

THE EFFECT OF NUTRITION DURING MID AND LATE PREGNANCY ON LAMB
BIRTHWEIGHT AND SURVIVAL IN F+ BOOROOOLA X S.A. MERINO EWES

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Reproductive potential of the S.A. Merino can be increased markedly by utilization of the Booroola fecundity gene (F). However lamb survival is poor. Nutritional manipulation during mid and late pregnancy may improve lamb survival through an increase in birthweight and further improve reproductive efficiency.

In January 1987, a flock of 289 1.5-year-old S.A. Merino ewes heterozygous for the F gene (F+) were joined to 24 S.A. Merino rams and, in addition, were laparoscopically inseminated with fresh semen from the above strain of ram at the second synchronized oestrus following progestagen sponge (Repromap, 60 mg) withdrawal. After stratification on the basis of foetal number (determined by ultrasonography), ovulation rate and liveweight ewes were randomly allocated to two mid-pregnancy nutritional treatments (H,L). Each of these groups was subdivided into two late-pregnancy treatments (H,L), on the foregoing basis, forming a 2 x 2 factorial (H/H, H/L, L/H, L/L). From day 50 of pregnancy all sheep were grazed on mature, pastures; the H/H and H/L groups received an oat, pea and hay supplement (800/200/350 g, respectively/head/day). From day 100 the four treatment groups were transferred to 0.6 ha paddocks and were fed at the rate given above. At 1-2 weeks prior to lambing lupin grain (700 g) replaced oats in the H/H and L/H groups. Lambs were tagged, weighed and identified with their mothers at twice-daily inspections. The number of lambs marked was recorded.

Table 1 Effect of nutrition during mid and late pregnancy on lamb birthweight and survival from birth to marking (least squares means)

Nutrition group	Birthweight (kg)			Survival (%)		
	Single	Twin	Triplet	Single	Twin	Triplet
H/H	4.60 ^{ab} (8) [¶]	3.33 ^a (54)	2.61 ^a (23)	55.8 ^a (8)	58.6 ^a (54)	43.8 ^a (24)
H/L	5.23 ^a (11)	3.38 ^a (42)	2.60 ^a (23)	87.3 ^a (11)	25.2 ^a (44)	27.0 ^a (24)
L/H	4.61 ^{ab} (14)	3.26 ^a (51)	2.59 ^a (23)	56.5 ^a (15)	31.4 ^b (52)	17.4 ^a (24)
L/L	4.36 ^b (16)	2.84 ^b (45)	2.61 ^a (18)	79.2 ^a (16)	22.9 ^b (46)	9.2 ^a (21)
SE range	0.23-0.45	0.10-0.12	0.11-0.18	13.8-26.4	8.6-10.2	9.7-13.4

[§] Within columns, means with a common letter do not differ significantly ($P > 0.05$)

[¶] Number of lambs born; weight of 11 lambs was not recorded due to predation

Reasons for a significant interaction ($P < 0.05$) between mid and late pregnancy treatments for single-lamb birthweight were not apparent. Improved nutrition mid-term increased twin lamb birthweight ($P < 0.01$). A significant ($P < 0.01$) interaction for twin lambs indicated that short-term feeding of lupin grain near parturition increased birthweight in the low but not the high nutrition mid-pregnancy groups. Birthweight of triplets did not vary with the treatments imposed. Survival of twins was improved by increased nutrition during late-pregnancy ($P < 0.05$). The lack of significant treatment differences for survival within the single and triplet categories may be due to sample sizes.

We conclude that manipulation of nutrition during mid- and late-pregnancy in 1.5-year-old F+ Booroola x S.A. Merino ewes can improve birthweight in twins. In late-pregnancy short-term feeding of lupin grain can increase twin-lamb survival.

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