NUTRITION OF GRAZING CATTLE

4. Selectivity Exhibited by Grazing Cattle

By K. W. MOIR, B.Sc.*

SUMMARY

A comparison was made between the percentages of protein, phosphorus and calcium in total available pasture and the percentage of these constituents in the pasture representative of that selected by grazing cattle.

The two pastures examined were an *Axonopus affinis* and a *Paspalum dilatatum* dominant pasture. For both pastures the selected pasture contained about 50 per cent. more protein and about 30 per cent. more phosphorus than the total available pasture.

Calcium levels in the selected pasture were comparable with those in the total available pasture.

I. INTRODUCTION

Plant and animal factors involved in selective grazing have been discussed by Hardison, Reid, Martin, and Woolfolk (1954). They compared digestibility data derived from grazing steers with digestibility data from steers hand-fed forage clipped from areas adjacent to those allotted to grazing. They found that the average diet selected by the grazing steers contained 23·3 per cent. more crude protein, 37·3 per cent. more fat, 25·6 per cent. more ash and 16·8 per cent. less crude fibre than the whole herbage.

Regressions relating faecal and pasture composition (Moir 1960*a*, 1960*b*) permit estimates of the protein, phosphorus and calcium contents of pastures selectively grazed. It is the object of the investigations reported in this paper to examine the degree of selectivity exhibited by cattle grazing (1) *Axonopus affinis* (narrow-leaf carpet grass) dominant pasture, and (2) *Paspalum dilatatum* (paspalum) dominant pasture.

II. METHODS

Faecal samples were taken as described by Moir (1960*a*).

The pasture sampling technique described by Moir (1960*a*) was used to obtain samples representative of pasture selectively grazed.

* Chemist, Division of Animal Industry, Queensland Department of Agriculture and Stock.

Quadrat sampling was used to obtain samples representative of the total available pasture. Six random quadrats each of 4 sq. ft. were cut to 2 in. above ground level and the total pasture collected in this manner was sub-sampled for analysis.

Methods for the determination of protein, phosphorus and calcium were those described by Moir (1960*a*, 1960*b*).

III. RESULTS AND DISCUSSION

The chemical composition of pasture selected by eight Hereford heifers grazing a 4 ac paddock of carpet grass dominant pasture is compared in Table 1 with the chemical composition of the total pasture.

TABLE 1

Comparison of Chemical Composition of Selected Diets of Carpet Grass Dominant Pasture with Chemical Composition of Total Pasture

Month of Sampling	Chemical Composition of Selected Diet (Dry Matter)						Chemical Composition of Total Pasture		
	From Faecal Analysis			From Pasture Analysis			From Pasture Analysis		
	Protein (%)	P (%)	Ca (%)	Protein (%)	P (%)	Ca (%)	Protein (%)	P (%)	Ca (%)
May ..	9·8	0·20	0·21	9·8	0·23	0·19	6·7	0·15	0·16
June ..	9·6	0·20	0·21	9·6	0·22	0·24	6·3	0·15	0·34
July ..	10·5	0·20	0·25	8·2	0·22	0·27	5·7	0·15	0·29
August ..	9·8	0·19	0·23	7·9	0·17	0·21	5·8	0·14	0·31
Mean ..	9·9	0·20	0·23	8·9	0·21	0·23	6·1	0·15	0·28

The chemical composition of the pasture selected by six cows of mixed breed grazing a 6 ac paddock of paspalum dominant pasture is compared in Table 2 with the chemical composition of the total pasture.

TABLE 2

Comparison of Chemical Composition of Selected Diets of Paspalum Dominant Pasture with Chemical Composition of Total Pasture

Date of Sampling	Chemical Composition of Selected Diet (Dry Matter)						Chemical Composition of Total Pasture		
	From Faecal Analysis			From Pasture Analysis			From Pasture Analysis		
	Protein (%)	P (%)	Ca (%)	Protein (%)	P (%)	Ca (%)	Protein (%)	P (%)	Ca (%)
May 14 ..	12·8	0·34	0·38	13·0	0·29	0·30	8·7	0·23	0·21
May 28 ..	11·4	0·31	0·39	10·7	0·29	0·34	8·1	0·26	0·29
June 10 ..	11·9	0·27	0·37	11·1	0·29	0·30	8·2	0·28	0·35
June 24 ..	12·3	0·26	0·35	12·0	0·27	0·22	7·4	0·15	0·34
July 9 ..	11·5	0·24	0·38	10·2	0·24	0·43	7·3	0·18	0·34
Mean ..	12·0	0·28	0·37	11·4	0·28	0·32	7·9	0·22	0·31

In Table 2 there is satisfactory agreement between the analysed values of protein, phosphorus and calcium in the grasses sampled by a technique designed to yield samples representative of grasses grazed and the values of these constituents determined from the appropriate regressions relating pasture and faecal composition. Similarly, in Table 1 there is satisfactory agreement in the May and June samples. The discrepancy in the values recorded for the July and August samples is considered to be due mainly to pasture sampling error. In this period from July to August most of the pasture was very short and there was some uncertainty whether the grasses sampled had been recently grazed.

When the means of the results of the analyses of pasture samples representative of grasses grazed and the results derived from regression are considered, the selected pasture in both experiments contained about 50 per cent. more protein and about 30 per cent. more phosphorus than the total available pasture sampled by quadrats. Calcium levels in the selected pasture were comparable with those in the total available pasture.

On both pastures, short green grass was available at all times and this was preferentially grazed. Although some of the mature grasses were grazed, it does not appear to be likely from the observations made that the reduction of total available carpet grass pasture in July and August was due entirely to grazing. There would have been considerable losses due to trampling with the heavy rate of stocking of two beasts to the acre for this type of pasture. Weathering would also have contributed to the loss of the dry and brittle mature grasses.

These findings stress the inadequacy of analyses of samples of total available pasture in relation to studies on grazing cattle in Queensland.

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