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STUDIES IN THE UTILIZATION OF WINTER PASTURE BY DAIRY COWS

L. R. Wallace*

DESPITE THE IMPORTANCE of autumn saved pasture in the winter nutrition of dairy cattle, very few critical studies have been made of its value for body maintenance and liveweight increases during late pregnancy and for subsequent production. Furthermore, while the effects of extremely low planes of nutrition prior to calving have been previously shown to severely affect production no information has been available on the effect of moderate levels of under-feeding.

In the trial described 36 sets of identical twins in four balanced groups were break-grazed on areas of autumn-saved pasture divided in the ratio of 100 : 85 : 70 : 55. The actual size of each area was determined by the requirements of the 100% group of cows which were allowed an area that they would reasonably clean up each day.

Liveweight changes, the quantities of digestible nutrients consumed, the area of pasture available, the grazing habits, and production after calving of each group were recorded.

The number of grazing days and quantities of digestible nutrients produced from autumn-spelled pasture was calculated.

A regression equation to predict digestible organic matter intake was derived from analysis of the data for all cows.

The four levels of feeding employed were sufficiently distinct to be very important from the point of view of their influence on the numbers of stock which could be wintered on a given area. They were not, however, sufficiently different to produce dramatic effects on the subsequent level of milk and butterfat production.

It was concluded that provided cows are in good condition at the time of drying off and provided also that they can be really well fed from the time of calving onwards there is very little to be gained from feeding them more than moderately well during the six to eight weeks prior to calving.

DISCUSSION

Q: : In view of the fact that the chromium marker technique is the routine method used at Ruakura would Dr. Wallace elaborate on his comment that this method may have given biased estimates of the intake of the animals in this experiment?

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A: : The chromium marker method has been routinely used at Ruakura under what may be called normal grazing conditions—where the cows are allowed to graze at pasture day and night except when removed to the dairy for milking. However in the present experiment a severely modified grazing procedure was employed. Several of the groups were allowed to graze for only a short period during each 24 hours. The possibility that this peculiar grazing system might affect the accuracy of the chromium method had, therefore, to be considered. This was tested in separate trials in which bagged cows were dosed with chromium. In these trials it was found that the amounts of faeces collected in the bags agreed very well with the amounts estimated by the chromium method.

Q: : *Would Dr. Hammond comment on the differences between Wallace's results and those of English workers on the effect of steaming up? Is it possible to steam up cows on pasture?*

DR. JOHN HAMMOND: : I certainly believe in steaming up animals prior to calving. Wallace started with cows in good condition. We get best results with animals which are in moderate condition at about mid-pregnancy. Heifers already in good condition will have a large amount of fat in their udders which is not conducive to obtaining a good response. It has been found in experiments conducted at Reading that concentrates are more effective than roughages.

DR. WALLACE: : I think it is important to remember that with cattle fed entirely on pasture it is not possible to obtain the high levels of nutriment intake that are possible with concentrate feeding.

DR. JOHN HAMMOND: : Spring grass will give a degree of steaming up such that cows coming into milk a month or so after the spring flush will milk at a higher initial yield than animals calving earlier and fed on winter rations.

D. MCFARLANE: : Dr. Wallace has emphasized that autumn-saved pasture is the basic winter feed on dairy farms. I believe his findings are equally important with beef cattle and sheep and a similar study with these animals would be of interest. His 'on and off' grazing may be a technique which could be used with sheep on hill country.

Q: : *In earlier work Dr. Wallace indicated that during lactation the maintenance requirement is much higher for the grazing than for the stall fed animal. How do the maintenance requirements of the non-lactating cows used in this experiment line up with the previous findings?*

A: : The maintenance requirements were considerably lower for the non-lactating cows in this experiment than for the lactating animals previously studied. In considering this difference two points have to be remembered. The level of intake of the dry cows was considerably lower than for the lactating cows and their grazing time was restricted. The lower maintenance requirements of the dry cows may have been due to a proportionately smaller heat increment and to lower energy expenditure in grazing.

Q: : *Has Dr. Wallace any explanation for the fact that the 70% group had the highest production?*

A: : The production differences between the 100%, 85% and 70% groups were in fact very small and statistically non-significant. Too much importance should not be attached to them. However, there were a number of heifers which calved down with hard udders, particularly in the 100% and 85% groups. Although these animals quickly recovered it is possible that this condition had some influence upon their subsequent milk production.