CATTLE PERFORMANCE FOLLOWING PRESCRIBED BURNING OF RANGELAND IN NORTH-CENTRAL OKLAHOMA

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Story in Brief

Weight gains by stocker cattle grazing burned and unburned rangeland were compared using four years of performance records collected near Stillwater. All pastures were burned in late March or early April. Cattle grazing began in late April and ended in late September. Burning improved average daily gain by .21 lb/day, or 12.1%, for the entire summer grazing season. Gains during the early season were .28 lb/day, or 13.6%, higher for stocker cattle grazing burned pastures. The value of the additional weight gain was sufficient to cover the costs of burning in most situations.

(Key Words: Beef Cattle, Fire, Grazing, Range, Weight Gain.)

Introduction

Prescribed spring burning of tallgrass prairie is a beneficial and often economical means of suppressing eastern redcedar, other brush and undesirable plants, enhancing wildlife habitat, and improving grazing distribution. In many instances, weight gains of cattle grazing are enhanced by burning. Data from ongoing research trials were composited in order to determine the performance response to burning on rangeland supporting tallgrass communities.

Materials and Methods

Observations collected over a four year period on the Cross Timbers Experimental Range (CTER) and OAES Research Range were evaluated. The CTER area is a mosaic of oak-dominated savannahs and tallgrass prairies. The burned pastures had been treated with either triclopyr or tebuthiuron in 1983. The OAES Research Range pastures were primarily

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tallgrass prairies with relatively little woody vegetation other than eastern redcedar. All pastures were burned in late March/early April with headfires.

Stocker cattle, averaging between 430-545 lb/head in April, were placed on the experimental pastures in mid- to late April. Grazing ended in late September following 150-165 days of grazing. All cattle were implanted with Synovex and had access to a commercial mineral (12% Ca, 7% P) containing either chlortetracycline or lasalocid. All weights were obtained following an overnight period without feed or water.

Response over the entire grazing season was evaluated based on 70 observations. Early (late April - mid-July) and late (mid-July - late September) grazing season responses were available for 38 observations. Experimental units were pastures. General linear models procedures were used for the analysis. Main effects were burning treatment and year. Residual error was used to test the main effects. No year X burning interaction was observed ($P > .10$).

Results and Discussion

Averaged across all observations, total weight gain and average daily gain were 268 lb/head and 1.83 lb/day. Similar means for the observations used to evaluate early season responses were 193 lb/head and 2.20 lb/day. During the early grazing season weight gain was increased .28 lb/head/day by spring burning ($P < .01$; Table 1). This 13.5% improvement equates to 22.4 lb/head additional gain during an 80-day period. Responses from mid-July to the end of the grazing season were more variable with a tendancy ($P = .18$)

Table 1. Average daily gains of stocker cattle grazing unburned and burned rangeland in central Oklahoma.

	Unburned	Burned	SE
	-------lb/head-------		
Daily gain			
Late April - midJuly	2.06	2.34	.05[a]
MidJuly - late September	1.35	1.49	.07[b]
Late April - late September	1.73	1.94	.03[c]

[a] Means are different ($P < .01$), $n = 19$.
[b] Means are not different ($P = .18$), $n = 19$.
[c] Means are different ($P < .01$), $n = 35$.

towards improved gain on burned pastures. Based on an 80-day early season and a 155-day total season, 66% of the additional gain from burning occurred in the early season. Over the entire grazing season, burning improved cattle gains by .21 lb/head/day or 12.1% ($P<.01$); this equates to an additional gain of 34 lb/head during a 155 day grazing season.

Based on price relationships among various weight classes of cattle, this additional weight gain is usually considered to be worth around $0.50/lb. Therefore, on average, burning would have increased returns $11.20/head during the early season and $17.00/head for the entire grazing season. Combined use of burning and intensive-early stocking (double cattle numbers in the early season) would have returned $22.40 (2 head * $11.20/head) compared to $17.00 with seasonlong stocking. Returns per head would be significantly higher if cattle were forward contracted at a constant price per hundredweight.

Generally, the cost of burning rangeland in this area of the state ranges from $1.00/acre and $3.00/acre with the higher costs being associated with smaller acreages and/or land which is more difficult to burn. The additional returns realized from extra weight gain would more than offset these costs in most situations. Hence, prescribed burning is a very effective and affordable tool for improving rangeland and cattle performance.