40 pounds of urea nitrogen an acre applied aerially. Average daily gains of the calves did not differ significantly among pastures. Pounds of beef produced per acre was significantly higher from the burned, fertilized pastures, which supported heavier stocking rates with increased herbage production.

Introduction

The number of cows grazing the native grass in the Bluestem pasture region of eastern Kansas has constantly increased over the years and is expected to continue to increase due to a greater demand for beef. Large feedlots and more efficient corn and sorghum forage production have resulted in young cattle being grown in feedlots, so more grass is available for cows and their calves. A combination of burning and fertilizing pastures to be grazed summer and winter might reduce investment per cow unit by increasing range efficiency, as weed control and fertilizing have increased cropland efficiency.

Experimental Procedure

Seventy-two Polled Hereford cows were divided into six groups and placed in separate Bluestem pastures prior to the 1971-'72 winter. A supplement of sorghum grain, wheat, soybean oil meal, and dehydrated alfalfa pellets was fed daily November 15 to April 15. Calving was from February 21 through April 10.

Four of the pastures were burned April 28; two were not burned. Nitrogen was applied aerially on two of the burned

¹ The following cooperated in making this study possible: Willchemco, Inc., Tulsa, Okla; Erhart Spraying Ser., Inc., Lawrence, Kans; C. K. Processing Co., Manhattan, Kans.

pastures May 17 at 40 lbs. per acre as 45% urea granules. Stocking rates were calculated from previous plot studies on herbage production under similar treatments. Pastures not fertilized were stocked at 8 acres per cow-calf. Fertilized pastures were stocked at 5.5 acres per cow-calf. Cows and calves were gathered the first week of each month, penned overnight without feed or water, and weighed the next morning. Calves were weighed, graded, and weaned October 21.

Results and Discussion

Neither burning nor burning and fertilizing significantly affected average daily gain of calves (Table 1). Pounds of beef produced per acre were significantly increased by burning and fertilizing combined. The increase was primarily from the heavier stocking rates, not individual animal performance.

Table 1. Effects of burning and fertilization of native bluestem pastures on gains of spring-born nursing calves

	Stocking rate, acres per cow	Calf gain per acre, lbs.	Adjusted Daily gain per calf, lbs.
Control	8.0	59	1.95
Burned April 28, 1972	8.0	60	1.86
Burned plus 40 lb. nitrogen per acre	5.5	87	1.88