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INVESTIGATIONS INTO THE EFFECT OF SELENIUM, COBALT AND A COMPOSITE MINERAL BLOCK ON SHEEP REPRODUCTION WHEN GRAZING OESTROGENIC CLOVER PASTURE

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A large proportion of the low lamb marking percentage in the agricultural regions of Western Australia was associated with the grazing of clovers with a high (>1.0%) concentration of formononetin (Lloyd Davies 1987). Some of the differences in sheep fertility between Western Australia and the eastern states may have been due to cobalt or selenium deficiency –both deficiencies being more widespread in WA than in the eastern states of Australia. This experiment was carried out on newly cleared land at the Yalanbee Research Station of the CSIRO at Bakers Hill, Western Australia. The mean annual rainfall is 575mm; the growing season is April to October.

There were 4 treatments with 2 replicates of each treatment with 20 sheep per replicate plot. The four treatments were: 1) controls; no mineral supplement, 2) cobalt group; a cobalt bullet and a grub screw administered to each ewe, with the cobalt repeated annually, 3) selenium group; 5 mg of selenium given as sodium selenite orally 4 times a year, 4) complete mineral group. The sheep in this last group were given cobalt and selenium as in groups 2 and 3 and also given access to a composite mineral block based on the Moir and Harris (1962) mixture in which all macro and minor minerals known to be essential for sheep were included. The clover variety used was Dwalganup and the plots were grazed continuously at a stocking rate of approximately 4 ewes per hectare. Mating took place in March/April over a six-week period.

The only significant effect on ewe and lamb liveweight was that the ewes on the composite block were heavier in the summer than the ewes on the other treatments. The effect of treatment on conception rate is shown in Table 1 and on uterine pathology in Table 2.

Table 1. Percent ewes conceiving

Year	Control Group	Cobalt	Selenium	Complete Minerals
1	74	92	80	68
2	74	89	82	72
3	52	60	74	55
4	75	72	65	50

Table 2. Pathological status of the uteri at the end of the experiment

Cystic endometrium score	Control	Cobalt	Selenium	Complete Minerals
*** (severe)	3	2	1	4
** (intermediate)	2	1	4	2
* (mild)	6	5	1	5
0	9	11	5	6

At least 50% of the ewes had mild to severe cystic endometrium, two had pyometria and four had *hydrops uteri*.

This experiment showed that the usual methods of correcting a suspected mineral deficiency is unlikely to have any effect upon the reproduction of sheep grazing oestrogenic pastures nor upon the incidence of oestrogen-induced pathology of the uterus.

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