

## GRAZING BEHAVIOUR AS AN INDICATOR OF NUTRITIVE VALUE OF FEED AND ENVIRONMENTAL EFFECT ON CATTLE

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*Keywords:* Grazing time, Periodicity of grazing, Cattle.

### RINGKASAN

*Vibracorder* telah digunakan untuk mengkaji perlakuan meragut pada lembu-lembu yang meragut empat jenis pastura semasa musim kering dan awal musim lembap di kawasan tropika bermusim (kering dan lembap), Australia. Masa dan tempoh meragut yang diperolehi memberikan panduan yang berguna untuk menunjukkan mutu rumput yang diragut dan kesan iklim terhadap perlakuan ragutan. Penggunaan teknik ini di dalam kajian pengeluaran ternakan pada keadaan setempat di Malaysia juga dibincangkan.

### INTRODUCTION

Techniques have been developed to study the grazing behaviour of animals. The grazing time and periodicity of grazing recorded by vibracorders can often give a valuable guide to the quality of herbage being grazed (MINSON, STOBBS, HEGARTY and PLAYNE, 1976) as well as the response of the grazing animals to the environment.

The study reported here was part of a grazing experiment which aimed to evaluate the performance of cattle grazing different pastures during the dry and early wet seasons in the seasonally dry tropics of Australia. The nature and causes of weight changes of the cattle during this period in response to the changes in the quality of the feed have been reported by LIANG, MURRAY and WINTER (1985). In this paper the associated grazing behaviour of the cattle is discussed.

### MATERIALS AND METHODS

The experimental details are described by LIANG *et al.* (1985). Briefly the different pasture treatments used for this study were continuously grazed improved grass pasture, *Centrosema* legume, *Alysicarpus* legume and *Stylosanthes* legume.

In this study, two steers in each treatment were mounted with a vibracorder (made by KIEZLE APPURATE GMBH., Villingen, West Germany). Measurements comprising four to seven days of continuous recordings were taken at four occasions: early dry, late dry, immediately following the first rain and early wet for the three legume paddocks. Because of technical difficulties, information for the improved pasture was recorded only at the latter two occasions. The readings of the two steers in each treatment were pooled and averaged to represent its respective measurement at each occasion. Four esophageally fistulated steers were used to collect dietary samples at various occasions to determine the nutritive value of pasture in the different treatments.

### RESULTS AND DISCUSSION

Time and periodicity of grazing by animals from the different treatments during the different seasons are shown in *Figure 1*. In the early dry season, steers which grazed the legume pasture spent about ten hours per day grazing, of which about six hours were in the afternoon (1300 h - 1900 h) and the remaining four hours being divided evenly between midnight (2400h - 0200 h) and morning (0600 h -

