# Response of Yearling Steers to Burning and Fertilizing Pasture and Intensive Early Season Stocking (Bluestem Pastures)

Don Boggs, L. H. Harbers, R. R. Schalles, C. E. Owensby, and E. F. Smith

## Summary

Nine pastures totaling 492 acres were summer grazed by yearling Hereford, Hereford-Angus cross, and Angus steers distributed equally by breed. Five pastures were burned April 22, 1975; four were not burned. Burned and nonburned pastures had 0, 40, or 80 lbs. of nitrogen per acre applied aerially April 29, 1975. Stocking rates were determined with herbage production data from experimental plots under similar treatments. Under equal fertilization and stocking ratios, burned and fertilized pastures produced as much or more average daily gain and more gain per acre than nonburned pastures. Fertilizing and heavier stocking tended to reduce average daily gains but increased gains per acre. Steers on the early season, intensely-stocked pasture gained the most per day (1.78 lbs.) and produced the highest gain per acre (70 lbs.).

## Introduction

Native bluestem grasses have long provided a major part of the forage for Flint Hills beef producers. Late spring burning (late April) has increased steer gains and improved range conditions. Nitrogen fertilization has improved both the quantity and protein content of the forage produced, but also has increased cool-season grasses and weedy species in the pastures. The treatments explained, used separately and in combination, are to evaluate their effects on beef production and range condition. Effects of early-season, intensive stocking on a burned pasture also are being studied.

## Experimental Procedure

Nine native bluestem pastures, totaling 492 acres, four miles northwest of Manhattan were used in the study. All treatments were the same as the previous three years. One burned, nonfertilized pasture, and one nonburned, nonfertilized pasture have had the same treatment the last 25 years, to study long term effects. Burned pastures were burned April 22, and ammonium nitrate (34% nitrogen) was applied aerially April 29. Pastures grazed the entire summer season were stocked from May 2 to October 2. The intensively grazed pasture was stocked from May 2 to July 15. All were stocked with Hereford, Hereford-Angus cross, and Angus steers averaging 553 lbs. and equally distributed among the pastures. One-third of the steers were implanted with Ralgro, one-third with Synovex-S, and a third with Stilbestrol (30 mg.) before being placed on pasture. All were gathered the first of each month, penned overnight without feed or water, and weighed the next morning.

## Results and Discussion

Late spring burning tended to increase daily gain and gain per acre (table 8.1 ). Nitrogen at 40 or 80 lbs. per acre tended to reduce daily gain, but increase gain per acre. The pastures receiving nitrogen probably were stocked too heavily for maximum long range productivity. The intensively-stocked pasture produced the highest average daily gain.

Differences in average daily gain among steers implanted with Ralgo, Synovex-S, or Stilbestrol (30 mg) were not significant.

All burned pastures had better range condition than unburned pastures. Pastures not burned had high amounts of Kentucky Bluegrass and western ragweed. Carbohydrate reserves were much higher on burned than on non-burned pastures. The highest range condition was in the intensive, early-stocked pastures.

Table 8.1 Effects on steer gains from burning and fertilizing native bluestem pasture, May 2 to October 2 (153 days), 1975.

| | Daily gain per steer, lbs. | Gain per acre, lbs. | Acres per steer |
|---|---|---|---|
| Not burned | | | |
| No nitrogen, same treatment 25 years | 1.17 | 48 | 3.8 |
| No nitrogen | 1.17 | 48 | 3.8 |
| 40 lb. nitrogen per acre | .96 | 54 | 2.7 |
| 80 lb. nitrogen per acre | .90 | 57 | 2.4 |
| Burned April 22 | | | |
| No nitrogen, same treatment 25, years | 1.40 | 58 | 3.7 |
| No nitrogen | 1.18 | 48 | 3.8 |
| 40 lb. nitrogen per acre | 1.16 | 69 | 2.6 |
| 80 lb. nitrogen per acre | .95 | 63 | 2.3 |
| Intensively stocked May 2 to July 15 (74 days) | 1.78 | 70 | 1.9 |
| Normal stocked May 2 to July 15 (74 days) | 1.58 | 31 | 3.8 |