

THE EFFECTS OF LOW NITROGEN AND PHOSPHORUS DIETS  
ON PREGNANT AND LACTATING EWES

S.P.S.BUDHI\* and J.H.TERNOUTH\*

Reductions in food intake have been reported in growing lambs receiving diets deficient in nitrogen (N) and phosphorus (P) (McLachlan and Ternouth 1985). This experiment was designed to investigate the effects of dietary N and P deficiency in pregnant and lactating ewes.

Twenty-four pregnant ewes (38 kg) were randomly allocated to a 2 x 2 experiment; the four dietary regimens containing high (H) and low (L) concentrations of N and P. The basal diet (LNL P) was barley straw (4.07 g N and 0.55 g P/kg DM) fed *ad libitum* with fixed quantities of molasses (210 g), 50 g wheat gluten and minerals. After lambing the quantity of supplements was increased by 25%. The high N and P treatments were created by the addition of urea and  $\text{NaH}_2\text{PO}_4$  so the H and L diets contained 99.3 and 64.3 g rumen degradable protein and 3.02 and 0.66 g P/kg DM respectively. Food intake was monitored daily and ewe and lamb live weight weekly. Milk intake of the lambs was measured at 21 and 28 days-of-age by tritium dilution (Dove and Freer 1979).

Table 1 The effects of feeding ewes N and P deficient diets

Diets	HNHP	HNLP	LNHP	LNL P	s.e.
Intake of barley straw (g DM/d)					
10 weeks before lambing	875.6	815.0	715.9	695.3	36.7
10 weeks after lambing	1223.5	1034.8	949.9	808.4	86.8
Ewe milk production (l/d)	2.04	1.74	1.66	1.50	0.11
Live weight (kg)					
Ewes shortly before lambing	42.4	40.7	34.9	35.5	1.9
Ewes 10 weeks after lambing	33.2	30.1	30.3	26.8	2.3
Lambs at birth	3.9	3.8	3.7	3.9	0.1
Lambs at week 10	17.8	16.3	16.2	15.8	1.8

The intakes of the barley straw were significantly reduced in the ewes fed the N deficient diet before and after parturition ( $P < 0.01$ ) but the low P diets depressed intake after lambing only ( $P < 0.05$ ). There were no interactions between the N and P deficiencies on intake. The differences in straw intake are reflected in the liveweight changes in the ewes and the amounts of milk drunk by the lambs. There were no differences in lamb weight at birth.

The results are consistent with the earlier results of McLachlan and Ternouth (1985) that dietary deficiencies of N and P will depress food intake. The N deficiency appears to have an immediate effect upon food intake but the effect of the P deficiency was delayed due to the reserves of skeletal P and the lower P requirements of the pregnancy compared to lactation (Bass et al. 1981; Bortolussi et al. 1988). The food intake of milking goats fed P deficient diets was decreased by over 30% (Muschen et al. 1988).

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\* Department of Agriculture, University of Queensland, Qld. 4067.