

## LUPIN SUPPLEMENTATION OF MERINO EWES GRAZING NATIVE PASTURE IN NEW ENGLAND: EFFECTS ON BIRTH WEIGHT AND MATERNAL BEHAVIOUR

S. CAJAS and G. N. HINCH

Department of Animal Science, University of New England, Armidale, NSW 2351

Protein and energy supplements have been reported to improve lamb survival in many studies but it is still unclear whether the effects are mediated via ewe or lamb. This study was designed to evaluate the effect on lamb characteristics and ewe behaviour of lupin supplementation of Merino ewes grazing abundant, poor quality New England pastures.

One hundred and twenty six pregnant Merino ewes were divided into three treatments (balanced for litter size and weight): an unsupplemented group grazing native pastures throughout pregnancy (Control), a group supplemented with 100 g of lupin grain/head/day in the last third of pregnancy (100) and a third group supplemented with 300 g/day of lupins (300). All groups were rotated through a series of 2 ha paddocks containing low quality native pasture (48% digestibility and 6.6% crude protein) with an average initial dry matter availability of around 1500 kg/ha.

All ewes were weighed prior to the start of supplementation and one week prior to lambing. The sex, litter size (single or twin), skin thickness, packed cell volume (PCV) and rectal temperature of the lambs were recorded at tagging (two to four hours post-partum). A maternal behaviour score (O'Connor *et al.* 1985) in which 1= poor and 5= very good, was also recorded at this time. Data were analysed using least squares analysis of variance, fixed effects including feeding treatment, litter size and sex. Effects of the lamb characteristics on survival to weaning were determined using generalised linear model procedures.

The supplemented ewes (100 and 300) were 4.3 and 3.6 kg respectively heavier at lambing than the control group ( $P<0.01$ ). Feeding treatment and litter size had significant ( $P<0.01$ ) effects on lamb birth weight, lambs from the 100 and 300 group being heavier than lambs from the control group (3.69 and 3.48 vs 3.03 kg). These differences were also reflected in significant ( $P<0.05$ ) survival to weaning differences (87.5 and 83.6 vs 67.9%).

There were no significant differences between the control, 100 and 300 feeding groups in lamb skin thickness (3.14, 3.22, 3.23 mm), PCV (44.2, 44.9, 44.7%) or rectal temperature (39.3, 39.3, 39.2 °C). However there were significant differences ( $P<0.001$ ) in the maternal behaviour score between the control and supplemented animals (2.97 vs 3.37, 3.38). Single-born lambs were heavier than twins (4.05 vs 3.16 kg,  $P<0.01$ ) and survival to weaning was also greater for the single lambs (86 vs 75%,  $P<0.05$ ). Of the total of 37 deaths, 45.9% were caused by starvation. Birthweight was the dominating characteristic influencing survival but all other lamb measurements had a significant ( $P<0.05$ ) effect on survival when birth weight was excluded from the model.

Lupin supplementation of late gestation Merino ewes, grazing winter native pastures in New England had a marked effect on lamb survival. Levels of supplementation above 100g/head/day were not required to improve both lamb characteristics (particularly birthweight) and maternal behaviour, confirming the positive effects of lupin supplementation on maternal behaviour of Merino ewes reported by Putu *et al.* (1988).

O'CONNOR, C.E., JAY, N.P., NICOL, A.M. and BEATSON, P.R. (1985). *Proc. NZ Soc. Anim. Prod.* **45**, 159-162.

PUTU, I.G., POINDRON, P. and LINDSAY, D.R. (1988). *Proc. Aust. Soc. Anim. Prod.* **17**, 294-297.