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The Effect of Management on the Grazing Behaviour of Calves

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SUMMARY

OBSERVATIONS were made on the grazing behaviour of two groups of calves from 3 to 9 months of age, at fortnightly intervals. Each observation consisted of a 24-hour period. The following activities were recorded for each calf:—Grazing, Rumination, Resting and Idling.

The two groups of calves, consisting of 10 calves in each group, were managed in the following way. The high plane group were rotationally grazed on milking-quality pasture, spending on the average 3 days in each paddock. There were only small fluctuations in the quality of pasture available to them. The low plane group were set-stocked, remaining in a small calf paddock which deteriorated in quality although it was adequate in quantity, until a month after weaning. After this they grazed with other dry stock in a bare paddock of poor quality for 2 months. During the last month of observation they grazed rank pasture. Both groups had the same milk feeding and were weaned at 18 weeks of age.

There was no divergence in growth rate between the two groups until after weaning. Thereafter, over the following 5 months, the average weight gains for the high and low plane groups were 153 and 25 lb. respectively.

The diurnal rhythms of calves were very similar to those of adult cows. The pattern of behaviour was polycyclic. In the daytime cycles of grazing were followed by periods of idling, rumination and rest. During the night, which was spent mainly lying down, periods of rumination alternated with periods of rest.

As the calves get older the number of grazing and rumination cycles remained the same but they become longer. Less idling was associated with each grazing cycle.

Management did not affect the pattern of grazing very much. The high plane group tended to behave more as a herd than the low plane. The low plane calves started grazing later after sunrise than the high plane and carried on in the evening after the high plane had camped for the night. The grazing time of the low plane calves was associated with a longer time spent grazing in each grazing cycle rather than an increase in the number of cycles.

A comparison of the average grazing times for all periods for the high and low plane groups shows that these were 454 and 557 minutes respectively, a difference of 103 minutes. The range in average grazing times between periods was 297-563 for the high plane and 263-790 for the low plane.

During the time both groups were receiving milk, there were no significant differences in grazing time between the two groups. On all the remaining periods, the low plane grazed for a significantly longer time than the high plane calves. Observations on the biting rate, the number of bites taken per minute, showed that the low plane calves on rank feed bit at a slower rate than the high plane but on bare pasture the rate was the same.

The implications of these observations are that they suggest very strongly that a calf tends to buffer itself against environmental vicissitudes. Thus in rank pasture where the quality is low, the calf will select the food more carefully, biting at a slower rate and increasing its grazing time. If the pasture is sparse, the calf will attempt to get its fill by grazing for a longer time. Thus the effects of large differences

in apparent pasture conditions are reduced in terms of nutrition by the buffering action of behaviour. It is important to note, however, that this adaptability may not be of sufficient magnitude to compensate entirely for differences in environment.

The dry stock, 15 yearlings and 4 dry cows, grazed on an average 100 minutes less than the low plane calves grazing the same paddock. While the dry stock were gaining, the calves were losing in weight. Although the calves were grazing longer, they were presumably consuming less. It is difficult to avoid the practical conclusion that the type of pasture offered is more important to calves than to older dry stock.

The grazing times for calves are comparable with the lower values found by Hancock (1950) studying adult cows. The efficiency of grazing as defined by Hancock, is the food consumed per unit of time. As the quantity of feed consumed by calves must be less than that consumed by adult animals, it follows that calves are less efficient grazers than cows from this point of view.

The average rumination times for the high and low plane groups were 415 and 413 minutes respectively with a range between periods of 297-486 in the former and 287-514 in the latter.

The differences in rumination time were only significant on four of the observation periods. Hancock (1951) has shown that for cows there is a negative correlation between quality of pasture and rumination time, and a positive correlation between intake and rumination time. As it is probable that there were differences in both quality and intake of pasture between the two groups, it is not surprising that the differences in rumination time were small. Thus the rumination time would be lower for the low plane calves because of a lower intake but higher because of poor quality of the feed consumed.

All the observations on rumination time are comparable with values found for cows. As the amount of food consumed by calves must be less than by adult animals, it follows that the age or size of an animal affects the length of time it spends ruminating each unit of food it consumes. The long rumination time per unit of food consumed by calves as compared with cows gives rise to speculation as to whether the rumination process of the calf is less efficient or food is being more finely divided or both.

REFERENCES:

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Hancock, J. J. (1951). Private communication.

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Discussion

Mr. DICK: Would the less efficient grazing of calves be related to body weight?

Mr. McARTHUR: That is probably true.

Mr. WARD: Could efficiency of grazing be determined by the bites per day as a product of bites per minute and grazing time?

Mr. McARTHUR: An index of efficiency of grazing could be obtained from the number of bites per day in relation to food intake. However, if such a figure is to be accurate it would need a considerable number of bites per minute observations because of the wide variation.