RESPONSES OF MERINO WETHERS GRAZING LOW-QUALITY PASTURE TO A SUPPLEMENT OF BY-PASS PROTEIN

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Supplementing low-quality diets with by-pass protein meals has improved appetite and performance of ruminants and offers a means of improving the level of utilization- of low-quality pastures by sheep (Leng *et al.* 1977). The present study was designed to explore this possibility.

150 mature medium-wool Merino wethers, grazing dry, unimproved pasture during winter at Armidale, were offered, daily, a pelletted mixture of cottonseed meal (78%), soybean meal (10%), meat meal (10%), salt (1%) and a mineral-vitamin mixture and containing 42% CP DM (50% sol.) and 10.63 MJ ME/Kg DM. The supplement was regularly labelled with tritium (Nolan *et al.* 1975) as a means of ascertaining individual intake. wool growth rate was measured by a dye-banding procedure '(Chapman and Wheeler 1963).

One-third of the flock consistently ignored the supplement;. intake of individual "consumers" remained relatively constant over time (mean 124 g DM/h/d) despite variation in pasture availability.. The lowest level of CP measured in pasture samples collected from oesophageal fistulae during the study was 9.1% (DM); the highest, 12.8%.

Liveweight changes are summarised in Table 1. The mean weight of non-consumers declined by 4 kg between mid-May and mid-August and increased by 4.5 kg between then and late-October. The mean liveweight of consumers declined by 2 kg from mid-May to'mid-July and increased by 5 kg from then until late-October.

TABLE 1 Relative performance of "consumers" and "non-consumers"

Date	Liveweight (kg)		Wool Growth Rate (g clean dry wool/head/day)		
	Consumers	Non-Consumers	Period	Consumers	Non-Consumers
16/5/78 (Pre expt)	32.4	32.4	1/11-14/5 (Pre-expt)	8.2[a]	8.1[a]
14/6	32.1	32.1	15/5-14/6	6.3[a]	5.8[b]
14/7	30.4	28.5	14/6-10/8	5.6[a]	4.3[a]
11/8	31.0	28.1	11/8-29/9	6.7[a]	4.9[b]
25/10	35.4	33.1			

The relationship between level of consumption of supplement and weight change varied with time, reflecting changing pasture conditions but at no stage was there evidence that the supplement stimulated consumption of dry pasture substantially.

The wool growth response to supplement was, however, more substantial, though lagged in time (Table 1). In the final stages of the study wool growth rate in consumers was some 36% greater than in non-consumers notwithstanding that the relationship between intake of supplement and wool growth weakened over time.

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