SPECIAL REPORT

PRODUCTION AND PERSISTENCE OF TALL FESCUE, PERENNIAL RYEGRASS, AND PRAIRIE GRASS AFTER FALL GRAZING

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As the costs associated with animal agriculture increase, so does the interest in grazing to lower feed cost. Inn Pennsylvania and other temperate environments, extending the grazing season into the fall or early winter further helps reduce animal production expenses relative to feeding hay or silage.

Tall fescue has traditionally been the grass species used for fall grazing and/or stockpiling (accumulating the standing forage during the growing season for use in late fall or winter). However, other grass species which have excellent fall growth attributes may also work well for fall grazing and/or stockpiling. Our objectives were to evaluate the seasonal and whole-year production of perennial ryegrass, prairie grass, and tall fescue under different fall grazing management schemes.

Study Description

In 1994, 1995 and 1996 three fall-grazing treatments consisting of: 1. Stockpiled; 2. Lax (grazing once in September and then not grazing again until spring); and 3) Intensive (continued grazing on approximately 30 d schedule through November) were imposed on established stands of 'Barcel' tall fescue, 'Citadel' perennial ryegrass, and 'Grasslands Matua' prairie grass at the Haller Livestock and Forage Research Center near State College, PA. Swards were grazed to a residual 2 in. stubble height by mature cross-bred (Dorset x Suffolk) ewes. Forage yield, persistence, and ewe grazing days were monitored throughout the study.

Applied Questions

• How did Citadel perennial ryegrass perform compared with tall fescue? Perennial ryegrass and tall fescue responded similarly within and across grazing treatments. Total season yield and persistence ryegrass were equal to tall fescue regardless of the fall grazing management.

• How did Grasslands Matua prairie grass perform compared with tall fescue? During the first year after implementing the grazing treatments, prairie grass had lower survival and lower total-season yield in Stockpiled compared with the other grazing treatments. By year two of the study, prairie grass had not survived in any of the grazing treatments. The frequent inability of Grasslands Matua prairie grass to survive Pennsylvania winters makes it an unsuitable grass in perennial pastures.

• Which grazing treatment produced the most forage each year? Continuing to graze on an approximate 30-d interval into the fall until the grasses stopped growing produced the most annual forage and consequently the most grazing days. However, unlike stockpiling, this grazing practice (Intensive) can not extend the grazing beyond November in Pennsylvania. In addition, spring growth of fall grazed and stockpiled grasses is less than when grasses are not harvested after September (Lax). Consequently, a combination of Lax, Intensive and Stockpiled grazing may be most desirable on farms in Pennsylvania and the Northeast.

Recommendations

Tall fescue and perennial ryegrass were similar in performance regardless of the fall grazing treatment. Grasslands Matua prairie grass did not survive in this and other studies in the northeast region. Therefore, varieties with improved winter survival must be available before farmers in northern climates consider prairie grass as a viable component in perennial pastures. Using a combination of Lax, Intensive, and Stockpile grazing may be most desirable. Intensive and Stockpile grazing would allow continued grazing into the fall and early winter, respectively, and Lax grazing would permit early spring grazing while the fall-grazed pastures recover.

Table 1. The effect of number and frequency of harvests on the annual dry matter (DM) yield and net economic return from four perennial cool-season grasses under different environmental conditions

Treatments		Dry conditions†		Normal to wet conditions†	
Species	Harvest schedule	DM	Economic return‡	DM	Economic return‡
#/yr x interval	ton/acre	$/acre	ton/acre	$/acre	ton/acre
Orchardgrass	2 x 70 d	3.97§	88	5.35	159
	3 x 45 d	3.77	97	5.64	217
	3 x 35 d	3.04	97	-----	--
	4 x 35 d	----	--	5.55	258
Reed canarygrass	2 x 70 d	3 78	96	5.48	197
	3 x 45 d	3.63	97	5.86	250
	3 x 35 d	2.87	108	-----	--
	4 x 35 d	----	--	5.15	247
Smooth bromegrass	2 x 70 d	4 45	130	6.31	233
	3 x 45 d	3 89	117	6.19	283
	3 x 35 d	2.77	103	-----	--
	4 x 35 d	----	--	4.89	252
Timothy	2 x 70 d	4 13	106	5.70	172
	3 x 45 d	3 70	88	5.25	194
	3 x 35 d	2 89	87	-----	--
	4 x 35 d	----	--	4.54	172

† Dry and wet conditions averaged 70 and 135 percent, respectively, of normal (29.6 in. by 1 Oct.) Reduced plant growth permitted only three harvests to be made from the four-harvest treatment in dry years

‡ Based on relative value of the harvested forage ($65/ton hay with a forage quality of 16% CP and 60% DDM) minus costs for harvesting ($28/harvest) and fertilization.

§ All values are the mean from two years.

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ALFALFA SUGARS

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Recent farm magazines have reported research that shows alfalfa hay cut in the afternoon has higher sugar levels and greater palatability than morning cut hay. It is important to note, however, that this research was done in Idaho and may not apply to Pennsylvania conditions.

We know that there are daily fluctuations in plant sugar levels, with the highest levels occurring in the afternoon or evening on days when the alfalfa is actively growing. During the night, these sugars are moved from the leaves and stem into the root where they are stored until needed to support regrowth after cutting. Consequently, the lowest level of herbage sugars occurs just before sunrise.

So mowing in the afternoon captures the maximum amount of sugars in the leaves and stems. However, with the humid and warm nights we have in Pennsylvania, compared with the dry cool nights in Idaho, respiration continues to burn up the sugars throughout the night so that by morning we see very little difference between afternoon and morning mowed alfalfa. In addition, mowing in the afternoon adds an extra day to the drying time and increases the chance of rain on the hay.

The one time when afternoon mowing would possibly be beneficial in Pennsylvania would be if the alfalfa could be cut and harvested in the same day as haylage.