Early feeding experience and subsequent acceptance of feed by sheep

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ABSTRACT

Groups of Merino lambs, with or without their mothers, were exposed to whole grain wheat for periods ranging from 5 to 45 hours at different ages before weaning at 10 weeks. Acceptance of wheat was tested during the following week. Feeding behaviour was monitored during exposure periods and both behaviour and intake were recorded during 30 minute tests periods on each of 5 days in week 11.

Groups of lambs exposed together with their mothers, which regularly ate wheat, all ate; their intakes averaged 810 g/head over the test period. Another group, also exposed with their mothers, but mothers which had been first offered wheat during the week before exposure, all ate wheat; their intakes averaged 290 g/head. Most lambs exposed without their mothers ate very little or no wheat in the post-weaning test period.

The results show that pre-weaning experiences, particularly those related to maternal or other adult influences, are strong determinants of feeding behaviour, at least in the short term. Post-weaning acceptance of wheat was not obviously affected by age when exposed, duration of exposure, or interval from exposure to testing. The practical implications of these results are discussed.

INTRODUCTION

Livestock performance can be unsatisfactory if unfamiliar feeds are offered during periods when the usual feed supply is unavailable or very limited, e.g., during sea transport, severe drought, harsh winter conditions, or prolonged periods of facial eczema danger. In parts of Australia whole grain wheat is often fed to sheep as a supplement during drought when intake from pasture can be very low. It may take several weeks before all sheep in a flock start eating wheat, and even then intake can be very variable.

In spring 1980 a series of experiments was initiated at the CSIRO Division of Animal Production Pastoral Research Laboratory, Armidale, New South Wales, to look at factors affecting acceptability of wheat and other supplements by sheep. Results of the influence of pre-weaning experiences of wheat by Merino lambs on their post-weaning feeding behaviour and intake of wheat are reported in this paper.

METHODS

Experiment 1

Groups of lambs were exposed to wheat by confining them in pens in which the floors were covered with whole grain wheat. Five groups of lambs (A to E) were exposed to wheat without their mothers at initial ages between 3 days and 9 weeks. An exposure consisted of 5 consecutive periods of 1 hour daily over a period of a week. One group (F) was exposed with their mothers. Three further groups of lambs (G, H and I) had, from 3 days after birth, 2, 3 and 9 consecutive weekly exposures respectively. Group J was not exposed to wheat prior to weaning (Table 1).

The ewes had not previously been fed wheat and the mothers of group F lambs only were given access to wheat on 3 days of the week immediately prior to exposure with their lambs.

Experiment 2

The ewes were fed wheat as a supplement at pasture for 6 months before lambing by trailing it onto the pasture twice weekly. The ewes spent approximately 5 hours feeding at the wheat trail per week until lambing. The following groups were then established on the basis of the periods during which the ewes and their lambs had access to the wheat trails after lambing:

A - 3 to 5 days
B - for 2 weeks
C - for 4 weeks
D - for weeks 3 and 4

Exposure Observations

In Experiment 1 the feeding behaviour of individual lambs was monitored during the first 30 minutes of each daily exposure except for group I lambs, which were observed only during weeks 1, 2, 6 and 9. Experiment 2 groups were observed twice weekly for 20 minutes after fresh wheat was trailed.

TABLE 1 Experiment 1—Treatment details and results from exposure and test periods

Group	A	B	C	D	E	F*	G	H	I	J**
Age when exposed (weeks)	1	2	3	6	9	6	1 to 2	1 to 3	1 to 9	11
Exposure time (hours)	5	5	5	5	5	5	10	15	45	0
Lambs tested per group	11	12	12	12	12	11	12	12	12	12
Lambs eating during exposure	2	5	2	2	1	11	5	10	11	—
Lambs eating at testing	5	3	2	11	0	11	4	5	5	4
Lambs eating for > 20 minutes	1	1	0	1	0	9	0	2	2	0
Group feeding time (minutes)	104	32	6	119	0	599	19	65	159	7
Group intakes (g)	788	25	5	1007	0	3224	2	15	453	1

* F Exposed with mothers
** J Control, exposed only during post-weaning testing.

Testing Regime

All lambs from each experiment were weaned during week 10 and kept together on short pasture that had very little green leaf. During this week they were also familiarised with the test surroundings and procedures.

The lambs were yarded 2 to 4 hours before each daily test period and had access to water only. Testing was carried out in pens (3 m x 1 m) which contained 2 feeding troughs and 1 container of water. Four lambs were placed in each pen with each group occupying 3 adjacent pens. Six kg of wheat was placed in the feeding troughs and the feeding behaviour of each lamb was then recorded over the ensuing half hour after which the wheat residues were withdrawn, weighed and discarded.

RESULTS AND DISCUSSION

Experiment 1

During the exposure periods all lambs in group F and most of those in groups H and I ate wheat but only 17 of 72 lambs in the other groups did so (Table 1). The lambs in group F ate more and spent more time eating wheat than did the lambs in any of the groups exposed without their mothers. More feeding activity was observed in these latter groups during week 2 than during any other week before weaning.

Nine of the 11 lambs in group F ate for more than 20 minutes each during testing. Although most of the lambs in the comparable age-at-exposure group, D, ate wheat at testing, only 1 did so for more than 20 minutes. Only 6 of the 95 lambs in the other groups ate for more than 20 minutes each—most (71 of 95) did not eat. Consequently it cannot be determined from these results whether age when exposed and/or duration of exposure would have influenced the subsequent acceptance of wheat.

The results show, however, that acceptance of wheat by lambs was increased markedly if their mothers were present. Not all mothers ate wheat during exposure but those that did appeared to be sufficient to elicit a feeding response from the lambs. In the group feeding situation during exposure there was opportunity for individual lambs to learn by observing and/or imitating the actions of their own mothers, the mothers of other lambs and also the other lambs themselves. The relative importance of each grouping could be expected to change as the lambs developed, but this was not examined.

Experiment 2

The mean feeding times and intakes per lamb for the 45 lambs tested were 92 minutes and 810 g respectively. There were no significant differences between any of the 4 treatment groups in either parameter. This result was not expected, as most of the lambs in group A had access to the wheat trail for less than 4 days after birth. Within this time, however, they certainly learned that wheat was acceptable as a foodstuff and, moreover, they retained the memory of this through the ensuing 10 weeks until they next encountered wheat during testing.

These results show that age when exposed and duration of exposure, within the first 4 weeks after birth, does not affect wheat acceptance after weaning. They also indicate that the young lamb may be very sensitive to factors influencing its later feeding behaviour.

The differences in intake and feeding time between the Experiment 2 groups and group F (Experiment 1)

may be a result of the differences in exposure conditions (*ad. lib.* access to wheat trail *v* exposure in pens) coupled with a major difference in the acceptance of wheat by the ewes. Wheat was a normal, major component of the diet of Experiment 2 ewes but an unfamiliar food for mothers of group F lambs.

If the feeding behaviour demonstrated for wheat in these experiments and also demonstrated for molasses-urea blocks by Lobato, Pearce and Beilharz (1980), can also be shown for other common supplements such as hay and ensilage, then a simple change in feeding practices before weaning may mean that supplements that are fed infrequently are accepted more quickly and eaten in greater quantity. The main requirements are to provide the supplement(s) (1) when the animals are young; (2) in the presence of their mothers who should already be familiar with the supplement; and (3) under conditions in which it will be readily consumed.

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