EFFECTS OF SUPPLEMENTATATION WITH VITAMIN E AND SELENIUM ON THE PRODUCTION OF GRAZING WEANER AND HOGGET WETHERS

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Although frank deficiencies of vitamin E (Vit E) can develop in sheep of adequate selenium (Se) status grazing dry feed (Steele *et al.* 1980) it is not known if marginal deficiencies of Vit E result in production losses similar to those which occur with Se. This was investigated over 2 years (1990/91; 1991/92) at Bakers Hill, Western Australia (WA), with wethers grazing pastures low in Se and also low in Vit E when dry.

Four groups each of weaner and hogget wethers (n = 15/group) were grazed together and supplemented as follows: nil supplement (-Se/-E), or supplemented with Se alone (+Se/-E), with Vit E alone (-Se/+E) or both Se and Vit E (+Se/+E). Supplements were given orally by aqueous drench at 6 week intervals starting in December in both years. Se treatment (0.1 mg Se/kg liveweight as sodium selenite) continued until shearing in late September while Vit E treatment (100 mg Vit E/kg liveweight as Rovomix E-20W™) ceased in June 1991 and May 1992. The sheep were fed lupin supplements during autumn. Greasy wool weight was recorded at shearing and a mid-side sample taken for determination of clean wool weight (CWW), fibre diameter (FD), staple length (SL) and staple strength (SS). Weaner sheep from 1990/91 were retained as hoggets in 1991/92 and combined with 4 groups of new weaner wethers.

The most significant treatment effects of note occurred in 1990/91 since rain in February 1992 resulted in some green pasture during autumn in year 2; wool data from 1990/91 only are presented (Table 1). Weaner CWW in the -Se/-E group was lower in 1990/91 than in other treatment groups and associated with a significant Vit E x Se interaction ($P < 0.05$); FD and SS were not affected. These effects persisted in the hogget year, 1991/92, whereas in this year there were no effects of treatment on weaner CWW, FD or SS. Hogget CWW, FD or SL were not affected by treatment in 1990/91 but there was a highly significant Vit E x Se interaction with SS ($P < 0.001$). Se supplementation resulted in a higher SL in weaners in both years ($P < 0.05$). There was a significant Vit E x time interaction with liveweight in year 1990/91, with lower and higher liveweight gains in early spring after supplementation ceased in Vit E supplemented weaners ($P < 0.05$) and hoggets ($P < 0.01$) respectively. No effects of treatment on liveweight were observed in either age group in the second year.

Table 1. Effects of Se and Vit E supplementation on clean wool weight (CWW), fibre diameter (FD), staple length (SL) and staple strength (SS) in 1990/91 (Mean with s.e.m. in parenthesis)

Treatment	CWW (kg)		FD (μm)		SL (mm)		SS (N/ktex)	
	Weaner	Hogget	Weaner	Hogget	Weaner	Hogget	Weaner	Hogget
-Se/-E	2.50	3.67	19.3	21.2	92.6	97.9	19.2	21.3
	(0.10)	(0.13)	(0.31)	(0.41)	(1.8)	(2.1)	(2.4)	(1.7)
+Se/-E	2.84	3.55	20.1	21.8	98.8	93.1	22.9	31.0
	(0.10)	(0.08)	(0.27)	(0.41)	(1.6)	(2.1)	(2.0)	(2.4)
-Se/+E	2.82	3.52	19.7	20.9	96.8	94.1	18.7	33.6
	(0.07)	(0.09)	(0.24)	(0.37)	(2.6)	(3.0)	(1.8)	(2.1)
+Se/+E	2.81	3.55	19.3	21.6	98.1	93.6	21.9	28.3
	(0.08)	(0.10)	(0.25)	(0.39)	(1.6)	(2.5)	(1.9)	(2.1)

The results suggest that marginal deficiencies of Vit E are unlikely to cause losses of production in grazing sheep provided their Se status is adequate.

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STEELE, P., PEET, R.L., SKIRROW. S, HOPKINSON, W. and MASTERS, H.G. (1980). *Aust. Vet. J.* 56: 529-32.