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Forage intake as one estimate of the nutritive value of Flint Hills rangeland forage

Abstract

Forage intake was used as an estimate of the nutritive value of Flint Hills pastures. The organic matter intake (OMI) ranged from 16.3 lb. to 22.05 lb. (7.40 to 10.0 kg) between June-August, 1976, and there was no clear difference between the burned and nonburned pastures. Intake seems to fluctuate with maturity of grass, digestibility, and as grazing season progresses. More data are still needed for computing the nutritive value of Flint Hill pastures.

Keywords

Report of progress (Kansas State University. Agricultural Experiment Station); 291; Cattlemen's Day, 1977; Beef; Forage intake; Organic matter intake

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Forage Intake as one Estimate of the Nutritive Value of Flint Hills Rangeland Forage

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J. E. Umoh, L. H. Harbers and E. F. Smith

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Summary

Forage intake was used as an estimate of the nutritive value of Flint Hills pastures. The organic matter intake (OMI) ranged from 16.3 lb. to 22.05 lb. (7.40 to 10.0 kg) between June-August, 1976, and there was no clear difference between the burned and nonburned pastures. Intake seems to fluctuate with maturity of grass, digestibility, and as grazing season progresses. More data are still needed for computing the nutritive value of Flint Hill pastures.

Introduction

Intake and digestibility are important factors in nutritive value of forages for ruminants. Crampton (1957) showed that the feeding value of a forage depends more on the amount consumed than on its chemical composition. That concept led to a "Nutritive Value Index" for forages based on cattle's voluntary intake and the digestibility of the forage.

Various techniques and schemes have been used to determine the intake of a grazing animal. Such information is necessary for adequate by managing range livestock. To a certain extent, voluntary intake of forage varies with forage digestibility, and nutrient contents of forage vary with maturity so knowing forage intake would help range managers know when to feed supplements to cattle or when to reduce the number of cattle on ranges.

We are measuring forage intake from Flint Hill range pasture by a fecal nitrogen technique. Preliminary results are reported here.

Experimental Procedure

This study started in June, 1975. The equation used to estimate forage intake was derived in 1972 after harvesting forage from the range.

Two pastures (one burned on April 23, 1976) were used for this study. Two Hereford steers, weighing about 900 lbs. each, were used in each of the 2 pastures to measure forage intake. After a week on pasture the steers were harnessed with canvas collection bags, and confined to a small area. Then all defecation except urine was collected for 24 hours. Feces dry matter was determined by drying a small portion in a forced-air oven at 100C.

The dried feces was milled and analyzed for chemical composition. Nitrogen percentage in the feces and fecal organic matter produced were used in the following equation to estimate organic matter intake (OMI):

$$\uparrow \text{ (OMI) = 1.128 + 1.752 x (Fecal nitrogen)(Fecal organic matter).}$$

Results and Discussion

The results of the OMI (kg) for June, July, and August, 1976, are presented in Table 16.1. Intakes in both pastures were less in June than August. The low forage digestibility in June (discussed in another paper in this publication by Umoh *et al.*), was partially responsible for the low herbage OM intake. A second explanation is that by August steers were more accustomed to the facilities, were consuming more, and behaving normally, which increased fecal organic matter output. Third, and perhaps most important, the steers were growing so their intake was sure to increase.

The three months' measurements gave no clear indication whether intake was higher on burned or nonburned pastures. More data are needed on digestibility and chemical composition to establish the nutritive value of Flint Hills pastures.

Table 16.1. Percentage of fecal nitrogen and kg of fecal organic matter from steers on Flint Hills pastures.

	Nonburned	Burned
	<u>June</u>	
Fecal N (%)	2.030	2.040
Fecal OM (kg)	1.804	2.012
OMI (kg)	7.547	8.279
	<u>July</u>	
Fecal N (%)	1.684	1.733
Fecal OM (kg)	2.601	2.070
OMI (kg)	8.801	7.400
	<u>August</u>	
Fecal N (%)	1.627	1.668
Fecal OM (kg)	3.031	3.040
OMI (kg)	9.778	10.015