

PERFORMANCE OF LOT FED LAMBS ON CLOVER SILAGE AND GRAIN-BASED DIETS

R. W. GRAHAM, F. U. DAPA and R. H. SOEHARTONO

School of Agriculture, Charles Sturt University, Wagga Wagga, N.S.W. 2650.
NSW Agriculture, Agricultural Research Institute, Wagga Wagga, N.S.W. 2650.

To date most attempts to produce out of season lambs in Australia have involved the feeding of cereal grain based diets. These attempts have often been uneconomical, as cereal grains are generally deficient in protein essential for rapid growth, whilst they can also cause adverse changes in rumen function (Hynd and Allden 1986). Although silage is recognised as a low cost source of protein and energy (Thomas and Thomas 1988), its potential for prime lamb production has received little attention. The aim of this study was to determine whether high quality subterranean clover silage could be used to reduce the proportion of grain in diets for finishing prime lambs.

Fifty-six Border Leicester x Merino wether lambs, (31.3 ± 0.22 kg) were allocated at random to 8 experimental diets, and were individually penned in an indoor feedlot. The composition of experimental diets is shown in Table 1. Diets were fed *ad libitum* on a daily basis, and were supplemented with 0.5% NaCl, 0.5% CaCO₃ and 0.1% vitamin-mineral premix. Lambs on high grain diets (50 or 75%) were introduced to concentrates over a 14-day period. The lambs were weighed at 7-day intervals and slaughtered when the treatment mean reached approximately 45 kg full liveweight. Lambs on diets 2 to 8 were fed for 68 days whilst those on diet 1 were fed for 104 days. The mean values for liveweight gain (LWG) and feed conversion efficiency (FCE) are shown in Table 2.

Table 1. Composition of experimental diets

S, silage (39% dry matter); B, barley; G1, grain mix (21% lupin + 79% barley); G2, grain mix (34% lupin + 66% barley)

Diet :	1	2	3	4	5	6	7	8
Crude protein (%)	17.9	16.8	15.6	14.5	17.9	17.9	17.9	20.0
Metabolisable energy (MJ/kg)	9.5	10.2	11.0	11.7	10.3	11.1	11.8	11.9
Composition (%)	100S	75S+25B	50S+50B	25S+75B	75S+25G1	50S+50G1	25S+75G1	25S+75G2

Table 2. Liveweight gain (g/day) and feed conversion efficiency (FCE) (kg feed/kg gain) of lambs on eight feedlot diets

Means with different letters are significantly different (*P* < 0.05)

Diet:	1	2	3	4	5	6	7	8
Initial full liveweight (kg)	31.0	31.5	31.6	30.5	31.0	31.8	31.4	31.4
Final full liveweight (kg)	42.3	42.6	44.9	44.7	44.2	49.0	47.9	47.5
Liveweight gain	108a	163b	197bc	208cd	194bc	253e	243de	236cde
Dry matter intake (kg/day)	1.09	1.16	1.18	1.14	1.27	1.42	1.24	1.16
FCE	10.118a	7.272b	6.085c	5.993cd	6.721bce	5.638cef	5.156cf	4.954df

Analyses of variance of LWG and FCE showed significant differences between diets. From the results it can be seen that lambs offered diets comprising up to 50% silage were capable of achieving growth rates comparable to 75% grain diets. Growth rate responses were further improved by the inclusion of lupins into feedlot diets. Results clearly demonstrate that high quality clover silage can be used to reduce the proportion of grain required in feedlot diets, and that when, silage is combined with moderate levels of grain it is capable of supporting high rates of animal production.

HYND, P. I. and ALLDEN, W. G. (1986). *Proc. Aust. Soc. Anim. Prod.* **16**: 29.
THOMAS, C. and THOMAS, P. C. (1988). *In* 'Recent Developments in Ruminant Nutrition-2.' (Eds W. Haresign and D. J. A. Cole.) p. 274. (Butterworth: London.)