SUMMARY

A 140-day grazing trial was conducted to determine the effects of various levels of monensin on gains made by steer calves and yearlings while grazing Coastal bermudagrass pasture. Cattle on all treatments were grazed on Coastal bermudagrass forage at a stocking rate of 2.5 head per acre (6.2 steers per hectare). Corn, yellow, ground, pelleted, 4 02 992 (ground, pelleted corn) was fed at a rate of 2 lb (908g) per head daily as a carrier for the appropriate monensin levels. The treatments were no corn, corn only, and corn plus 25, 50, 100, or 200 mg monensin per head daily. Each treatment was replicated twice. Ten cattle, with equal numbers of steer calves and yearling steers, were grazed in each replicate. The cattle were rotated among pastures within each set of replicates at 7-day intervals.

Cattle on all levels of monensin produced larger (P<.05) weight gains than the control cattle. Animals fed corn with no monensin performed better than those on forage only. Growth rates of the steers receiving monensin increased as the drug level increased through 100 mg per head daily. Cattle fed the 200 mg level of monensin gained only slightly, but significantly, more than those on the 25 mg level.

(Key Words: Monensin, Stocker Cattle Grazing, Coastal Bermudagrass, Steer Age, Beef Cattle.)

INTRODUCTION

Monensin is a biologically active compound produced by Streptomyces cinnamomis (Haney and Hoehn, 1967). It was first used as a coccidiostat in poultry rations. Monensin has been observed to increase the production of propionic acid during rumen fermentation both in vitro and in vivo with high grain rations (Richardson et al., 1974). Propionic acid is said to follow the same metabolic pathway as glucose (Leng et al., 1967). Thus, an increase in propionic acid implies an increase in the energy obtained from a unit of feed. Earlier studies have shown that the addition of monensin to feedlot rations resulted in a significant increase in animal gain and feed efficiency (Raun et al., 1974a,b). Potter et al. (1974a,b) observed an increase in weight gain for cattle that received monensin daily in 2 lb (908g) of grain while grazing improved, warm season pasture in the Midwest. The purpose of the study reported here was to evaluate the effect of various dietary levels of monensin on weight gains of stocker steers grazed on well managed Coastal bermudagrass pasture in the South.

MATERIAL AND METHODS

Twelve Coastal bermudagrass pastures, each four acres (1.62 ha) in size, were grazed. Pastures were arranged in two blocks of six pastures each. One replicate of each treatment appeared in each block. Each pasture was stocked at a rate of 2.5 steers per acre (6.2 steers per hectare) or 10 steers per pasture. The cattle were rotated among pastures within blocks at 7-day intervals to reduce differences due to pastures. Each pasture was fertilized with phosphorous and potash in March according to soil test recommendations. An application of 150 lb of ammonium nitrate per acre (168 kg per hectare) was made near April 1. An additional 450 lb of ammonium nitrate per acre (504 kg per hectare) were applied in three split applications during the growing season to stimulate continued growth of young, more nutritious forage. Surplus forage present in June was harvested as hay.

In order for monensin to be effective, the animal must receive it daily. Corn, yellow, grain, ground, pelleted, 4 02 992 (ground, pelleted corn) was used as a carrier for the drug.
and was fed at the rate of 2 lb (908g) per head daily. The treatments were no corn, corn only, and corn plus 25, 50, 100, or 200 mg of monensin per head daily. The pelleted corn containing the appropriate monensin level was fed in an open trough in each pasture near 8 am daily. The trial was initiated on May 1 and was continued 140 days.

One-hundred-twenty steers were grazed in the trial. One half were yearlings that had been weaned the previous fall and fed Coastal bermudagrass hay ad libitum during the winter. The remainder were fall born calves weaned in late April. The steers were assigned to the 12 treatment groups such that each group was made up of five calves and five yearlings. The average initial weights were 518 lb (235 kg) for the yearlings and 343 lb (156 kg) for the calves.

**RESULTS AND DISCUSSION**

The weight gain data were statistically analyzed as a three factor factorial with block,
steer age, and treatment as the main effects. The analysis of variance is shown in table 1. The analysis indicated that differences in both steer age and treatment imposed resulted in significant differences (P<.01) in animal weight gains. Neither the block effect nor the interactions were important sources of variation.

The average weight gains made by animals in the several comparisons are shown in table 2. The average gains made by the cattle in block A were not different (P<.05) from the gains made by those grazed in block B. This shows that the two sets of pastures likely produced the same quantity and quality of forage.

The yearling steers produced larger (P<.01) average gains than the steers calves. Table 2 shows that the average 140-day gain for the yearling steers was 246.9 lb (112 kg) while for steer calves it was 159.3 lb (72.2 kg) — a difference of 87.6 lb (39.8 kg) per head. This finding is in agreement with other studies comparing weight gains of calves and yearlings grazed on both Coastal bermudagrass and wheat-Gulf ryegrass pasture (Oliver, 1974a,b).

Table 2 also shows the average weight gain of the cattle grazed in each treatment. When the means were compared by both the Duncan’s New and the Student-Newman-Keuls multiple range tests, each treatment mean was found to be different (P<.05) from the others. The largest 140-day gain was 240.8 lb (109.2 kg) per head produced by treatment 5 (100 mg monensin level). This treatment produced 98.6 lb (44.7 kg) more gain than treatment 1 (no corn) and 66.4 lb (30.1 kg) more than treatment 2 (corn only). Treatment 4 (50 mg monensin level) produced 225.6 lb (102.3 kg) gain per head followed by treatment 6 (200 mg monensin level) with 218.8 lb (99.2 kg) and treatment 3 (25 mg monensin level) with 217 lb (98.4 kg) gain per head. Monensin at all levels produced larger average gains than the controls. The cattle fed 2 lb (908 g) of corn per head daily but no monensin (treatment 2) gained an average of .22 lb (105g) more per head daily than the cattle on forage only (treatment 1).

LITERATURE CITED


Oliver, W. M. 1974b. Weight gains of spring-weaned and fall-weaned stocker steers while grazing winter pasture. Hill Farm Facts, Beef Cattle No. 16.


