EFFECT OF NITROGENOUS FERTILIZER ON BOTANICAL COMPOSITION

IN A STOCKING RATE TRIAL

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Summary

In a dairy cow stocking rate-nitrogen experiment at Kyabram, Victoria, the changes in composition of an irrigated perennial pasture were studied. There were five stocking rates ranging from 4.4 cows/ha to 60.4 cows/ha and for each stocking rate there was a control and nitrogen treatment. There were no differences in pasture composition due to stocking rate. Significant differences (P < 0.05) were recorded between the control and the nitrogen treatments with respect to grass and legume percentages.

I. INTRODUCTION

Nitrogenous fertilizers produce significant increases in pasture production but this is generally of grasses at the expense of legumes. It has been found that greater animal production is obtained from a legume sward than from a grass sward. This information has been obtained at low stocking rates and under cutting regimes. The effect of nitrogenous fertilizer on a range of stocking rates was therefore studied in 1971-73. One facet of the results is reported here.

II. MATERIALS AND METHODS

A stocking rate-nitrogen experiment has been conducted at the Irrigation Research Station, Kyabram on an irrigated perennial pasture consisting of paspalum (Paspalum dilatatum), perennial ryegrass (Lolium perenne), cocksfoot (Dactylis glomerata) and white clover (Trifolium repens). There were six cows in each of ten treatments, these being 4.4 cows/ha, 4.9 cows/ha, 5.4 cows/ha, 5.9 cows/ha and 6.4 cows/ha, all at two nitrogen fertilizer levels, zero and 224 kg/ha/yr. of ammonium nitrate. At four times during a year 80 samples were cut from each treatment and hand-sorted into grasses, legumes and weeds.

III. RESULTS

There were no significant differences with respect to stocking rate (P > 0.05), but there was a significant increase in all types of grasses (P < 0.05) with the use of nitrogenous fertilizer. This difference ranged from four per cent to 20 per cent depending on the season.

IV. DISCUSSION

It is evident that, irrespective of grazing intensity of dairy cows, the application of nitrogenous fertilizer increases the percentage of grass, relative to the legume content, available to the grazing animal. This result was achieved under varying climatic conditions and applied to all grasses concerned.

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