

EFFECT OF SUPPLEMENT DELIVERY SYSTEM ON THE BEHAVIOUR OF PERIPARTUM EWES

P. J. HOLST and D. G. HALL

NSW Agriculture, Agricultural Research Station, Cowra, N.S.W. 2794.

SUMMARY

The behaviour of crossbred ewes offered a grain supplement, either from a lick feeder or troughs, was studied in their lambing paddock. Information was obtained on diurnal grazing behaviour and on individual ewes approaching the feeder or troughs. Lambing data were also collected.

Fewer ewes in the trough treatment grazed in the early morning compared with ewes in the feeder treatment. A changing 15% of ewes in the latter group were at the feeder throughout the day. Forty-six per cent of ewes on their day of parturition and 1 day post partum remained with their lambs in the feeder paddock or when supplement was fed out in troughs.

The study indicated that the supplement delivery system can modify the grazing pattern of ewes and also affect the number of ewes eating supplement. There was no indication that lamb survival was at risk with either system of supplementation.

Keywords: ewes, behaviour, supplementation, lamb survival.

INTRODUCTION

Supplementary feeding of pregnant and lactating ewes on pasture is often recommended particularly if ewes are multiple bearing (M.L.C. 1981; Hall *et al.* 1992). However, methods of feeding may cause mismothering as a result of ewes leaving the birthsite to feed (Alexander 1985). For this reason we compared the ewe behaviour response to 2 systems of grain feeding: a lick feeder (Holst and Markham 1988) where supplement is continuously available, and troughs where the supplement was fed every second day. Animal intake of lupin grain fed in a lick feeder or from grain trailed over the ground has already been compared (P. J. Holst, Curtis and D. J. Hall, unpublished data).

MATERIALS AND METHODS

Animals and location

Two hundred and fifty multiparous Border Leicester x Merino ewes were located at the Agricultural Research Station, Cowra in N.S.W. The ewes were side branded and stratified on mating liveweight and foetal number to 2 treatment groups in which 80% lambed over 3 weeks commencing in July. Lambing percentage was 137.

Treatments

A 15 ha paddock of clover (*T. subterraneum*) and grass (*Hordeum leporinum*) estimated to provide about 1000 kg green DM/ha was subdivided into 2 similar plots. A lick feeder was placed in 1 of the plots. The feeder consists of a 2.5 m metal hopper from which sheep can lick grain from holes in the bottom wooden tray. The tray can be moved to various settings which controlled the amount of supplement eaten. All ewes were familiar with lupin and oats grain but had no prior exposure to a lick feeder until given a 2-week introduction before allocation to the plots. Ten 2.5 m long metal troughs were placed in the other plot.

The treatments were:

(i) one lick feeder at a low setting of approximately 650 g/head.day for lambing but with additional grain during the observation period to ensure that grain was available at all times;

(ii) metal troughs filled every second day at 650 g/head.day at 1500 hours.

Grain ration was 3 oats:1 lupins. Lucerne hay (*M. sativa*) was provided *ad libitum* to both groups in a rack.

Observation sites

There were 3 observers with binoculars each located in a stationary vehicle. Two of the observers were within 30 m of either the feeder or the troughs.

Coloured nylon ribbon was attached to posts located every 50 m distance on transects from the feeder or troughs so as to help define the location of the animals.

Focal ewes

Twenty ewes (10/group) from each group were designated focal ewes (Altmann 1974) and were

fitted with a numbered breast plate and a numbered calico saddle for easy identification. These animals were selected prior to the experiment to represent the variation in feeding behaviour in the flock by visually appraising their behaviour at a trail of grain.

Data collected

Behavioural data were collected from 0700-1600 hours over 3 days commencing 2 weeks after the start of lambing and on a day that grain was not fed in troughs. Three different sets of behavioural data were collected.

- (i) Continuous recording. All ewes approaching within 5 m of feeder and, when trough feeding, those ewes eating supplement.
- (ii) 0.5 hourly. Record of activity and location of focal animals where activity was classed as supplementary feeding, grazing, standing, lying, nursing or watering. Location was measured on a grid basis for each plot and the distance in metres from the feeder or troughs.
- (iii) 1.0 hourly. Record of activity and location of all ewes in plots.

Lambing data consisted of a daily register of births, pedigree, birth weights and survival to 3 days of age.

RESULTS

Lamb survival

There was a total of 346 lambs born with average birthweight 4.8 kg. There was no significant difference in lamb survival to 3 days of age with 14.7% and 12.4% mortality for the trough and feeder treatments respectively.

