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Effects of Grazing a Brown Midrib vs. a Normal Sorghum x Sudan Hybrid on Steer Performance

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This study was conducted at the Texas Agricultural Experiment Station in Bushland during the summers of 1999 and 2000. Performance of stocker cattle grazing either Seed Resources BMR 200 (brown-midrib sorghum x sudan hybrid) or DeKalb SX17 (normal sorghum x sudan hybrid) was evaluated along with production per acre.

Each summer four 5.5-ac pastures were planted with each hybrid. In 1999, pastures were fertilized on June 10 with 400 lbs/ac of a 25-6-0-3 liquid fertilizer and planted on June 15 at a rate of 25 lbs/ac. In 2000, pastures were fertilized on May 15 with 200 lbs/ac of a 26-3-0-5 liquid fertilizer and planted at a rate of 25 lbs/ac on May 19. After planting, pastures were furrow irrigated once with about 5 inches of water in 1999 and 6 inches in 2000. No further irrigation occurred. Rainfall during the study is shown in Table 1. The pastures were grazed at a stocking rate of 2.69 hd/ac and 2.04 hd/ac in 1999 and 2000, respectively, using put-and-take stocking.

In 1999, steers that had been grazing rangeland were individually weighed and assigned to pastures so that average weight per pasture was similar. This procedure was repeated in 2000 with steers that had been backgrounded at the Texas Agricultural Experiment Station Feedlot in Bushland. The pastures were grazed with two groups of steers consisting of a tester group and a grazer group. The tester group consisted of 50 and 79 steers that remained on the pastures throughout the study for 1999 and 2000, respectively. The grazer group was used to apply additional grazing pressure as the study progressed and consisted of 86 and 14 steers for 1999 and 2000, respectively. In 1999, the pastures were grazed from July 20 to August 30 and in 2000 grazing occurred between July 5 and September 13. All steers were implanted prior to grazing. During the grazing period, the steers had free access to water and a complete mineral supplement.

Average daily gain was calculated based on the weight change of the tester steers only. Gain/ac was calculated as the product of average daily gain and total grazing days/ac. Total grazing days was the sum of both the tester and grazer steers. Forage standing crop was measured at the beginning and end of the grazing period.

Data were analyzed as a completely random design with pastures as experimental units in a model containing year, replication, and treatment. The interactions were not significant.

Results

Steer performance and forage standing crop results are presented in Tables 2 and 3, respectively. Steers grazing the brown-midrib hybrid gained more ($P = 0.065$) rapidly than steers grazing the normal hybrid. Stocking rates were not different. Gain per acre tended to be higher ($P = 0.12$) for the brown-midrib hybrid (337 vs. 300 lbs/ac).

The average daily gains are higher than often noted in producer situations. This contrast is the result of the shorter grazing period used in these trials compared to the grazing periods and stocking rates often applied by producers.

On average, the forages produced about 115 head*days of grazing per acre. These grazing days can be allocated to more cattle over a shorter period of grazing or fewer cattle over a longer period of grazing. Fewer cattle grazing for longer periods may result in lower weight gains per head because forage production will exceed the ability of the cattle to harvest the forage. Excessive forage growth can result in lower nutritive value and lower weight gains. Exceeding the head*days (increasing stocking rate beyond 115 head*days/ac) in these trials will result in lower weight gains unless timely precipitation during the summer allows additional forage growth.

Implications

In this study, steer gains were improved with the brown-midrib hybrid without sacrificing stocking capacity. If added weight gain was worth \$0.60/lb then gross return would have been \$22.00/ac higher with the brown-midrib hybrid.

Based on the two years, cattle management and forage management practices similar to those used in these trials can produce relatively high daily gains.

Table 1. Rainfall (inches) during 1999 and 2000

Month	Year	
	1999	2000
May	4.56	0.51
June	2.28	4.29
July	4.88	1.03
August	1.26	0.00
September	NA	0.03

Table 2. Performance of stocker cattle grazing either brown-midrib or normal sorghum x sudan hybrids

Year	1999	2000	Average
Initial Weight, lbs			
Brown-midrib	566	492	529
Normal	565	495	530
Gain, lbs/hd/day			
Brown-midrib	2.91	2.97	2.94
Normal	2.74	2.51	2.62
Gain, lbs/ac			
Brown-midrib	316	359	337
Normal	305	295	300
Stocking Rate, hd*days/ac			
Brown-midrib	109	121	115
Normal	111	117	114

Table 3. Average standing crop before and after grazing for each hybrid

Year	1999	2000
Before grazing		
Dry matter, lbs/ac		
Brown-midrib	936	1895
Normal	1307	2062
End of season		
Dry matter, lbs/ac		
Brown-midrib	1655	712
Normal	1351	754