

PERFORMANCE OF CROSSBRED STEERS GRAZING PHOTOPERIOD SENSITIVE AND NON PHOTOPERIOD SENSITIVE SORGHUM SUDANGRASS HYBRIDS.

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Summary

Twelve 2.5 acre pastures were seeded with 25 lb/acre of two non photoperiod sensitive (PS) sorghum sudan hybrid (SS), SS 200 BMR or SS 201 BMR, or two PP SS, Mega Green (MG) or PS 210 BMR (n=3 pastures/hybrid). SS 200 BMR, SS 201 BMR and PS 210 BMR contained the brown midrib characteristic. Crossbred steers (n=132) were allotted to the pastures. Grazing head days/acre were greater (P=0.0234) for MG than for PS 210 BMR, SS 201, BMR and SS 200 BMR. Steers grazing SS 200 BMR had a greater (P=0.0086) average daily gain (ADG) than those grazing MG, PS 210 BMR or SS 201 BMR. Gain per acre was greater (P=0.1010) for steers grazing SS 200 BMR than PS 210 BMR with MG and SS 201 BMR being intermediate. These data show that grazing SS 200 BMR resulted greater ADG and gain/ha than PS 210 BMR.

Introduction

Sorghum sudan hybrids are commonly used for grazing during the summer for stocker calves. Our laboratory has conducted research showing that calves grazing brown midrib sorghum sudan hybrids have higher ADG's and gain/acre compared to the conventional hybrids. Our data shows that the brown midrib hybrids result in a higher dry matter digestibility, probably due to lower lignin content. The photoperiod sensitive sorghum sudan hybrids remain in the vegetative stage of growth for a long period of time when planted under normal conditions in the Texas High Plains and generally having a higher leaf to stem ratio. The higher leaf to stem ratio should result in a greater digestibility and thereby, higher ADG for cattle grazing these forages. The objective of this research was to determine ADG, gain/acre, grazing days, forage availability, and leaf to stem ratio of brown midrib and photoperiod sensitive sorghum sudan hybrids in a grazing study.

Experimental Procedures

The experiment was conducted during the summer of 2002 at the Texas A & M University James E. Bush Research Farm (Bushland, TX) located ten miles west of Amarillo, TX. Twelve, 5.5 acre pastures were seeded with 25 lb/acre of two non photoperiod sensitive (PP) sorghum sudan hybrid (SS), SS 200 BMR or SS 201 BMR, or two PP SS, Mega Green (MG) or PS 210 BMR (n=3 pastures/hybrid). SS 200 BMR, SS 201 BMR and PS 210 BMR contained the brown midrib gene. Pastures were irrigated with 8.8 inches/acre and fertilized with 300 lb/acre of 20-10-0 before planting.

Crossbred steers (n=132; average body weight=550 lb) were allotted to the pastures using a 'put-and-take' pasture management. Cattle were weighed at the beginning and end of the grazing period, and when cattle were added or removed from any particular pasture. On d 0 of the grazing period, forage availability was determined by hand clipping six predetermined areas in each pasture. The clipped forage samples were separated into leaf and stem portions and dried at 60°C. Initial forage standing crop, percent leaf, and percent stem were determined for each pasture. Grazing was terminated when forage growth and availability did not support steer growth. During grazing, steers had free access to water and a complete free-choice mineral supplement. At the termination of grazing for each pasture, forage samples were collected to determine residual forage availability. Samples were collected from approximately the same location that was clipped at the onset of grazing. However, at the final sampling, forage that was lying on the ground (litter) was also collected. Samples were separated into standing forage and litter instead of leaf and stem fractions. Total residual forage availability was calculated as the sum of standing forage and litter.

Table 1. Effect of sorghum sudan hybrid on ADG Total gain/acre; grazing head day/acre, available Forage, and percentage leaf and stem.

	Mega Green	PS 210 BMR	SS 201 BMR	SS 200 BMR	SE	P value
ADG, lb	2.25 ^a	2.31 ^a	2.56 ^a	3.04 ^b	0.05	0.0086
Total gain/acre, lb	407 ^{ab}	360 ^a	389 ^{ab}	459 ^b	26	0.101
Grazing head day/acre	181 ^a	155 ^b	151 ^b	151 ^b	13.7	0.0234
Available forage						
Initial, lb/acre	1929 ^a	2230 ^{ab}	2678 ^b	1968 ^a	174	0.0464
Final, lb/acre	1573	1118	1058	774	274	0.2414
Percentage leaf	58.6	66.5	61.3	64.7	3.2	0.3869
Percentage stem	41.4	33.5	38.7	35.3	3.2	0.3869

Results and Discussion

The effect of sorghum sudan hybrids on ADG, total gain/acre, grazing head days/acre, available forage and percentage of leaf and stem is shown in table 1. Steers grazing SS 200 BMR gained more per day ($P=0.0086$) than those grazing MG, PS 210 BMR or SS 201 BMR (3.04 vs. 2.25, 2.31, and 2.56 lb/day, respectively). Gain per acre throughout the grazing period was greater ($P=0.1010$) for steers grazing SS 200 BMR (459 lb/acre) than PS 210 BMR (360 lb/acre) with MG (407 lb/acre) and SS 201 BMR (389 lb/acre) being intermediate. The amount of available forage at the beginning of the grazing period was greater ($P=0.0464$) for SS 201 BMR (2,678 lb/acre) than MG (1,929 lb/acre) or SS 200 BMR (1,968 lb/acre) with PS 210 BMR being intermediate (2,230 lb/acre). Although there was more available forage in the pastures seeded with SS 201 BMR, steers grazing SS 200 BMR gained more per day and per acre compared. This increased

performance of steers grazing SS200 BMR is presumably due to increased energy availability in the SS 200 BMR compared to the other hybrids tested.

Grazing head days/acre were greater ($P=0.0234$) for MG than for PS 210 BMR, SS 201, BMR and SS 200 BMR (181 vs 155, 151, and 151 days/acre). Although the MG resulted in more grazing head days, this did not coincide with more gain per acre for MG compared to the other hybrids tested. Amount of available forage at the conclusion of grazing was similar ($P=0.2414$) for the hybrids. No differences ($P=0.3869$) occurred in the initial percentage of leaf or stem for the photoperiod sensitive vs the non photoperiod sensitive hybrids.

Implications

These data show that grazing SS 200 BMR resulted greater ADG and gain/ha than PS 210 BMR.