

FEED INTAKE AND LIVEWEIGHT RESPONSE TO METHIONINE SUPPLEMENTS IN SHEEP GRAZING ANNUAL PASTURES

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Wool responses to abomasal methionine supplements may be reduced not only when sheep are fed a low quality roughage (Dove and Robards 1974) but also when they are in low body condition (Mata and Peter 1991). If protected forms of methionine are to be used to improve wool quality and production in grazing animals, then we need to know their effects on feed intake and liveweight gains, because nutrient intake and partitioning may affect the wool response.

Ten Merino wethers fitted with abomasal cannulae grazed a clover based pasture (70-80% clover) for periods of 6 weeks in Spring 1989, Summer, Autumn, Winter and Spring 1990 and were kept indoors on a lupin + hay maintenance ration (10:90) between grazing periods. Five sheep received no supplements (-) and 5 sheep received DL-methionine (3 g/day) via the abomasum daily (+) during weeks 3 and 4 of each grazing period. A chromium control release device (Captec chrome) was administered on day 8 of grazing. Organic matter intake (OMI, g/day) was estimated from the concentration of Cr in the faeces and the *in vitro* digestibility (IVD, %) of the pasture samples collected from randomly thrown quadrats (0.4 m²). Total dry matter (TDM, t/ha) and total nitrogen (N, %) of pasture were also determined. Liveweight gains (LWG, g/day) were measured over a 4-week period from the start of the supplements.

Table 1. Pasture characteristics and the effect of methionine supplements on the performance of grazing animals

–, no supplement; +, 3 g/day DL-methionine

	Spring		Summer		Autumn		Winter		Spring	
	–	+	–	+	–	+	–	+	–	+
IVD (%)	75.5		48.42		52.16		60.91		63.26	
N (%)	2.80		1.81		2.08		2.82		2.51	
TDM (T/ha)	3.42		3.20		2.03		1.96		3.61	
OMI (g/day)	753	981	632	933	418	566	485	494	900	1080
LWG (g/day)	190	273	–88	–11	129	171	89	56	156	246
ΔLWG (g)	83		77		42		–33		90	

Methionine supplements significantly increased feed intake ($P<0.05$) and improved liveweight gains ($P<0.001$). The responses in liveweight gain were greatest in spring and summer with a season by treatment interaction ($P<0.05$). It is possible that during autumn and winter limited feed supply reduced the response to the supplement. A season effect ($P<0.001$) occurred in response to the normal fluctuations in pasture quality (IVD, N and TDM). Methionine is limiting for body growth at most times of the year in this environment and production responses are expected if pasture quantity does not limit intake. This has important implications for wool growth responses as the need to satisfy body tissue requirements following a period of unbalanced amino acid supply is likely to reduce total available nutrients to the follicles. For effective use of methionine supplements, the nutrient status of the animals and the quality of the feed available must be taken into consideration.

DOVE, H. and ROBARDS G. E. (1974). *Aust. J. Agric. Res.* **25**, 945–56.

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