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Growth rate, muscling and reproduction in Merino ewe lambs

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SUMMARY

To meet projected demand for lamb meat, weaning rates in the Merino flock must be improved. Lambing of replacement ewes at 12–14 months of age rather than at 24 months of age will increase the number of lambs produced and is likely to increase the profitability of lamb production systems if the reproductive rate is sufficiently high (Young *et al.* 2010). Merino ewe lambs can be successfully joined if they have adequate liveweight at joining, but little is known about how genetic factors that control weight gain influence reproductive success. As growth, muscling genotype and fecundity are positively correlated in adult Merino ewes (Ferguson *et al.* 2007), we tested the hypothesis that Merino ewes with higher genetic potential for growth and muscling would be more able to reproduce at younger ages.

For 136 Merino ewe lambs that were born between August and September 2009, we recorded liveweight (LW) weekly and used ultrasonography to measure back fat and eye muscle depth at average ages of 164 and 251 days. The data were used to generate Australian Sheep Breeding Values (ASBVs) at post-weaning age for weight (PWT), depth of eye muscle (PEMD) and fat (PFAT). Teasers were introduced when the ewe lambs were on average 179 days old and 37 ± 0.4 kg LW. Ewes were allocated to 8 groups and teasers were replaced with rams when the ewe lambs were on average 249 days old and 41 ± 0.5 kg LW. Age at first oestrus was recorded when ewes were marked by either a teaser or a ram and pregnancy was determined by ultrasound 40 days after ram removal. Data were analysed using a linear mixed model for age at first oestrus and a generalised linear mixed model with a binomial distribution and a logit-link function for the proportion pregnant. In total, 127 (93%) of the ewe lambs displayed oestrus during the experiment and 97 (71%) of ewes conceived. Ewe lambs with a higher PWT displayed first oestrus at a younger age ($P < 0.05$; Fig. 1a) and were more likely to conceive ($P < 0.01$; Fig. 1b) than ewe lambs with a lower PWT. There was no significant effect of PEMD or PFAT on age at first oestrus or on fertility.



Figure 1. Relationships between ASBV for post-weaning weight (PWT) and (a) age at first oestrus and (b) percentage of ewes pregnant.

We conclude that selection of animals for improved growth (high PWT) will improve the success of mating in ewe lambs, adding to the other known benefits of selection for growth in terms of improving the profitability of lamb production systems.

REFERENCES

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