

SUPPLEMENTATION OF A LOW QUALITY ROUGHAGE WITH LUPIN OR CEREAL GRAINS

J.R. LINDSAY*, D.B. PURSER** and J.P. HOGAN*

The ovulation rate of ewes receiving a low quality diet is increased by up to 30% when a lupin grain supplement of more than 250 g/hd/d is given; in contrast, supplements of cereal grains have no such effect and it is suggested that this response may be due to the protein content of the supplement (Marshall 1978).

Experiments were carried out to determine the nutrient supply to sheep fed a basal ration of wheaten chaff (6.2% CP) near *ad lib.* with and without a supplement (500 g/day) of either lupin grain or oats/barley (1/1). Adult Merino wethers (c. 45 kg) were housed indoors in metabolism crates and digestion of nutrients determined by reference to the inert markers ^{51}Cr -EDTA and ^{105}Ru -Phenanthroline (Hogan 1973).

TABLE 1 Intake and digestion of wheaten chaff (B) with and without a supplement of cereal (C) or lupin (L) grains

	Total	OM Intake Chaff	DOMI	Intake	Crude Protein ex Abom [†]	DCP _i
B	921	921	510	65	101	72
B + C	975	563	651	84	132	103
B + L	1091	649	787	184	156	123
SE	21	18	13	3	2	2

† Leaving abomasum

Total organic matter (OM) intake was not significantly different between basal (B) and basal + cereals (B + C) but was 18% higher ($P < 0.01$) with the lupin supplement (B + L). The intake of chaff declined with both supplements ($P < 0.01$) but the depressing effect of cereals was greater than that of lupins ($P < 0.05$). Digestible organic matter intake (DOMI) was 26% greater ($P < 0.01$) with B + C and 56% greater ($P < 0.01$) with B + L compared with B, the difference between supplements being significant ($P < 0.01$).

Supplements of C and L increased the crude protein (CP) intake by 29% and 183% over the basal diet, but as a result of rumen microbial activity, gains of CP in the stomach occurred with B and B + C while losses occurred with B + L. Thus, crude protein digested in the intestines (DCP_i) for C was 42% higher, but with L was only 71% higher, than for B. The balance of protein to energy, expressed as DCP_i/DOMI was the same (15.8%) for both supplements and only a little higher than the value observed with the basal diet (14.2%).

Although the differences in DCP_i between supplements was only 20%, larger differences in supply of individual amino acids may have occurred. Analyses are currently being carried out to investigate this possibility.

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* CSIRO Division of Animal Production, P.O. Box 239, Blacktown, N.S.W. 2148.

** CSIRO Division of Animal Production, Private Bag, P.O. Wembley, W.A. 6014.