

## EFFECTS OF DIETARY NITROGEN CONTENT AND SOURCE ON FAECAL NITROGEN EXCRETION

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The factorial approach to estimating ruminant protein requirements (ARC 1965) requires information on the loss of endogenous nitrogen (N). The faecal loss is important as it is greater than losses in urine or detritus. Nitrogen intake affects the rate of metabolic faecal N (MFN) excretion (Hutchinson 1958; Stallcup, *et al* 1975). This experiment further examined the effects of N source and intake on faecal N excretion.

Four Merino wethers were fed isocaloric diets supplying a high (H) or low (L) N intake provided mainly from either protein (P) or urea (U) in a latin square design. The diets of 420 g concentrate pellets and 150 g chaffed straw supplied 6.8 (LU), 7.4 (LP), 21.0 (HU) or 18.1 (HP) g N/d. Faeces were collected for 7 d, following adaptation periods of 14 d. Faecal N fractions determined were total N, diaminopimelic acid (DAPA), feed residue N (Mason 1969) and water-soluble N (WSN). Non-dietary N (NDFN) and bacterial and endogenous debris N (BEDN) were calculated as total N less residue N and NDFN less WSN, respectively.

TABLE 1. Excretion of faecal N fractions (g/d)

Treatment	Total N	Residue N	NDFN	BEDN	WSN	DAPA
Low N	3.69 a	0.53 a	3.15 a	2.11 a	1.04 a	0.18 a
High N	4.59 b	0.59 a	4.01 b	2.88 b	1.13 a	0.14 a
Urea	3.50 A	0.51 A	3.00 A	2.00 A	0.99 A	0.17 A
Protein	4.78 B	0.61 A	4.16 B	2.99 B	1.17 B	0.16 A

a, b or A, B means in the same column with the same notation are not different (P<0.05)

High N or protein diets increased total N, NDFN and BEDN excretion. As there were no effects on residue N or DAPA excretion these diets caused an increase in the excretion of the non-bacterial components of faecal N.

The results suggest that high N, and especially high protein, diets may increase the sheeps maintenance protein requirement through increasing the excretion of body tissue N.

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