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Increasing levels of grain supplementation for intensive-early stocked steers: three-year summary

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INCREASING LEVELS OF GRAIN SUPPLEMENTATION FOR INTENSIVE-EARLY STOCKED STEERS: THREE-YEAR SUMMARY

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Summary

During the initial 3 years of a 4-year experiment, average daily gain tended to increase in direct proportion to increasing levels of grain sorghum supplementation (2.3, 2.5 and 2.7 lb gain per day for the control and 2 and 4 lb supplement per day, respectively). The amount of grass remaining in the pastures at the end of the growing season (October 1) was greater in each of the 3 years when cattle were supplemented at 4 lb/day. During the 2 years (1989 and 1990) that feedlot performance was monitored, level of supplementation for grazing steers did not influence subsequent feedlot gain or efficiency.

(Key Words: Intensive-early Stocking, Supplementation, Grain Sorghum, Milo.)

Introduction

Intensive-early stocking is becoming relatively well accepted in the tallgrass prairie region. However, limited information is available regarding the value of grain supplementation for stockers managed within that system. In order to determine the appropriate use of supplementation within intensive-early stocking programs, information describing effects of supplementation on pasture characteristics as well as animal performance during both the grazing and finishing phases is necessary. Therefore, a 4-year study is being conducted with the objective of monitoring average daily gains and changes in forage production when intensive-early stocked steers are supplemented with increasing levels of grain sorghum. During 1989 and 1990, subsequent feedlot performance was monitored. This report is a compilation of data from the first 3 years.

Experimental Procedures

British × Zebu crossbred steers were randomly assigned to six, 60-acre pastures during each of the 3 years. Stocking rate (1.5 acres/550 lb steer) was equal among pastures. Number of steers per pasture was adjusted depending on starting weights to ensure that the same stocking rate was maintained for each year. Pastures were randomly assigned to a control or two supplementation treatments (two pastures/treatment): 2 or 4 lb rolled sorghum grain per head daily. Supplemented groups were bunk-fed daily at approximately 1:00 - 2:00 pm. All pastures were burned in late April, and subsequently steers grazed the pastures from early May through mid-July. Weights were taken after an overnight stand without feed or water at trial initiation, mid-June, and at trial termination. Conversion efficiency (lb feed/lb extra gain) was calculated by dividing the quantity of supplement fed to a treatment group during a given period by the amount of gain above the unsupplemented steers during the same period. Steers were implanted during initial processing and had unlimited access to a Bovatec®/mineral mixture during the entire trial. Consumption of that mixture was not different ($P > .10$) among treatments and averaged .17 lb/day (approximately 125 mg Bovatec®/head/day). Forage remaining was measured in the pastures at the end of the

[1]Appreciation is expressed to Mr. Gary Ritter, Mr. Wayne Adolph, and the student workers at the Range Research Unit for their invaluable assistance in conducting this trial.

grazing period (July 15) and at the end of the growing season (October 1) by clipping 10, ½ m^2 frames at random locations within each pasture. Following the grazing phase in 1989 and 1990, a representative group of steers from each pasture (n = 192 in 1989, n = 144 in 1990) was randomly allotted to a finishing trial to measure the effects of supplementation on subsequent finishing performance.

Results

Although response to supplementation during the early portion of the grazing period (Figure 1, May - Early June) varied by year, generally little performance difference was evident among treatments. In contrast, average daily gain during the latter part of the grazing period (mid-June to mid-July) increased (P = .06) with increasing level of supplement. A similar trend (P = .18) was evident over the entire grazing period. Conversion efficiency followed the same pattern as that observed for daily gain and, when averaged over the entire grazing period, typically fell in the range of 9 to 10 lbs of grain for each additional lb of gain above the control group. Compensatory responses in gain, intake, or gain:feed ratio were not evident during the subsequent finishing phase (Table 1). Weight differences among treatment groups at the start of finishing tended to remain intact throughout finishing and, as a result, there was an increase (P = .07) in hot carcass weight that corresponded to level of grain supplementation during the pasture phase. Carcass quality characteristics did not differ (P > .10) among treatments.

When grass and forbs remaining in the pasture were measured at the end of the 1990 grazing period (Figure 2, mid-July), little difference was evident among treatments. In contrast, during 1988 and 1989, more grass remained at the end of the grazing period in those pastures where steers received 4 lb/day of supplement. Increased response to supplementation during 1988 and 1989 was probably due to the reduced forage production that resulted from drought during those years. At the end of the growing season, more grass was observed to be left in the pastures with the highest level of supplementation. Quantity of forbs remaining was not different among treatments.

