



Forage Research in Texas

Departmental Technical Report No.80-6
Department of Soil and Crop Sciences

Project: H 6244
 Date: 1978
 Worker: H. Lippke

BQ - 0032

INTAKE, DIGESTIBILITY, AND SWARD CHARACTERISTICS OF BERMUDAGRASS-DALLISGRASS PASTURES

OBJECTIVE:

To obtain data for relationships between sward characteristics and intake and digestibility by grazing cattle.

PROCEDURE:

A 2-yr old lactating cow and a yearling heifer, both crossbreds ($\frac{1}{2}$ Santa Gertrudis, $\frac{1}{4}$ Angus, $\frac{1}{8}$ Hereford, $\frac{1}{8}$ Brahman) and with ruminal and esophageal fistulas, were placed on a lightly grazed (0.5 cow-calf unit/acre) bermudagrass-dallisgrass pasture (14 acres) in late July, 1978. They were allowed to graze freely during daylight but were penned at night. To estimate fecal output by dilution, YbCl_3 was infused continuously (823 mg Yb/day) beginning on the 4th day of the 7-day preliminary period. On day 1 of the 5-day trial period each animal received an intra-ruminal dose of ErCl_3 (4 g Er) adsorbed onto freeze-dried, esophageally-collected forage (60 g). Ruminal ingesta flow parameters as well as fecal output were estimated from the Er excretion pattern.

Sward, esophageal and fecal samples were collected on each day of the trial period. Sward samples from 40 sites were used to estimate forage available to ground level. Growth rate was measured on 18 sites using an earth-plate capacitance meter.

Fiber determinations and *in vitro* fermentations were conducted on all samples.

RESULTS AND DISCUSSION:

Forage available on the pasture was estimated to be 2920 (± 210) lb/acre with a growth rate of 30.7 (± 3.7) lb/acre/day. Growth was, therefore, approximately twice the estimated utilization rate by the cattle grazing the pasture.

The test animals selected diets lower in NDF and lignin and higher in *in vitro* organic matter disappearance (IVOMD) than the available forage (Table 1). Approximately 15 points must be subtracted from IVOMD values in Table 1 to derive estimates of apparent dry matter digestibility. For the test animals, digestibilities were estimated from the ratios of indigestible

fiber in esophageal and fecal samples (Table 2). The estimates of digestible organic matter (DOM), intake, and rumen turnover rate are all in favor of the cow, with a large difference in intake. This is consistent with the flighty behavior of the heifer during the trial.

Lightly grazed bermuda-dallisgrass pastures appear to provide adequate energy for lactating beef cattle and moderate gains by yearling cattle in mid-summer. Protein adequacy needs to be investigated, however.

TABLE 1

FIBER CHARACTERISTICS OF ESOPHAGEAL AND SWARD SAMPLES

	Esophageal		Sward
	Cow	Heifer	
	%		
NDF*	66.5	66.9	73.1
ADF*	35.3	37.3	36.0
lignin*	4.9	5.4	7.8
IVOMD (144 hr)	83.7	84.2	65.5

*Organic matter basis

TABLE 2

INTAKE, DIGESTIBILITY AND RUMEN TURNOVER RATE

	Cow (400 kg)	Heifer (306 kg)
Organic matter intake, g/kg BW ^{.75}	85	49
DOM, %	68.5	64.8
Turnover rate, hr ⁻¹	.059	.049