

LONG TERM EFFECTS OF EARLY EXPERIENCE TO SUPPLEMENTARY FEEDING IN SHEEP

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SUMMARY

Merino lambs were given access (exposed) to wheat for one hour per day for periods varying from 5 to 20 days in the presence or absence of their mothers. All lambs were weaned at 10 weeks and tested for acceptance of wheat at 12 weeks of age. Sub-groups of these lambs were further tested at 6, 12, 24 and 34 months of age without having access to wheat between the initial test (12 weeks) and these final tests.

Lambs which were initially given access to wheat with their mothers ate a considerable amount at the later tests (mean 360 g/day). In contrast, those given access to wheat without their mothers and controls ate only a small quantity (mean 50 g/day). This large difference in acceptance of wheat could be attributed to maternal influence at initial exposure.

INTRODUCTION

Experiments by Lobato et al. (1980) and Lynch et al. (1983) have shown that maternal influence at initial exposure to a supplement is an important factor in ensuring its acceptance later in life. This could be important in times of drought or in feed-lot situations with the problems associated with shy feeders being overcome.

Initial treatment groups, access (exposure) schedule, test procedure and the results of the 12 week test have been reported by Lynch et al. (1983). These results showed no significant differences in wheat intake for (i) age at exposure, (ii) length of exposure or (iii) interval between exposure and testing. Large differences were reported, however, due to the presence or absence of mothers during exposure.

MATERIALS AND METHODS

This experiment was carried out at Armidale N.S.W. with lambs born in September 1980. Following consideration of the results from Lynch et al. (1983) the lambs were combined into three treatment groups; those initially exposed to wheat with their mothers, those initially exposed to wheat without their mothers and controls which had not previously seen wheat. Sub groups (~12 lambs) from these three treatments were subsequently tested for acceptance of wheat at 6, 12, 24 and 34 months of age. Between tests all sheep grazed in common without access to wheat.

Tests consisted of access to a known weight of wheat for 30 minutes per day for five consecutive days. Drinking water was available at all times and prior to testing all sheep were held in yards for two hours. For the tests at 6 and 12 months each testing pen (3 x 1.5 m) held four sheep. Following the 6 month test when one pen of control sheep appeared to learn to eat by watching those in an adjacent pen, visual barriers were provided between the pens for the tests at 12 months. For the tests at 24 and 34 months, individual pens (1.2 x 1.5 m) were used. Visual barriers were placed between different test groups but not between individual animals within each group. For all tests, individual feeding behaviour was recorded each minute and wheat residues were weighed.

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RESULTS

Average intake of wheat for the three treatments over all tests is shown in Table 1. One way analyses of variance were performed on the data from each test and intakes within rows with the same superscripts were not significantly different.

TABLE 1 Intake of wheat (g/head/day) at testing

Age at test	Control	Exposed without mothers	Exposed with mothers	Significance
12 weeks	0 ^a	2 ^a	162 ^b	P < 0.001
6 months	75 ^a	20 ^a	287 ^b	P < 0.05
12 months	7 ^a	25 ^a	280 ^b	P < 0.005
24 months	3 ^a	254 ^b	554 ^c	P < 0.001
34 months	19 ^a	38 ^a	357 ^b	P < 0.001

Sheep initially exposed to wheat with their mothers always ate significantly more than both the controls and those exposed without their mothers. On only one occasion (24 months) did the latter group eat significantly more wheat than the controls. Since there was no effect of age at testing on the number of animals eating on either the first day of each test or over the whole test, the data for the number of sheep in each exposure treatment and the number eating were pooled over all tests (Table 2).

TABLE 2 Pooled data from all tests showing numbers of sheep the percentage eating on day one and by day five

	Control	Exposed without mothers	Exposed with mothers
No. of Sheep	55	115	83
% eating on day one	5	20	92
% eating by day five	60	77	100

TABLE 3 Combined data from all tests showing mean intakes (g/head) for each day of testing and the maximum individual intake (g/head) on day one of any test

	Control	Exposed without mothers	Exposed with mothers
Day 1	0	0.5	126
Day 2	2	4	242
Day 3	4	26	330
Day 4	37	61	265
Day 5	64	66	305
Maximum individual day one intake	3	15	842

From Table 3 it is seen that sheep from the exposed with mothers group ate a considerable amount of wheat on day one of the tests. For the 34 month test, even though the sheep had not seen wheat for 30 months, the maximum individual intake on day one was 797 g and the mean 322 g/head, while for those exposed without their mothers, the maximum individual intake on day one was 2 g and the

mean 0.3 g/head. The control group at this test did not eat any wheat on day one.

DISCUSSION

The sheep exposed with their mothers, immediately "recognised" wheat as an acceptable food and most ate large quantities on the first day of each test (Tables 2 & 3). By the third day of testing all sheep in these groups were eating. In contrast the control group and those exposed without mothers showed a very distinctive learning pattern (Table 3) with at first only a few sheep nibbling the wheat and progressing on successive days to a more definite intake. Other sheep within these groups showed the same pattern but commenced later in the test period. Even after the five days of testing, significant numbers from each group (40% from controls and 23% from exposed without mothers) had not begun to eat (Table 2).

At the time of the 24 month test severe drought conditions prevailed, with very low pasture availability and all sheep were losing weight when testing began. These conditions appear to have hastened the learning process in the exposed without mothers group (Table 1) although the controls were unaffected. The intake data from the 34 month test show that the group exposed with mothers which had last experienced wheat as 12 week old lambs immediately recognised it and ate considerable quantities; in fact the average intake of 322 g/head on day one of this test constitutes approximately 75% of the daily maintenance energy requirements for these sheep (Clark 1980).

In practical terms this experiment shows that if lambs are given exposure to wheat before weaning in the presence of their mothers, they will readily accept wheat as a food source in later life. This ready acceptance should eliminate the problems of shy feeders when sheep are being fed in drought situations and should also reduce the incidence of grain poisoning when feeding is commenced as most sheep will immediately begin eating (and become adjusted to wheat) during the first few days of feeding when only an introductory ration is being fed. While this experiment was confined to wheat as a supplement, similar results have been observed for molasses-urea blocks (Lobato et al. 1980) and for salt (Lynch and Rocks, unpublished data). Similar results could therefore be expected if any of the other regularly used supplements were offered.

It would seem prudent for sheep breeders to first ensure that all their breeding ewes will readily eat a supplementary feed. A regular practice could then be made of offering the ewes and lambs some supplement (for one or two weeks) after lambing had finished and before weaning. This ongoing practice would thereby ensure that the industry would be provided, at small outlay in both time and money, with animals which could easily and safely be brought on to supplements.

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