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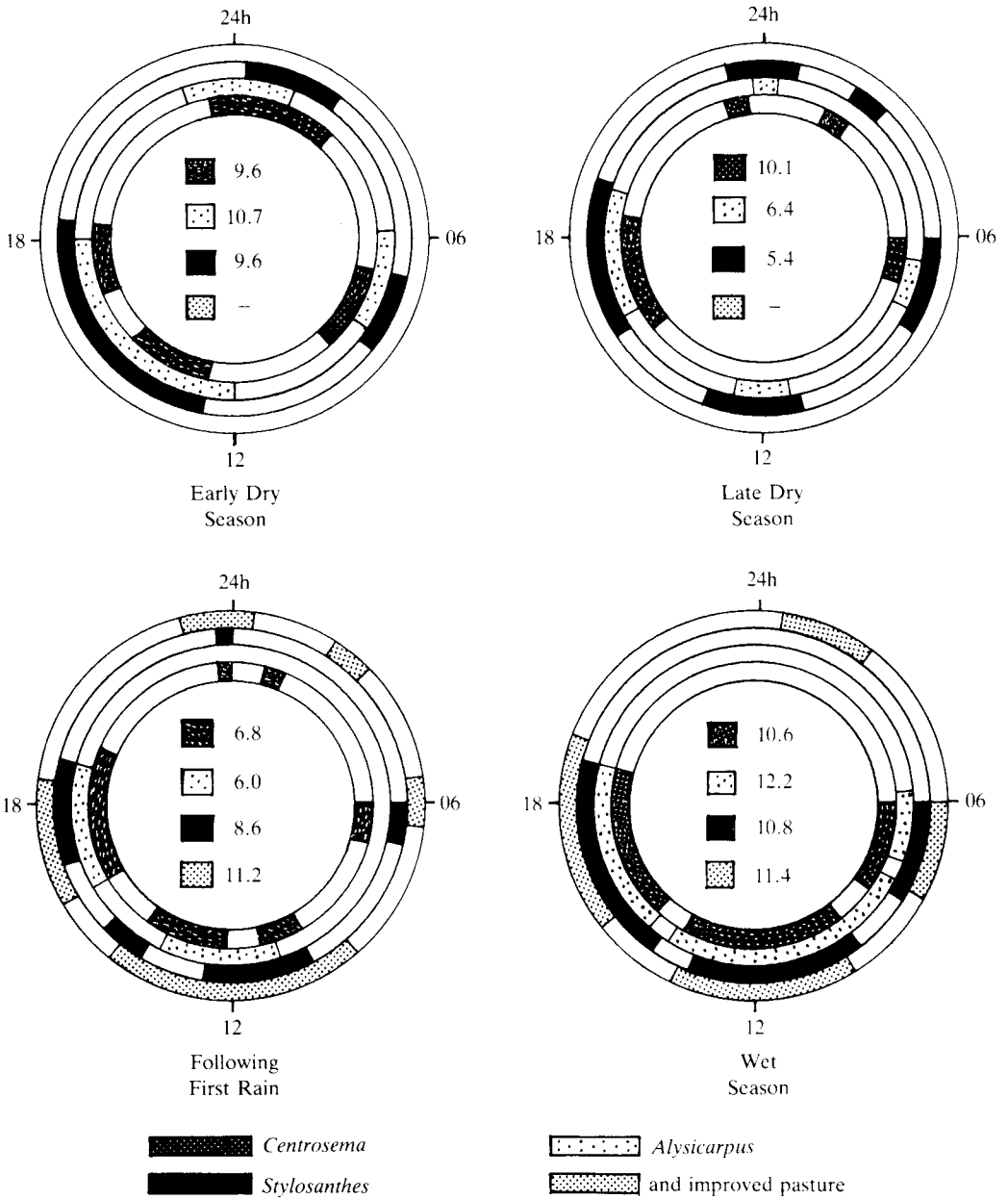


Figure 1. Time and distribution of grazing by cattle grazing on 4 types of pastures during differet seasons of the year. Numbers refer to total grazing time (h)

0800 h). There was no significant difference, both in the grazing time and periodicity of grazing between the different legume pastures.

As the dry season proceeded (late dry) the steers grazed for less time (five to six hours) in the Alysicarpus and Stylosanthes

treatments while grazing of Centrosema remained at ten hours. At this time the animals took more frequent breaks during grazing session, particularly during the afternoon.

Grazing times of cattle usually vary from seven hours on good quality pastures

to 10 – 12 hours on low quality pastures or when feed is scarce (MINSON *et al.*, 1976). Reduction in the grazing time in the late dry season observed here contradicts these general observations. Dry matter availability was not considered to be limiting, being not less than 0.9 t/ha at any time, and although the quality declined during the dry season the final figure of at least 1.0 g N/100 g OM (Figure 2) was considered adequate. The reduction in grazing time may be explained by the stressful environmental conditions in the late dry season. The average daily maximum temperature recorded at the experimental site rose from 30.6°C (when the first grazing time was measured in early August) to 38.3°C at the second measurement at the end of the dry season (Figure 2). Grazing during the night and early morning, when temperatures were cooler, accounted for almost 50% of the grazing time during this season. This compared with 30% during the early dry season and only 20% following the first rain.

Total grazing time per day of steers grazing the improved grass pasture immediately following rain was longer (11 hours) than those grazing the legume pastures (six to nine hours), but had quite a similar pattern. The animals grazed for about 30 minutes in the early morning (0600 h) and continued again later in the mid-morning (1000 h) until late afternoon (1900 h) with one or two short breaks. There was also some short, discontinuous, midnight grazing.

