

QUANTITY AND TIMING OF LUPIN GRAIN SUPPLEMENTS FED TO MERINO EWES IN LATE PREGNANCY CAN INFLUENCE LAMB SURVIVAL

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The activity of the lamb is important in developing maternal behaviour in its mother during the first hour after birth (Murphy and Lindsay 1996). Large, sluggish lambs are just as predisposed to poor bonding as light, weak lambs and both of these have a much lower chance of survival than more active lambs of intermediate weight. Management and, particularly, the nutrition of ewes prior to, or during lambing, may influence the vigour of lambs at birth but long-term supplements are seldom used because they are too expensive. If short term supplementation increases lamb vigour then it may provide a worthwhile option for increasing survival. This experiment investigated this concept.

Ninety-five pregnant Merino ewes on short, green pasture were allocated to 1 of 4 treatments 4 weeks before the expected mean date of lambing. Lupin grain consisting of 13.1 MJ/kg DM of metabolizable energy and 32% crude protein was offered to groups as follows: (1) for 14 days at 500 g/ewe.day from day 134 of gestation to parturition (2) for 14 days at 500 g/ewe.day from day 120 to day 134 of gestation, then at 1000 g/ewe.day from day 134 to parturition (3) for 28 days at 500 g/ewe.day from day 120 of gestation to parturition or (4) 14 days at 1000 g/ewe.day from day 134 of gestation to parturition. The standing and sucking activity and vocalization of the lambs were recorded every 10 seconds during the first half-hour after birth, along with the responses of the ewes. Lambs were weighed 6 hours after birth and ewes were all supplemented at 500 g/ewe.day for the next 2 weeks. Data on lamb survival were recorded at 3 days, 8 weeks and 12 weeks of age and were analysed by chi square. The data for behaviour were analysed by ANOVA using litter size as covariate.

Table 1. Mean birth weight (kg $\pm$ SEM), time spent standing and sucking (minutes $\pm$ SEM) and number of bleats in the first half-hour and the survival rates of Merino lambs from birth to 12 weeks of age

Ewe treatment	Lambs born (Twins)	Birth weight	Time lamb standing	Time lamb sucking	Number of bleats	Survival to 12 weeks (%)
Group 1	33 (12)	3.6 $\pm$ 0.1 ^{aA}	12.7 $\pm$ 2.4	1.5 $\pm$ 0.5 ^a	98 $\pm$ 34	25 (80) ^a
Group 2	29 (6)	4.2 $\pm$ 0.1 ^b	13.5 $\pm$ 3.8	1.6 $\pm$ 0.9 ^a	122 $\pm$ 55	24 (83) ^a
Group 3	32 (20)	3.5 $\pm$ 0.2 ^a	16.4 $\pm$ 2.9	1.9 $\pm$ 0.7 ^a	32 $\pm$ 42	32 (100) ^b
Group 4	23 (6)	3.8 $\pm$ 0.2 ^{ab}	20.9 $\pm$ 3.9	5.9 $\pm$ 0.9 ^b	123 $\pm$ 56	21 (91) ^{ab}

^A Values in the same column with different superscripts are different ($P < 0.05$).

About 14% more lambs survived to 12 weeks in groups 3 and 4 than in groups 1 and 2 ($P < 0.05$, Table. 1). It was remarkable that all 32 lambs born in group 3 survived because there were more twin lambs in this group than in the other groups and the corresponding birth weights of these lambs were about 17% lighter than those of the lambs in group 2. Lambs in group 4 spent more time sucking ($P < 0.001$) and tended to stand for longer and bleat more often in the first half hour after birth than lambs from the other groups. Their dams had been fed lupin grain at the highest daily rate over the shortest period. However, this higher vigour did not result in the lambs surviving significantly better than those in any of the other groups.

By contrast, lambs belonging to group 3 survived the best but were no more vigorous or vocal than those in groups 1 and 2. The ewes in this group were fed lupins at the lowest rate but for the longest period over the final month of gestation. Vigour varied significantly among the feeding regimes in this experiment but it was not clearly related to the survival of the lambs. The results do not support the hypothesis that short term feeding of ewes in late pregnancy can increase survival to weaning through its effect on the vigour of the lambs. Lamb survival was highest when ewes were supplemented with lupin grain during the final month of gestation, despite no improvement in the vigour of these lambs at birth.

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