SHORT DURATION GRAZING TRIAL

D.R. Kirby and T.J. Conlon

Summary

Short duration (SD) and repeated seasonlong (SL) grazing trials were initiated at the Dickinson Experiment Station Ranch Headquarters in 1981. Forage production has generally been greater on the SL treatment, yet forage disappearance has been similar despite a greater stocking rate on the SD treatment. Average daily gain of calves has been similar between treatments; therefore, the increased average calf gain/acre on the SD treatment is a reflection of the prior greater stocking rate on this treatment.

Introduction

The mixed grass prairie comprising approximately 30% of the land area of the state is dominated by cool and warm-season midgrasses, shortgrasses and sedges. The principle effects of previous unrestricted, heavy grazing in the mixed grass prairie is a marked decrease of tall and midgrasses and an increased coverage of short grasses and sedges, with a subsequent decrease in total forage yield. Considered to be below their potential for forage hence livestock production, North Dakota's rangelands warrant research into more efficient management systems such as short duration grazing.

Short duration grazing is a rotation system using multiple pastures and generally one herd. Stocking rate increases appear necessary and combined with a large number of smaller sized pastures results in a high stocking density (animals/area). The grazing period of a pasture is short, usually 7 days or less, to eliminate grazing of new plant regrowth. The rest period, generally 30 to 90 days, allows plants to recover from grazing and is short enough to allow animals to graze plant regrowth before it matures. Graze and rest period lengths should vary according to the growth rate of the vegetation.

Study Area and Methods

A trial comparing short duration (SD) to repeated seasonlong (SL) grazing was initiated June 25, 1981 on typical mixed grass prairie. Section 16 of the Ranch Headquarters was divided into one 320 acre pasture grazed seasonlong and eight 40 acre paddocks grazed rapidly in rotation. Twenty and 35 cow/calf pairs were allocated to SL and SD treatments, respectively, in June 1981, 1982 and 1983. From 1984 through 1986 an additional 5 cow/calf pairs were added to the SL treatment. In 1987 ten additional cow/calf pairs were allocated to the SL treatment for a total of 35 pairs on the SL treatment also. Cattle were rotated every 5 days on the SD trial and paddocks rested 35 days throughout the grazing season. Grazing seasons totalled 70, 112, 131, 131, 126, 140, 140, and 80 days between 1981 and 1988. Average annual precipitation for the study area is 16 inches. Precipitation recorded for 1981 through 1988 was 8.5, 25, 15.5, 14, 24, 14, and 7.5 inches, respectively. Forage production and disappearance was determined utilizing portable cages and the paired-plot technique. Fifty paired, caged and uncaged quadrats were clipped at the beginning of trials and approximately every 40 days thereafter until termination of trials. Caged plots were used to estimate growth and total annual production while comparison of paired, caged and uncaged quadrats allowed estimation of forage disappearance (use). Plant basal cover was estimated using the point contact method on permanent transects. Livestock were weighed on and off grazing trials and every 28 days throughout the trials.

Results and Discussion

Annual herbaceous production on grazing treatments has ranged from 507 to 1766 lbs./ac (Table 1). In 1988 less than 50% of the long-term average annual precipitation was received. This resulted in a similar percentage decrease (55%) in total forage production on both grazing treatments. To maintain proper range use, the grazing season was terminated after 80 days with forage disappearance estimated to be 45 and 47%, respectively, on the SL and SD grazing treatments.

Livestock performance is summarized in Table 1. Cow and calf performance were better in 1988 than any of the preceding years due to the well cured forage and shortened grazing season. Calf average daily gains have exceeded 2 lbs./day on both treatments each year with the exception of 1984. Differences in calf daily gains between annual grazing treatments were insignificant. Calf production per acre was higher on the SD treatment between 1981 and 1986 which is a reflection of the greater stocking rate on this treatment. Calf production per acre has been similar between treatments since 1987.

Table 1. Forage Production and Disappearance and Livestock Performance on Short Duration (SD) and Season-Long Grazing Treatments, Dickinson Experiment Station

					Livestock				
		Forage			Cows			Calves	
Year	System	Production (lbs./ac)	Disappearance %		ADG (lbs.)	AG/ac (lbs.)		ADG (lbs.)	AG/ac (lbs.)
1981	SD	678	55		0.4	3		2.2	16
	SL	679	51		0.7	3		2.3	10
1982	SD	1645	41		0.3	4		2.1	25
	SL	1766	36		0.5	4		2.1	15
1983	SD	1057	46		0.3	5		2.1	30
	SL	1720	43		0.5	5		2.2	18
1984	SD	919	60		0.0	0		1.9	26
	SL	1371	60		0.0	0		1.9	19
1985	SD	702	61		0.1	2		2.1	28
	SL	865	61		0.1	1		2.2	21
1986	SD	1667	56		0.1	2		2.2	23
	SL	1558	60		0.2	2		2.2	24
1987	SD	1286	65		0.7	11		2.4	37
	SL	1310	63		0.7	11		2.5	38
1988	SD	507	47		0.8	7		2.6	23
	SL	521	45		0.6	5		2.6	23
1981 – 1988 Average									
Average	SD	1058	54		0.3	4.3		2.2	26
Range		507-1667	41-65		0-0.8	0-11		1.9-2.6	16-37
Average	SL	1224	52		0.4	3.9		2.3	21
Range		521-1766	36-63		0-0.7	0-11		1.9-2.6	10-38