The improved perennial grass pastures produced new forage faster than legumes after the first rain. The nitrogen content of the improved grass increased from 0.7 g N/100 g OM in the late dry season to 1.1 g N/100 g OM about two weeks after the first rain (Figure 2) while the legumes had not produced any appreciable amounts of new feed. The longer grazing time of animals grazing grass pasture was probably due to

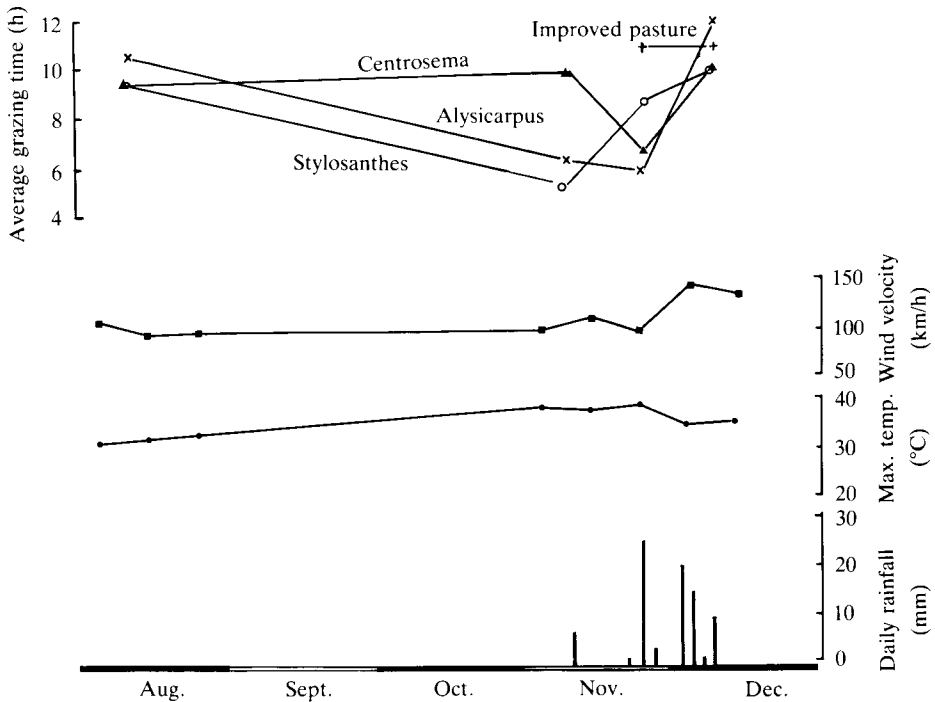


Figure 2. Effects of various climatic factors and sampling runs on average grazing time of cattle grazed on 4 types of pastures.

animals seeking the scattered green regrowth available at the time.

In the early wet season, the grazing time of animals in the legume treatments increased to a similar degree – probably for the same reason. Grazing was also more intense, continuing from 0600 h to 1900 h with only short breaks in between. This was no doubt as the environmental temperature continued to drop as the wet season proceeded (*Figure 2*). At this time only the animals in the improved pasture grazed at night.

### CONCLUSION

Grazing behaviour manifested through grazing time and periodicity of grazing by itself has limited use. However, it is a useful adjunct to other measurements as an end to interpretation of grazing experiments.

Under Malaysian condition, this technique may be useful in research under situations such as those prevailing in the villages where the animals have to walk long

distances each day along roadsides and jungle fringes to search for food. With more and more emphasis upon integration of grazing animals into the plantations (oil palm and rubber) this technique may also be useful in the evaluation of feed resources in plantations.

Vibracorders have not previously been used in Malaysia. This tool, which is relatively cheap and easy to operate, should be employed to improve our research efforts.

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### ABSTRACT

Vibracorders were used to study the grazing behaviour of cattle on four different types of pastures during the dry and early wet seasons in the seasonally dry tropics of Australia. Grazing time and periodicity of grazing gave a valuable guide to the response of the grazing cattle to the forage and ambient environment. The application of such a technique for animal production research under local situations is discussed.

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