Table 1. Influence of Grain Level during the Grazing Period on Subsequent Feedlot Performance and Carcass Characteristics of Steers (2-yr Summary)

	Grain Level (lb/d)			Standard	Probability Value	
Item	Control	2	4	Error	Linear	Quadratic
Initial Weight (lb)	780	796	807	10.4	.11	.88
Final Weight (lb)	1173	1191	1194	9.6	.16	.55
Dry Matter Intake (lb/d)	22.3	22.5	22.4	.2	.87	.51
Average Daily Gain (lb/d)	3.48	3.51	3.44	.06	.68	.53
Gain:Feed Ratio	.156	.156	.154	.003	.61	.89
Hot Carcass Weight (lb)	720	731	737	5.7	.07	.70
Dressing Percentage	64.1	63.8	64.6	.20	.07	.07
Yield Grade	3.00	3.05	2.99	.09	.95	.61
Marbling	Sm^{27}	Sm^{33}	Sm^{20}	.09	.61	.40

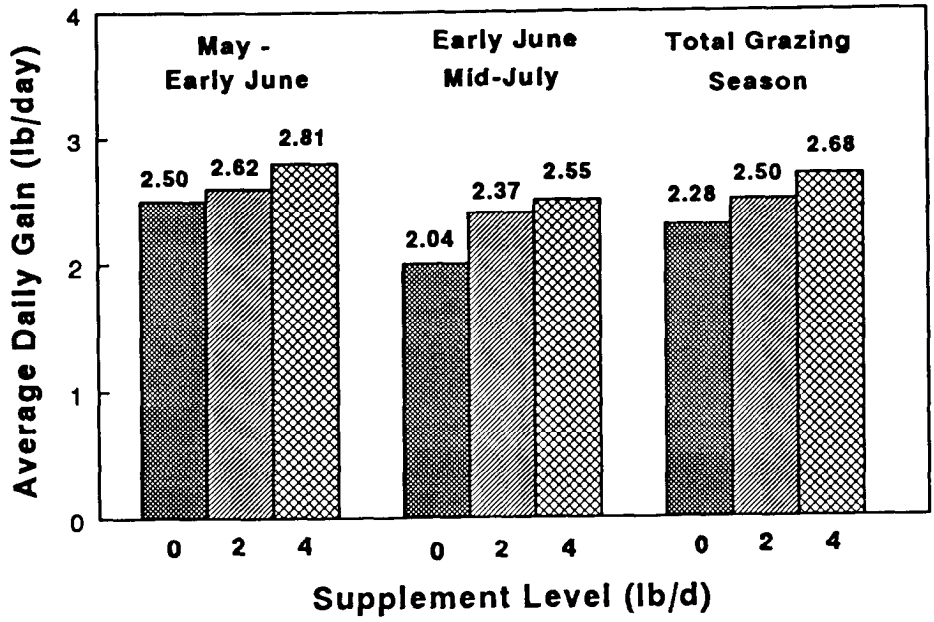

Figure 1. **Influence of Level of Grain Supplementation on the Average Daily Gain of Intensive-early Stocked Steers - Three Year Summary (linear increase in gain with increasing supplement level; P=.07 for early June to mid-July and P=.18 for the total grazing period).**

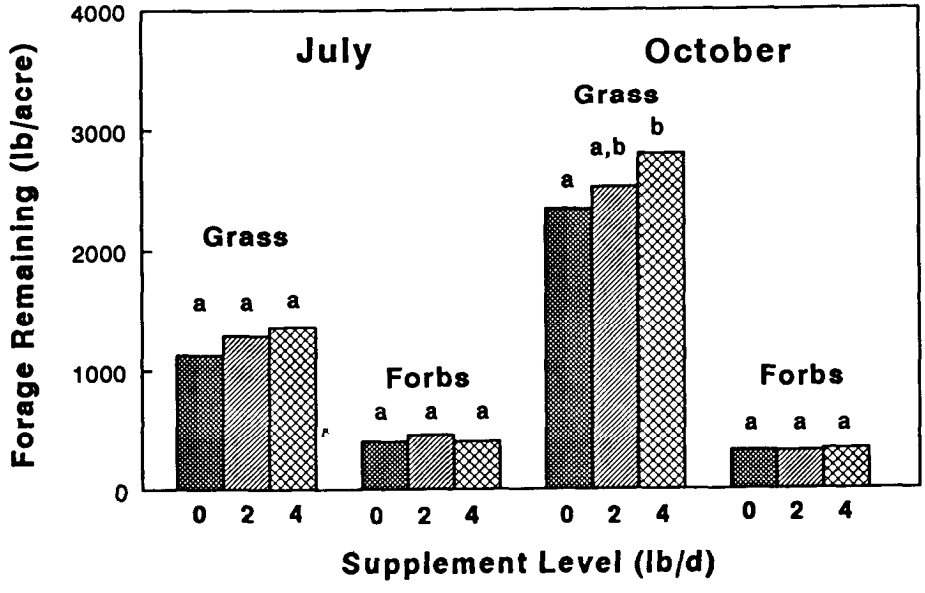

Figure 2. **Influence of Level of Grain Supplementation on the Forage Remaining in Intensive-early Stocked Pastures at Mid-July and Early October (1990 data; columns within forage type accompanied by different letters differ, P<.10).**