

ABSTRACT

The effects of nitrogen, phosphorus, potassium, calcium and magnesium on plant growth on a Long Stretch soil were studied. The main effects and interactions of these nutrients on dry matter yield, nitrogen content of the tissue and nutrient uptake were examined. Two grasses were grown; they were Pangola grass (Digitaria decumbens) and Coastcross I (Cynodon dactylon). The experiments were carried out in the greenhouse.

For optimal growth of either Pangola grass or Coastcross I experiments suggest that calcium and nitrogen may be the most important additives. Both grasses responded well under greenhouse conditions to calcium, and responded to nitrogen (sulphate of ammonia) where calcium had been added. There was no obvious response of dry matter yield to phosphorus, potassium or magnesium. Phosphorus and magnesium uptake were limited by soil acidity. Magnesium deficiency symptoms were common, and low magnesium content of the herbage would result in a deficient diet. Similarly the phosphorus content of the herbage, even under high calcium/phosphorus treatments, fell below the minimum requirements for grazing cattle (0.33% D.W.), and would be severely deficient for milking cows.

Where the two grasses were grown under limed conditions dry matter yield and nitrogen content were similar. Results indicated that the two grasses did not show the same pattern of

protein synthesis and more detailed comparisons would be necessary. Coastcross I was far more sensitive to extreme soil conditions, and establishment and growth were very difficult where no calcium was applied. Coastcross I appeared to be more tolerant of prevalent races of foliar diseases (mildew and leaf blotch). Percentage crude protein for both grasses ranged from 6.5 to 9.0%.

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L. L. EVES.