INFLUENCE OF LEVEL OF GRAIN SUPPLEMENTATION ON THE PERFORMANCE OF INTENSIVE-EARLY STOCKED STEERS

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Summary

Two levels of sorghum grain supplementation (2 or 4 lb/day) for steers in an intensive-early stocking program tended to increase average daily gain in direct proportion to increasing supplement level (2.7 and 2.9 lb/day, respectively, compared to 2.5 lb with no supplement). Similarly, grass remaining in the pastures after the cattle were removed on July 15, and at the end of the growing season on October 1, was greater when cattle were supplemented.

Introduction

Intensive-early stocking is an effective management option for stocker operations in the Flint Hills. During the intensive-early stocking period, typically May 1 to July 15, forage quality is relatively high. Previous research from K-State indicates that steers consuming harvested (green-chopped) bluestem-range forage during this period can be supplemented with up to 4 pounds of grain per day without harming forage intake or digestibility. However, information regarding how grain supplementation affects animal performance and pasture characteristics when used in conjunction with intensive-early stocking is unavailable. Therefore, the objective of this study was to monitor average daily gain and changes in forage production when intensive-early stocked steers were supplemented with increasing levels of sorghum grain.

Experimental Procedures

Two hundred and forty crossbred steers were randomly assigned to six, 60-acre pastures. Stocking rate (1.5 acres/steer = 40 steers/pasture) was equal among pastures. Pastures were randomly assigned to three treatments (two pastures per treatment): 1) no supplementation; 2) 2 lb rolled sorghum grain per head; or 3) 4 lb rolled sorghum grain per head daily. Supplemented groups were bunk-fed daily at 1:00 to 2:00 pm. All pastures were burned in late April, and steers grazed the pastures from May 5, 1988 through July 14, 1988. Weights were taken at trial initiation (May 5), June 9, and at trial termination (July 15) following overnight stands without feed or water.

Conversion efficiency (lb feed/lb extra gain) was calculated by dividing the quantity of supplement fed to a treatment group by the amount of gain above the unsupplemented steers during the same period. Steers were implanted with Compudose® during initial processing and had unlimited access to a Bovatec® mineral mixture during the entire trial.

Consumption of the mineral mixture was not different (P>.10) among treatments and averaged .15 lb/day (approximately 110 mg Bovatec/head/day). Forage remaining in the pastures at the end of the grazing period on July 15, and at the end of the growing season on October 1, was determined by clipping 10, 0.5 m^2 frames at random locations within both the loamy upland and breaks range sites for each pasture.

Results and Discussion

Average daily gain over the entire grazing period tended to increase (P=.12) in direct proportion to the increase in supplementation level (Figure 13.1). In contrast to our expectation, steers showed little response to supplementation during the early period (May 5 to June 9). However, considerable increase (P=.09) in gain was observed during the latter grazing period (June 10 to July 15), which resulted in the trend toward increased gain over the entire grazing period. Because the level of supplement offered was fixed, the conversion efficiencies followed the same pattern as average daily gain.

Conversion efficiency during the early grazing period was poor but improved considerably during the latter part of the intensive-early stocking period (2 lb = 5:1 and 4 lb = 6.4:1). Conversion efficiency for the entire grazing period was 11.8:1 and 9.5:1 for the 2 lb and 4 lb groups, respectively. Using a rolled milo cost of $66.00/ton, the cost of feed to put on an additional pound of gain would be $.39 and $.31 for the 2 lb and 4 lb treatment groups, respectively.

Quantity of grass remaining on loamy upland sites in the pastures after the steers were removed increased (P<.05) in direct proportion to the level of supplement fed (Figure 13.2). Similarly, grass remaining on the breaks sites were greater when cattle were supplemented. However, little difference was evident between the two levels of supplementation regarding the quantity of grass remaining in mid-July. When measured at the end of the growing season, the same patterns were evident, except that grass production on the breaks was similar for all treatments.

In contrast to observations from confinement trials,which indicated that forage intake was not affected by supplementation level, the increased quantity of grass remaining in the pastures when steers were supplemented suggests that the supplement substituted for forage to some degree and, thus, reduced grazing pressure.

The summer of 1988 was quite dry, and forage production was down approximately 40 to 50% compared to 1982-87. Reduced forage availability may have modified the supplement's influence on digestive physiology and forage intake. Research will continue in this area in order to monitor responses under various environmental conditions.

