

## **Performance of steers grazing photoperiod-sensitive and brown midrib varieties of sorghum-sudangrass**

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### **Introduction**

Sorghum-sudangrass hybrids can be used for stocker cattle grazing during the summer months. This type of vegetation provides an abundance of forage; however, nutritional value can vary among varieties. Brown midrib varieties contain less lignin and are generally more digestible than varieties that do not carry the brown midrib trait. In previous research conducted at the Texas A&M University Bush Farm, Bushland, Texas, stocker cattle grazing a brown midrib variety gained weight more rapidly than those grazing a non-brown midrib variety (Banta et al., 2001). In recent years, more varieties carrying the photoperiod-sensitive trait have been released. The photoperiod-sensitive trait delays initiation of the reproductive stage until day-length is less than 12 hours and 20 minutes, or about mid-September in the Panhandle region. In silage evaluations at Bushland, the photoperiod-sensitive varieties have generally produced higher yields but with relatively lower digestibility than varieties without the photoperiod trait. In the initial year of this grazing study, the photoperiod-sensitive varieties tended to produce lower daily gains but supported more days of grazing per acre. This report summarizes the second year of a grazing trial comparing performance of steers grazing photoperiod sensitive and brown midrib sorghum-sudangrass hybrids.

### **Experimental Procedures**

The study was conducted during the summer of 2003 at the Texas Agricultural Experiment Station Bush Farm near Bushland, Texas. Four varieties, Megagreen and PS 210 BMR, SS 200 BMR and SS 201 BMR, were evaluated under grazing. Megagreen is a photoperiod-sensitive without the brown midrib trait. The variety PS 210 BMR carries both the photoperiod-sensitive trait and the brown midrib trait. The varieties SS 200 BMR and SS 201 BMR carry the brown midrib trait but are not photoperiod-sensitive. Three replicates of each variety were randomly allotted to one of twelve 5.5 acre pastures. All varieties were seeded at a rate of 25 lbs/acre on June 11 and 12. Prior to planting, pastures were fertilized at a rate of 320 lbs/acre of a 20-10-0-5 liquid fertilizer and furrow irrigated with an average of 4.7 in/acre. No further irrigation was applied during the trial. Rainfall data is shown in Table 1.

Crossbred steers (initial wt = 470 lbs) were allotted to pastures. Put-and-take grazing was used to adjust grazing pressure during the trial. Each pasture group included tester steers and grazer steers. Tester steers remained on pasture for the duration of the trial. Grazer steers were used to adjust grazing pressure. Grazing began when the forage reached 24 to 30 in of height (July 22) and terminated when forage availability could not support grazing (October 14). Steers had free access to water and a free-choice mineral supplement.

Average daily gain (ADG) was calculated from weight change of tester steers only. The total days of grazing/acre were calculated based on both tester and grazer steer data. The amount of gain/acre was determined as the product of ADG and days of grazing/acre.

Forage availability was measured at the initiation and termination of the grazing trial. Samples were taken at 6 designated areas in each pasture. At the initiation of the trial, leaf and stem portions were separated, dried at 55°C in a forced air oven for 7 d, and summed together to determine total initial forage availability. Residual forage at the end of the trial was determined by the same method; however, leaf and stem portions were not separated because of the lack of leaf material.

## Results and Discussion

Steer performance and forage availability are presented in Table 2. The three varieties with the brown midrib trait promoted higher ADG than Megagreen. SS 201 BMR had the highest ADG but was not different from SS 200 BMR. The PS 210 BMR variety was not different from SS 200 BMR. Although photoperiod-sensitive varieties generally produce higher yields in silage evaluations conducted by our group, digestibility of the silage has been lower for photoperiod-sensitive varieties compared to brown midrib varieties. The ADG from this trial supports the past observations that brown midrib varieties are more digestible. Introducing the brown midrib trait into the photoperiod-sensitive varieties should improve digestibility and performance as was noted with the PS 210 BMR compared to Megagreen. Gain/acre and head\*days/acre were not different among varieties. In the initial year of this study, Megagreen supported more head\*days/acre than the other varieties. In the current year, this numerical trend was present but not statistically significant.

Initial and final forage availability was not different across all treatments. Percent leaf material was higher for Megagreen (59.1%) than for PS 210 BMR (55.2%) and SS 201 BMR (55.0%) while SS 200 BMR (57.7%) being intermediate.

## Implications

Performance was very acceptable for all varieties. With proper stocking and timely termination of grazing, stocker cattle can perform well on sorghum-sudangrass. In our studies over the past five years, varieties carrying the brown midrib trait promote higher gains per head while also producing gain/ac that are not different from other varieties.

**Table 1.** Precipitation recorded at the Texas A&M University Bush Farm, Bushland, Texas, during the 2003 grazing trial.

Month	Rainfall, in
May	0.78
June	4.77
July	0.32
August	2.13
September	1.15
October	1.95

**Table 2.** Effect of sorghum x sudangrass hybrid on steer performance, carrying capacity, and forage availability.

<b>Item</b>	<b>Mega Green</b>	<b>PS 210 BMR</b>	<b>SS 200 BMR</b>	<b>SS 201 BMR</b>	<b>SEM</b>	<b>P-value</b>
<b>Steer Performance</b>						
Initial weight, lbs	469 <sup>a</sup>	480 <sup>b</sup>	468 <sup>a</sup>	471 <sup>ab</sup>	3.1	0.095
ADG, lbs	1.99 <sup>a</sup>	2.29 <sup>b</sup>	2.55 <sup>bc</sup>	2.65 <sup>c</sup>	0.09	0.004
Gain/acre, lbs	304	321	327	365	23.1	0.363
Grazing head days/acre	153	140	128	138	7.4	0.196
<b>Forage Availability</b>						
Initial, lbs DM/acre	2023	1932	1833	1935	165	0.880
Leaf, %	59.1 <sup>a</sup>	55.2 <sup>b</sup>	57.7 <sup>ab</sup>	55.0 <sup>b</sup>	1.0	0.048
Stem, %	40.9 <sup>a</sup>	44.8 <sup>b</sup>	42.3 <sup>ab</sup>	45.0 <sup>b</sup>	1.0	0.048
Final, lbs DM/acre	1103	909	1121	1498	189	0.244