

THE EFFECTS OF SELENIUM SUPPLEMENTATION ON RAPIDLY GROWING SHEEP OF A
LOW SELENIUM STATUS

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Episodes of selenium (Se)-responsive suboptimal production in young sheep are spasmodic and unpredictable (Gabbedy 1971; Hunter et al. 1982; Wilkins 1983). Inconsistent responses to Se supplementation in summer and autumn might be due, in part, to a concurrent shortage of energy and protein overriding a potential response to Se. This study measured the effects on production of Se supplementation in sheep under conditions where growth was not limited by environmental or nutritional factors.

Thirty four 12-15 month old merino wethers (29.0 ± 1.5 kg), which had a restricted protein and energy intake for the previous 8 weeks, were stratified according to body weight and randomly allocated to 2 equal groups. All sheep were given a Co bullet and grinder, an oral drench of vitamins A, D and E and an anthelmintic. The +Se group received an intraruminal Se bullet. The sheep were housed individually in sheltered pens for 8 weeks and fed ad lib. a ration comprising 55% oats, 25% lupin seed and 20% wheaten chaff supplemented with 2% limestone which provided 0.01 mg Se/kg, 16.7% crude protein and 19.3 MJ/kg metabolisable energy.

The mean (\pm SEM) activities of erythrocyte glutathione peroxidase on days 0 and 56 for the -Se and +Se groups were 22 (3) and 32 (4), and 23 (3) and 601 (19) IU/g Hb respectively. The mean (\pm SEM) Se concentration in the liver and blood of the -Se group on day 56 was 0.15 (.01) mg/kg DMB and 36 (2) μ g/L.

The mean (\pm SEM) bodyweight change, clean wool growth, fibre diameter and total feed consumption of the 2 groups did not differ significantly (see Table).

Group	Bodyweight change (kg)	Clean wool (mg/cm ²)	Fibre diam. (μ m)	Total ration consumed (kg)
-Se	11.1 (1.3)	96 (6)	19.2 (.4)	64.6 (2.1)
+Se	13.0 (1.5)	102 (9)	20.0 (.3)	70.3 (2.1)

The Se status of the -Se group was within the range associated with variable production responses to Se supplementation in grazing sheep (Wilkins 1983; AHL records). The growth rate of the sheep in this study (~ 200 g/d) was considerably more than that experienced by sheep grazing in summer and autumn, yet the response to additional Se was not significant. This finding indicates that factors other than protein and energy intake must be involved in the variable responses to Se supplementation found in grazing sheep with a similarly low Se status.

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