DETERMINATION OF PLANT SPECIES GRAZED BY OPEN RANGE CATTLE IN CENTRAL AUSTRALIA

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I. INTRODUCTION

A knowledge of plants which are eaten by cattle in open range country in Central Australia could assist in developing methods of pasture management for cattle production. Observations on grazed plants give limited qualitative data and indicate the effects of grazing on the vegetation, but provide no quantitative data.

This paper is a progress report of a study of rumen contents to provide qualitative and quantitative data on the grazing animal’s preferences. Some related data have already been published (Chippendale 1962).

II. MATERIALS AND METHOD

Samples of rumen contents of cattle killed for beef were supplied by about a third of the stations in Central Australia. The bulk of the samples came from two stations, one being about 50 miles east of Alice Springs and the other about 200 miles to the north.

The samples were approximately 680 ml in volume. Each sample was washed gently but thoroughly in a fine sieve, and then dried. The sample was examined with the use of magnifying spectacles, and fragments suitable for identification were sorted into species. All of the larger fragments and most of the seeds were sorted.

Identifications were made with the use of a binocular microscope, by reference to the collections of the Northern Territory Herbarium. Fragments of leaves of the various edible trees and shrubs were identified by their general morphology even when reduced to skeletons. Seeds and spikelets of grasses and herbaceous species were mostly readily identified, and these assisted in the determination of less readily identifiable fragments. Identification was aided by botanical collections in the grazed areas in a number of different seasons. There were occasionally some indeterminata, usually minute fragments of leaves. A number of minute fragments of herbaceous and top-feed species remained in the grass fraction.

After sorting and identification of the fragments, the samples were heaped and three independent visual estimates of percentage by volume of the various species in the whole sample were made and averaged. These estimates were made by the author and two technical assistants familiar with the material.

In an endeavour to obtain more accuracy, several samples were sorted with more than usual care into species fractions, and percentages by weight were obtained. The time involved in this tedious sorting precluded this method from being applied to the several hundred samples examined.

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III. RESULTS AND DISCUSSION

A sample result is shown in Table 1. There was a reasonable correlation between the visual estimates and the dry weight percentages of the various fractions. The percentages of some of the minor constituents were overestimated visually, but this may compensate for the small fragments which remained in the grass fraction after sorting.

Final interpretation of the complete results has not yet been made, but indications are:

(a) 75% or more of the plants eaten are grasses, even in dry times.
(b) Forbs rarely comprise more than 15% of the diet, and are mostly less than 10%.
(c) No forbs were recorded in 20% of the samples.
(d) All but two samples contained topfeed.
(e) Topfeed was rarely more than 20%, and was mostly less than 10% of any sample.
(f) From 5 to 18 species were identified in each sample.

Although highly digestible herbaceous material consumed may not be represented in the rumen, results indicate that consumption of herbaceous species is detectable by the presence of the more indigestible portions such as fruit or stem with a fragment of leaf.

The apparently small percentage of the diet comprised by topfeed species, when compared with the observed serious effects of the grazing of these species (Chippendale 1963) indicates the need for more careful management of this form of fodder.

IV. REFERENCES