

Grazing lucerne pasture at joining may not alter the sex ratio of lambs

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The sex ratio of lambs may be important to the profitability of sheep breeding enterprises through effects on growth rate, selection potential for genetic gain, and value differences between sexes. Nutritional factors around mating have been associated with changes in sex ratio (Rosenfeld 2011). Feeding grain has increased the proportion of female lambs born in some studies (Gulliver *et al.* 2013) but not others (Clayton 2014). A previous study (Robertson *et al.* 2015) study found that the proportion of female lambs was reduced to 24% in ewes penned fresh lucerne (*Medicago sativa*) pasture from 7 days before to 17 days after artificial insemination. Ewes fed lucerne only after insemination, or those fed a faba bean or oat-hull based pellet, produced 45-53% female lambs. In contrast, the same authors reported that grazing lucerne compared with senescent grass did not reduce the proportion of female lambs in naturally mated ewes. Given the recommendation for grazing lucerne to increase reproductive rate, further evaluation is warranted. This study aimed to determine the effect of grazing lucerne compared with wheat stubble at joining on lamb marking percentage and proportion female lambs.

A flock of 800 Merino ewes was stratified on age, condition scored, and randomly allocated to two replicates of two treatments. Ewes grazed either lucerne pasture or wheat stubble (*Triticum aestivum*) from 7 days before joining, until day 18 of joining. From day 18 to 46 of joining, ewes mated were detected using ram harnesses, and these ewes removed from the experiment. At lambing each group was placed in a separate 5.3 ha paddock, with ewes randomly removed to create the same number of ewes per paddock (n=128). For the first 11 days of lambing, lambs were tagged at birth and sex recorded. Due to labour limitations, thereafter lambs were not tagged, but the sex of dead lambs was recorded daily for each paddock before dead lambs were removed. At the end of the lambing period, sheep in each paddock were yarded, and any untagged lambs tagged, and their sex recorded. Lamb survival was calculated as survival to marking age only for those tagged at birth. Lamb marking percentage for each paddock was calculated as lambs present at marking as a percentage of ewes at the start of lambing and was analysed by ANOVA. Binary data was analysed using generalised linear mixed modelling.

Grazing lucerne at joining did not reduce the proportion of female lambs born or marked (Table 1). The proportion of ewes mated from day 18 and lamb survival also were not altered, although a larger sample size may have detected differences. Grazing lucerne increased the proportion of ewes bearing multiple foetuses, which resulted in a 10% increase in the percentage of lambs marked.

This study provides further evidence that grazing lucerne by naturally cycling ewes from day -7 to 18 of joining does not change the sex-ratio of lambs born but may increase marking percentages. Further studies are needed to understand whether and how nutritional management alters the sex ratio of lambs.

Variable	Stubble	Lucerne	P-value
Proportion of ewes raddled days 18-46	0.21 (85/400)	0.27 (107/400)	0.069
Number of single, twin, triplets	65, 99, 3	47, 118, 12	-
Proportion lambs born as multiples ^a	0.61 ^x	0.73 ^y	0.015
Proportion female lambs at birth ^a	0.45	0.46	0.901
Proportion female lambs at marking ^b	0.52	0.51	0.934
Proportion lamb survival ^a	0.71	0.62	0.103
Lambs marked per ewe at lambing (%)	86 ± 3 ^x	96 ± 4 ^y	0.049

^a Of lambs tagged at birth

^b Of all lambs present at marking (tagged at birth or not)

^{x,y} Values within a row with different superscripts differ ($P < 0.05$)

Table 1. Mean reproductive performance of ewes grazing lucerne or wheat stubble at joining.

References

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