Forage Research In Texas, 1985

Forage Quality Evaluations for Mt. Barker Subterranean and Bigbee Berseem Clovers

H. LIPPKE AND G. W. EVERS

Summary

Forage samples were harvested biweekly during March, April, and May 1984 from previously uncut subplots of Bigbee berseem and Mt. Barker subterranean clovers as well as from subplots which were mowed in early March. Forage quality, as measured by content of neutral detergent fiber and in vitro dry matter disappearance, was higher for the subterranean clover than for the berseem clover. Typically, forage quality declined with time. There was no clear difference in quality in favor of forage harvested from the subplots that were mowed. The absolute difference between these clovers in grazing situations cannot be inferred from these data.

Introduction

Bigbee berseem clover was released jointly by the Mississippi Agricultural and Forestry Experiment Station and the Agricultural Research Service, USDA in March 1984. Relatively little is known about its management and utilization. A small-plot study was conducted to compare the forage quality of Bigbee berseem with Mt. Barker subterranean clover from February through May.

KEYWORDS: Bigbee berseem clover/Mt. Barker subterranean clover/grazing situations.

Procedure

Bigbee berseem and Mt. Barker subterranean clovers were drilled in strips 4 x 50 feet, October 13, 1983 on a Norwood silt loam. Sixty lb/A of phosphorus and potassium were applied at planting. Experimental design was a split, split-plot with four replications. Twenty-five feet of each strip were left uncut and the other 25 feet were cut to a 2-inch height on March 8. The 25-foot strips were further divided into nine sub-plots. The center (16 x 24 inches) of a subplot was harvested every 2 weeks beginning February 7 and March 21 on the unmowed and mowed strips, respectively. Subplots from the mowed strip provided samples with a higher proportion of new growth than samples harvested on the same day from unmowed subplots. This design provided samples of forages of two ages over the growing season.

The samples were dried on open pans at 60°C and ground in an intermediate Wiley mill fitted with 1-mm screen. Neutral detergent fiber (NDF) and in vitro dry matter disappearance (IVDMD) after 6 days of fermentation were determined for each sample harvested on March 8 and thereafter.

Results and Discussion

The NDF and IVDMD values by clover species, mowing treatment, and date are shown in Tables 1 and 2, respectively. Values for IVDMD provide only a ranking. In vivo digestibility values will be about 15 percent units lower. All two-way and the three-way interactions were statistically significant. However, examination of the tables and testing the main effects

TABLE 1. NEUTRAL DETERGENT FIBER VALUES FOR BERSEEM AND SUBTERRANEAN CLOVERS

Date	Berseem		Subterranean	
	Mowed	Unmowed	Mowed	Unmowed
	Percent			
Mar. 8	—	41.1	—	32.9
Mar. 21	45.4	41.4	37.5	31.2
Apr. 5	43.4	48.7	32.4	36.9
Apr. 18	46.7	48.3	39.3	38.9
May 2	50.6	53.2	42.7	43.9
May 16	49.8	50.8	47.5	50.1
May 30	63.7	69.7	58.1	58.3

TABLE 2. IN VITRO DRY MATTER DISAPPEARANCE VALUES FOR BERSEEM AND SUBTERRANEAN CLOVERS

Date	Berseem		Subterranean	
	Mowed	Unmowed	Mowed	Unmowed
	Percent			
Mar. 8	—	89.0	—	93.6
Mar. 21	89.1	86.4	91.7	90.6
Apr. 5	86.6	79.6	90.3	88.7
Apr. 18	80.2	78.0	88.2	85.5
May 2	74.9	71.1	81.0	79.4
May 16	71.9	69.1	75.3	75.8
May 30	61.9	58.1	69.8	68.7

with interaction sums of squares as the error term shows that the subterranean clover clearly has a higher quality forage than does the berseem clover. Also, there are clear differences due to cutting date. The effect of the mowing treatment was ambiguous, although the subplots mowed on March 8 tended to yield higher quality forage. The IVDMD values for berseem clover dropped sharply with the onset of rapid growth in April, again at the initiation of flowering in early May, and finally at the completion of flowering in late May. Subterranean clover showed more rapid declines in IVDMD values at the onset of flowering and again at senescence. The significance of these values for grazing situations cannot be predicted. There is a high probability that the difference in qualities of herbage consumed from these two clovers would be less under grazing.