Supplementary grain feeding of pregnant and lactating Merino ewes

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Treatment of wheat grain with virginiamycin (VM) for feeding pregnant and lactating ewes at pasture was investigated, using 200 mature Merino ewes aged between 3 and 5 years and with an average body weight of 51.7 ± 0.7 kg. The ewes were randomly allocated to one of the following four treatments: wheat plus urea (WG+U); VM–treated wheat plus urea (VM–WG+U), VM–treated wheat plus cottonseed meal (VM–WG+CSM) and lupin seed. Grains were fed at a rate of 200 g per ewe daily, urea was added at a rate of 15 g/kg wheat and VM treatment was 40 mg VM/kg wheat. Each treatment was replicated (n = 25 per paddock) and the wheat diets were iso–nitrogenous. All diets were fed weekly at 9:00 am for 10 weeks. Measurements were made of ewe live weight (LW), birth weight (BW) and live weight gain (LWG) of lambs. Faecal pH and lactate concentrations were measured at 24 h post–feeding during weeks 2, 4, 6 and 8. Total lactic acid bacteria (LAB) in the faeces and in the rumen of ewes fed WG+U and VM–WG+U were enumerated.

After 10 weeks of supplementary feeding, ewes fed WG+U had lower LW ($P<0.001$) than the other treatment groups; there were no significant differences ($P>0.05$) between the lupin and the VM–WG+U and CSM groups (Table 1). Two ewes from the WG+U and one from the lupin groups died due to grain poisoning during the second and third weeks of feeding. Another ewe from the lupin group suffered diarrhoea and showed symptoms of grain poisoning but recovered after three days. No symptoms of grain poisoning were recorded in ewes fed the VM–WG+U. Birth weights of lambs were similar ($P>0.05$) across treatments, but lambs in the VM–WG+U and lupin groups were heavier ($P<0.01$) at week 10.

During week 2, faecal pH was lower and lactate levels were higher ($P<0.001$) for ewes fed WG+U, compared to the other treatment groups, and these differences persisted throughout the experiment. There were no differences between the other groups in faecal pH or lactate concentration. Numbers of LAB in both rumen and faeces tended to be higher for sheep fed the WG+U diet than those on the same diet with VM.

It is clear that ewes and their lambs supplemented with wheat and virginiamycin performed as well as those fed lupin. It appears that once problems of acidosis are overcome using virginiamycin, wheat is a suitable feed for supplying energy and protein to ewes in late pregnancy and lactation.

Table 1 Least square means (± SE) for liveweights (LW) of ewes, of lambs at birth and final weight, LWG of lambs and faecal pH and lactate concentrations during 10 weeks of supplementary feeding.

Experimental diets:	WG + urea	VM–WG + urea	VM–WG + CSM	Lupin	P
Ewes initial LW (kg)	52.0 ± 0.71	51.9 ± 0.73	50.9 ± 0.73	52.1 ± 0.73	NS
Ewes final LW (kg)	42.7[a] ± 0.58	44.5[b] ± 0.60	45.3[b] ± 0.61	46.0[b] ± 0.60	***
Birth weight (kg)	4.23 ± 0.1	4.27 ± 0.95	4.08 ± 0.97	4.43 ± 0.10	NS
Lambs final LW (kg)	12.6[a] ± 0.3	14.0[b] ± 0.3	14.2[b] ± 0.3	13.7[b] ± 0.3	**
LWG of lambs (g/d)	235 ± 7	256 ± 7	259 ± 7	265 ± 7	NS
Faecal pH (week 2)	5.18[a] ± 0.22	6.21[b] ± 0.21	6.30[b] ± 0.22	6.78[b] ± 0.22	***
Faecal lactate (week 2)	76.5[a] ± 6.2	12.4[b] ± 6.5	19.4[b] ± 7.0	3.3[b] ± 6.5	***

NS not significant; ** P<0.01; *** P<0.001