Two lines of Merino sheep were divergently selected from the same base population since 1986 on maternal ranking values for multiple rearing ability. In the high (H) line, ewe and ram progeny were preferably descended from ewes that reared >1 lamb per joining. In the low (L) line, replacements were the progeny of ewes that reared <1 lamb per joining. Data on lamb mortality, lambing and neonatal behaviour as well as lamb production were obtained from these lines over 5 years (1993–97).

Lamb survival was improved ($P < 0.01$) in the H line, mainly as a result of the improved survival of multiples. It was evident that the survival of lambs was not compromised by selection for ewe multiple rearing ability, despite the fact that higher mortality levels are expected with an increase in multiple birth rate. No line difference was found for the time lapse from birth to first standing for >10 s, but H line lambs were quicker ($P < 0.01$) to progress from standing to suckling than L line contemporaries (28 v. 38 min respectively). This line difference remained after adjustment for better co-operation of H line ewes with the first suckling attempts of their progeny. Ewes in the H line tended ($P = 0.18$) to remain longer on or near their birth sites than L line contemporaries (403 v. 362 min respectively). They also tended to be less ($P = 0.07$) likely to desert their lambs than L line ewes (12/424 = 0.028 v. 14/230 = 0.061 respectively). After least-squares adjustment for their heavier ($P < 0.01$) litter weight, H line ewes experienced shorter ($P < 0.05$) births than their L line contemporaries (46 v. 57 min respectively). Fewer ($P < 0.05$) H line lambs died during or shortly after parturition (respective proportions of 22/890 = 0.025 and 25/441 = 0.057), while maiden H line ewes were less ($P < 0.05$) likely to be assisted at lambing than L line contemporaries (4/107 = 0.037 v. 8/61 = 0.131 respectively). With regard to overall lamb production, it was found that the number of lambs weaned per ewe present at lambing in the H line was improved ($P < 0.05$) in all years relative to that observed in the L line, the differences ranging from 25 % in 1993 to 47 % in 1997. Lamb weaning weight was correspondingly improved ($P < 0.05$) in H line lambs, the differences ranging from 8 % in 1994 to 22% in 1996. Fairly high levels of production could thus be attained with predominantly pasture-fed ewes selected for multiple rearing ability.

Keywords: length of parturition, birth problems, neonatal lamb progress, desertion

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