

PERFORMANCE OF STOCKER CATTLE GRAZING A BROWN MIDRIB SORGHUM X SUDAN HYBRID IN EITHER A CONTINUOUS OR ROTATIONAL GRAZING SYSTEM

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Summary

Performance of stocker heifers grazing sorghum sudan hybrid in either a continuous or rotational grazing system was determined. The study consisted of four, 5.5 acre pastures (continuous) and four 8.25 acre pastures (rotational). The four 8.25 acre pastures were divided into three, 2.75 acre cells within each pasture. The continuous and first cell of each rotational pasture were planted on May 23, and the remaining two cells of the rotationally grazed pastures were planted on June 4, and June 14, respectively. The pastures were grazed from July 9 to September 27 at a stocking rate of 1.80 head/acre using put and take grazing. Heifers were rotated in the rotational pastures every 10 to 14 days. Average daily gain was not different ($P=0.96$). Rotationally grazed pastures allowed for 10 more head days per acre ($P = 0.002$). Consequently, the rotational grazing system tended ($P = 0.08$) to improve gain/acre by 25 lb.

Introduction

Sorghum sudan hybrids produce an abundance of forage during the early growing season. If forage is not grazed rapidly, forage quality declines as the forage matures. It is often difficult to stock pastures heavy enough to take advantage of the rapidly growing forage without being over stocked during the later stages of the grazing period. To manage the cattle/forage interface, we developed a rotational grazing system in conjunction with planting date compared with a continuous grazing system.

Table 1. Irrigation and rainfall amounts, Bush Farm, 2001.

Pasture #	Irrigation (Net inches)	Month	Rainfall, inches
1	3.24	May	3.57
2	2.94	June	0.78
3	3.03	July	0.57
4	2.78	August	3.08
5	3.50	September	0.50
6	2.77	October	0.07
7	2.64		
8	2.61		

Experimental Procedures

This study was conducted at the Texas Agricultural Experiment Station in Bushland during the summer of 2001. Performance of stocker heifers grazing Seed Resources BMR 200 (brown midrib sorghum x sudan hybrid) in either a continuous or rotational grazing system was evaluated along with production per acre. The study consisted of four, 5.5 acre pastures (continuous) and four 8.25 acre pastures (rotational). The four 8.25 acre pastures were divided into three, 2.75 acre cells within each pasture. Pastures were fertilized with 80 lbs of N and 30 lbs of P_2O_5 per acre between April 23 and 27. All pastures were planted at a rate of 25 lb/acre. The continuously grazed pastures along with the first cell of each rotationally grazed pasture were planted on May 23, and the remaining two cells of the rotationally grazed pastures were planted on June 4, and June 14, respectively. Pastures were furrow irrigated once between June 12 and June 25. No further irrigation occurred. Rainfall and irrigation levels during the study are shown in Table 1. The pastures were then grazed from July 9 to September 27 at a stocking rate of 1.80 head/acre using put and take grazing. Heifers were rotated from cell to cell in the rotational pastures approximately every 10 to 14 days allowing about 20 to 28 days rest per cell between grazing periods. Heifers that had been grazing rangeland were individually weighed and assigned to pastures so that average weight per pasture would be similar. The pastures were grazed with two groups of heifers consisting of a tester group and a grazer group. The tester group consisted of 83 heifers that remained on the pastures throughout the study. The grazer group consisted of 31 heifers that were used to adjust grazing pressure as forage availability changed. During the grazing period, heifers had access to a free-choice mineral supplement. Average daily gain was calculated based on the weight change of the tester heifers only. Gain/acre was calculated as the product of average daily gain and total grazing days/acre. Total grazing days was the sum of both the tester and grazer heifers.

Samples were taken to calculate forage availability at the beginning of each grazing period and the end of the trial. Animal performance and forage availability results are found in Tables 2 and 3, respectively.

Table 2. Performance of stocker heifers grazing a sorghum x sudan hybrid in either a continuous or rotational system.

	Continuous	Rotational
Initial weight, lbs.	455	451
Average daily gain, lbs.	2.44	2.45
Gain per acre, lbs.	320	345
Head days/acre	130.8	140.8
Grazing length, days	72	80

Results

There was no difference for ADG for the two treatments ($P = 0.96$). However, managing pastures in a rotationally grazed system resulted in 10 more head days per acre ($P = 0.002$). Consequently, the rotational grazing system tended ($P = 0.08$) to improve gain/acre by 25 lb.

As expected, no differences ($P > 0.10$) were observed in leaf, stem, or total forage availability measurements at the onset of grazing (Continuous compared to Cell 1 of Rotational). Heifers grazing

the rotational cells were stocked at a higher density per unit of available forage but rotated to the second and third cell as forage availability decreased. Total forage availability at the end of the trial was less ($P = 0.04$) in the rotationally grazed pastures. However, this was because of a larger quantity of the stem fraction ($P=0.02$) that is generally considered to contain less digestible nutrients than the leaf portion in the continuous grazed pastures. At the termination of grazing leaf availability tended to be higher ($P = 0.18$) for the rotational grazing system.

Implications

Staggered planting dates combined with rotational grazing is a potential option for managing summer annuals. Although individual heifer performance was not improved, gain per acre was increased as a result of having more leaf available and hence an extended grazing period. This management system also lends itself to a combined grazing and hay production program.

Table 3. Forage availability (lbs. of dry matter/acre) at the beginning and end of the trial.

Days from start	Grazing cell	Rotational			Continuous		
		Leaf	Stem	Total	Leaf	Stem	Total
0	1	1846	1736	3582	1984	1417	3400
14	2	1732	1081	2813			
25	3	1112	684	1796			
35	1	1578	1556	3134	1576	1879	3455
45	2	1256	1279	2535			
57	3	882	1052	1933			
Final		252	812	1064	164	1281	1445