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Influence of Grazing Frequency and Time of Grazing on Bite Rate

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Summary

Bite rate of cows and yearling heifers grazing wheat pastures 2 hours every day, 2 hours every other day, or 2 hours every third day were monitored throughout the winter grazing season. Cows maintained a higher bite rate than heifers throughout the season. The bite rate of both cows and heifers decreased with time. There was also a linear decrease in bite rate with plant height. The bite rate of cows decreased 1.9 bites per minute with each one-inch increase in plant height.

Introduction

The use of winter temporary pastures for commercial cow/calf operations are normally not a profitable endeavor because of the expense involved in the establishment and growing of these pastures, the low carrying capacity compared to warm-season perennial pastures, and the net returns to investment in the form of saleable liveweight grains. Under continuous grazing, dry matter losses due to trampling, defecation, and urine spotting can be quite significant and will vary greatly depending on the soil type and winter moisture conditions. But, because of the high quality characteristics of the cool-season annuals and their ready acceptance by livestock, alternate methods to continuous grazing may be feasible.

The study was designed to evaluate limited grazing as a possible alternative for meeting the nutritive require-

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ments of cows and yearling heifers during the winter. Frequency of grazing and bite rate on temporary cool-season pastures were monitored throughout the winter.

Procedure

Fifteen first calf heifers and 15 short yearling heifers in each of three treatment groups were wintered on a sorghum - sudan hay (round bales) and allowed to graze wheat pastures either 2 hours everyday, 2 hours every other day, or 2 hours every third day. Hay was rationed one roll at a time. Only after it was all eaten was another one made available.

Three cows and three heifers were selected from each treatment group as tester animals. Bite rates were determined after 30 minutes of grazing and again after 90 minutes of grazing by visually counting number of bites per unit of time. Time was recorded to the nearest 0.1 second using a standard stop watch. Five observations were made on each animal at each time period over three growth periods (December 22 - January 11, January 14 - February 6, March 1 - April 15).

The pastures were monitored during each grazing period for dry matter yield and plant height. Average plant height was determined by taking 25 measurements in each pasture. Yield was determined by hand harvesting three 3-foot strips.

Results

Table 1 shows the bite rate for each period for the cows and heifers after 30 and 90 minutes of grazing. The bite rates for both cows and heifers in each treatment decreased with time.

In general there was a negative linear relationship between bite rate and pasture height. In heifers on treatment A this relationship accounted for 62 and 67 percent of the variation in bite rates after 30 and 90 minutes of grazing, respectively. On the other hand, only 9.6 and 24 percent of the variation in the bite rate of the cows could be accounted for by plant height. A similar relation was observed in treatment B when the animals

were grazed for 2 hours every other day. The regression equation for cows and heifers following 30 minutes of grazing reflects that for every inch increase in the height of the standing forage the rate of biting for cows and heifers will decrease by 1.9 and 3.1 bites per minute. However, after 90 minutes of grazing the bite rates of cows and heifers decreased by 5.6 and 4.6 bites per minute, respectively. Those animals allowed to graze 2 hours every third day also showed similar decreases with time. The decrease in bite rate after the 90 minutes compared to the rate after the first 30 minutes is probably related more to rumen fill. Bite size apparently had a significant influence on bite rate. As the forage became taller, the bites became larger and the amounts required for a bolus were reduced. Bite size as measured only on the last period.

TABLE 1. EFFECTS OF GRAZING TREATMENTS ON BITE RATE OF COWS AND HEIFERS ON WHEAT PASTURE

Period ¹	Treatment ²	Bite Rates			
		After 30 min. Grazing		After 90 min. Grazing	
		Cows	Heifers	Cows	Heifers
1	A	49	36	41	28
	B	55	52	43	43
	C	47	41	44	34
2	A	59	53	49	44
	B	57	59	51	51
	C	60	54	50	48
3	A	65	63	57	54
	B	66	67	53	49
	C	66	66	55	59

¹1 = December 19, 1984 to January 19, 1985

²2 = January to February 1985

³3 = March to April 1985

²A = Graze every day

B = Graze every other day

C = Graze every third day