Long–term effect of dietary protein supplementation on resistance to gastrointestinal nematode infections and production in young grazing Merino ewes

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Young sheep are more susceptible to internal parasite infections than older sheep, but immunity is enhanced by dietary protein supplementation (van Houtert *et al*. 1995; Datta *et al*. 1999). A study was made of the effect of protein supplementation of young grazing sheep on their later resistance to gastrointestinal nematodes. Twelve groups of 15 Merino ewe weaners 4–5 months old were allocated to 0.8 ha pasture plots and given cottonseed meal pellets daily for 10 weeks at the rates of 0, 85 or 170 g per head. All groups remained in their respective plots for a further 8 weeks after supplementation ceased, and were then treated with anthelmintic and grazed as one flock. Faecal egg counts (FEC) and liveweight gains (LWG) were monitored each 2 weeks up to Week 18, and then at Weeks 29, 42 and 52. Fleece weight was recorded at shearing at Week 31.

Supplementation lowered FEC (P<0.05) during the feeding period and this effect persisted up to 8 weeks after supplementation ceased (P<0.05), but there was no significant carry–over effect at Weeks 29, 42 and 52 (Figure 1). Supplementation increased LWG during the supplementation period and in the following 8 weeks (P<0.05); this effect was still apparent 19 weeks after supplementation ceased (Week 29) but not at Weeks 42 and 52 (Figure 2). Fleece weight was increased (P<0.05) by supplementation; mean weights ± SEM were 2.12 ± 0.02, 2.19 ± 0.05 and 2.31 ± 0.01 kg for the 0, 85 and 170 g/d, respectively. These results suggest that protein supplementation enhanced host resistance to gastrointestinal nematode infections and production in grazing young Merino ewes and that these benefits were carried over for at least 8 weeks.

Datta, F.U., Nolan, J.V., Rowe, J.B., Gray, G.D. and Crook, B.J. (1999). Long–term effects of short–term provision of protein–enriched diets on resistance to nematode infection, and liveweight gain and wool growth in sheep. *International Journal for Parasitology* 29, 479–488.

van Houtert, M.F., Barger, I.A. and Steel, J.W. (1995). Dietary protein for young grazing sheep: interactions with gastrointestinal parasitism, *Veterinary Parasitology* 60, 283–295.

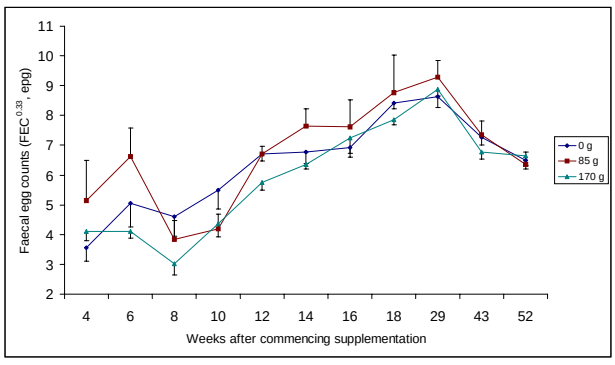

Figure 1 Mean ± SEM faecal egg counts (FEC, epg) in grazing ewe weaners given 0, 85 or 170 g cottonseed meal pellet per head per day. FEC raised to the power 0.33 to normalize data for statistical analysis.

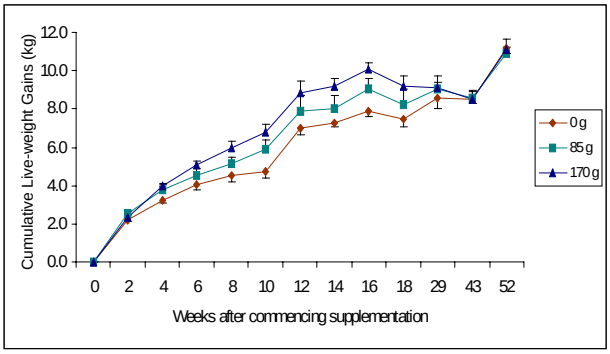

Figure 2 Cumulative live–weight gains, mean ± SEM, of grazing ewe weaners given 0, 85 or 170 g cottonseed meal pellet per head per day.