Grazing Warm-season Annuals - Report for 2010 and 2011

A.E. Crooks[2], M. R. Schaefer[3], D. J. Undersander[1] and D. M. Schaefer[3]
Departments of Agronomy[1], Agricultural Research Stations[2] and Animal Sciences[3]
University of Wisconsin-Madison

Cool-season grass species have heat-limited productivity in late July and August. Sorghum-sudan hybrid and teff grass are warm-season species that prefer to grow in warm temperatures. Furthermore, we hypothesized that the grazing efficiency would be improved due to wide row spacings since these would allow for inter-row hoof traffic by grazing cattle. We proposed that less hoof traffic on the plants would lead to less plant trampling and therefore greater grazing efficiency (i.e., forage utilized/forage available).

The treatments were teff grass planted with 7.5 inch row spacing, and sorghum-sudangrass planted with spacings of 7.5, 15 or 30 inches. Each of the treatments was planted in 3 replicate plots at the Lancaster Agricultural Research Station on June 11, 2010 and May 24, 2011. In 2010, teff and sorghum-sudan stands were 26 and 42-45 inches tall, respectively. At the time of grazing in 2011, teff and sorghum-sudan stands were 22 and 30 inches tall, respectively. Grazing occurred in mid- to late-July in both years for about 4 d with a mob of 55 cow-calf pairs. The herd had access to a replicate plot for 24-36 hours, and was removed when the residual height was 4-6 inches, or trampling prevented further grazing.

There were no differences due to grass species or row spacing on forage dry matter available or utilized in 2010 (Table 1) or 2011 (Table 2). In 2010, the sorghum-sudangrass tended to be taller than teff grass at turn-in for grazing. Also, the narrowest row spacing for sorghum-sudangrass tended to have the highest forage DM available and the lowest grazing efficiency. This growing season was especially wet with July rainfall equal to 10.2 in. This compares to a 30-year average for July rainfall of 4.3 in. and 6.9 in. of rainfall in July, 2011.

Table 1. Efficiency of forage removal by grazing of sorghum-sudangrass and teff grass in 2010.

Species	Row Spacing, in.	Pre-graze plant ht., in.	Forage DM available, lb/acre	Forage DM utilized, lb/acre	Grazing efficiency, %
Sorghum-sudan	7.5	45	2858	1457	41
Sorghum-sudan	15	42.6	2154	1351	61
Sorghum-sudan	30	44.4	2173	1040	49
Teff grass	7.5	26.1	2896	1345	49
P =		.20	0.75		0.67

In 2011, the teff tended to have more forage available but the lowest grazing efficiency (Table 2). There was substantial weed competition, especially by foxtail, for these summer annuals in 2011. The forage available consisted of weeds that dominated the planted grass species. It is our opinion that the weed pressure in 2011 was due to having planted summer annuals in these plots

for the prior three years. This cultural practice, in the absence of crop rotation, facilitated the weed competition. Also, no herbicides were applied to these plots to aid in weed control.

Table 2. Efficiency of forage removal by grazing of sorghum-sudangrass and teff grass in 2011.

Species	Row Spacing inches	Forage DM available, lb/acre	Forage DM utilized, lb/acre	Grazing efficiency, %
Sorghum-sudan	7.5	3061	2041	66
Sorghum-sudan	15	3628	2692	73
Sorghum-sudan	30	3225	2306	71
Teff grass	7.5	3934	2458	63
P =		0.28	0.57	0.42

We have reservations about the use of warm-season grass species planted as monocultures as a forage source to augment forage supply during the summer slump of cool-season grass species. During the four-year span of this project, there were mid-summers with much rainfall and mid-summers with little rainfall. High-rainfall summers made the grazing of these annuals challenging because these tilled and planted plots lacked cattle weight-bearing characteristics. Consequently, hoof traffic resulted in indentations and trampled, muddied plants, which reduced grazing efficiency. In contrast, dry mid-summers did not incur these negative effects. Given the likelihood of wet summers, this method of pasture forage production and grazing is problematic. Preservation of these forages for winter feed would seem to be the better option in wet summers, but that option incurs the need for harvest equipment.

It is the observation of one of us (AEC) that cattle grazing these annuals lost interest in consuming them. Cattle appeared to be more willing to graze these annuals consistently during the first two days of grazing but thereafter grazing was not uniform so residual plant heights were more variable and increasingly more variable by the time the third replicate plot was grazed.

Funding to partially support this research was provided by the University of Wisconsin Experiment Station in the form of Hatch project PRJ23AP.