ABSTRACT

The effect of four levels of nitrogen (sulphate of ammonia) fertilization (112, 224, 336 and 448 kg N/ha/yr) on the productivity and quality (IVDMD) of Halt grass (Hemarthria altissima), Tanner grass (Brachiaria sp.) and Coastcross I (Cynodon dactylon) established on River Estate Loam soil was compared in three separate (12-week) studies between December 1971 and March, 1973 with grasses cut at 24-day intervals. Tanner grass showed the highest response to N fertilization (24.0 kg/kg N applied), followed by Coastcross I (17.0 kg/kg N applied), while Halt grass gave no response above 224 kg N/ha/yr except during the dry season (average 2.41 cm rainfall) of 1973 (9.8 kg/kg N applied). Nitrogen fertilization increased the nitrogen content of the grasses and depressed P, K, and Ca contents, had no significant effect on grass IVDMD, and decreased soil pH.

In preliminary observations over 14 weeks, using the same three grasses as above, yearling Holstein steers made highest liveweight gains grazing Coastcross I (0.45 kg/head/day) and lowest gains on Halt grass (0.20 kg/head/day). Six-month old Holstein steer calves (average liveweight 130 kg) were used in a 31-week further grazing study to compare the effect of a high and low stocking intensity (4 vs. 8 grazing days equivalent to 6 vs. 12 calves/ha) on forage productivity and composition. Grass growth was significantly depressed at high grazing intensity, and Coastcross I swards

had the highest proportion of weeds (26% DM basis). Calves on Coastcross I and Tanner grass swards gained weight, while those on Halt grass lost weight. Estimates of grazing intake indicated that 2.8%, 2.5% and 1.1% of liveweight was consumed by the calves as DM on Coastcross I, Tanner grass and Halt grass pastures, respectively.

Three separate studies, each lasting 17 days, and using 15 mature male sheep housed in metabolism cages, were conducted to compare the nutritive value (voluntary intake and apparent digestibility) of the three grasses first, cut at 2 weeks, then at 3 weeks and finally, at 4 weeks of age. Coastcross I had the highest intake of digestible OM at 2 weeks (52.2 $g/kgW^{0.75}$) and at 3 weeks (38.4 $g/kgW^{0.75}$) of age, Halt grass the lowest at 2 weeks (36.5 $g/kgW^{0.75}$) and Tanner grass the lowest at 3 weeks (26 $g/kgW^{0.75}$) of age. There were no significant differences between grasses in digestible OM intake at 4 weeks of age. The sheep ate Halt grass readily and made highest gains on it.

Problems of evaluating new tropical grasses are discussed.