Grazing behaviour

The supplement delivery system significantly affected overall grazing pattern (Fig. 1). In particular ewes in the trough treatment (24%) were less active in the mornings compared with ewes in the feeder plot (65%). This was particularly evident on days 1 and 3 of observations but unknown early on day 2 because of missing data as a result of fog.

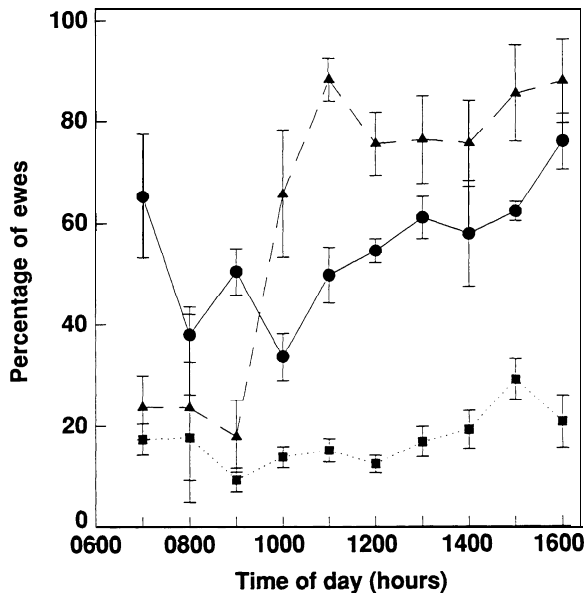


Fig. 1. Diurnal pattern of time at a feeder (■) and grazing by ewes when offered grain supplied via a feed bin (●) or trough (A). values are mean \pm s.e.m. over 3 days.

Feeder and trough visitation

Figure 1 indicates that a steady proportion of ewes was present at the feeder at any time during the day. There appeared to be no set behaviour as to when a ewe would visit the feeder. Over the 3 days of

observation 74% of ewes visited the feeder in the hours of observation. Of these, 30% visited once but 22% and 48% of ewes visited twice or more respectively. This can be compared with the 85% of ewes that ate supplement when fed in troughs in the adjacent plot.

Table 1 examines the effect of stage of pregnancy on the proportion of ewes that visited either the feeder or the troughs (when filled). On the day of parturition and the day after parturition 46% of ewes remained with their lambs while others ate supplement. Overall, 85% of ewes were present at the troughs for feeding whereas only 74% of similar ewes were observed to visit the feeder during the day.

Table 1. Percentage of ewes visiting feeder or eating supplement from troughs as affected by parturition day

Method of supplementation	Time to parturition (days)							Mean
	≤ -3	-2	-1	0	1	2	≥ 3	
Feeder	76	77	62	52	50	62	90	74
Trough	96	80	100	78	43	67	86	85

DISCUSSION

Method of feeding supplement did not affect lamb survival in this experiment. The conditions were such that there was an unrestricted view of each paddock from where the feeder/trough was located and maternal nutrition was adequate as indicated by lamb birth weight (twin 4.3 ± 0.06 kg, mean \pm s.e.m.). Peripartum ewes were reluctant to move from their lambs and presumably their lambing site, indicating a positive survival behaviour.

Ewes with access to open troughs were less active in the following morning than ewes with access to the lick feeder. This inactivity may have a positive effect on lamb survival. Such grazing behaviour may not express itself where the supplement and pasture are lower in quantity and quality.

Holst, Curtis and Hall (unpublished data) compared the lick feeder with trailing of grain supplement and noted considerable variability in intake of grain ($CV = 83$ v. 7%). The data presented here show at least 70% of the ewes visited the feeder more than once which provides a partial explanation for the observed variation in intake. Some ewes appeared not to visit the feeder at all. Table 1 indicates that peripartum ewes are less likely to visit the feeder. It also shows that 11% fewer ewes were observed to eat from the feeder compared with the troughs. Holst, Curtis and Hall (unpublished data) suggest that this group of ewes may be adverse to the feeder itself and may be responsive to training. This is supported by the limited total exposure period, prior to observations, of about 4 weeks here. If so, then greater emphasis should be placed on training if animals are expected to utilise lick feeders.

It is concluded that supplement delivery systems can modify the innate grazing rhythm of lambing ewes and, less so, their post partum care-giving behaviour. The experiment did not indicate that survival was at risk with either system of supplementation.

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