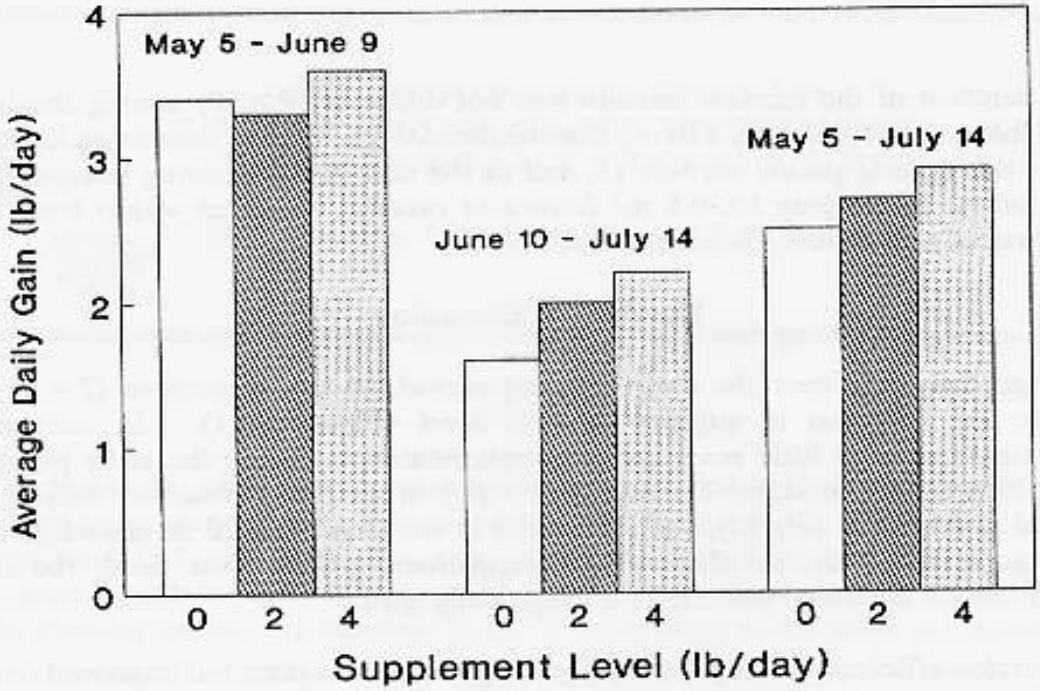

Figure 13.1. Influence of Level of Grain Supplementation on the Average Daily Gain of Intensive-early Stocked Steers (a linear increase in gain was observed with increasing supplement level; P=.09 for 6/10 - 7/14 and P=.12 for 5/05 - 7/14).

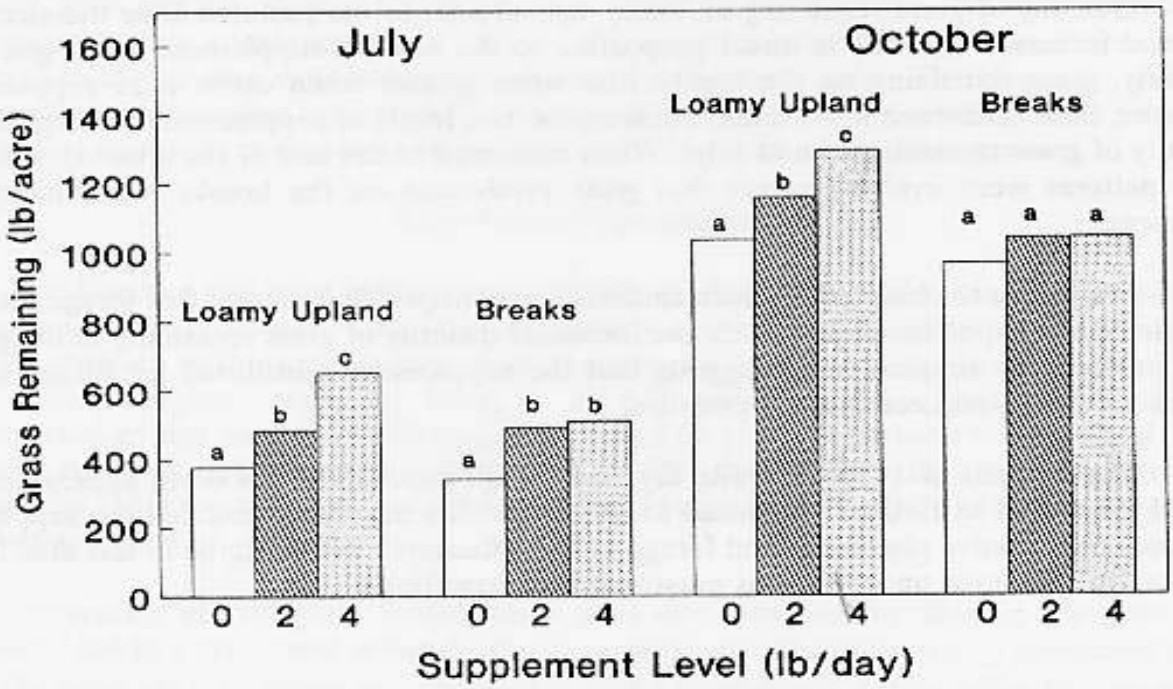

Figure 13.2. Influence of Level of Grain Supplementation on the Grass Remaining in Intensive-early Stocked Pastures at Mid-July and Early October (columns within range sites accompanied by different letters differ, P<.05).