

SEASONAL RESPONSES OF CATTLE TO COBALT SUPPLEMENTATION IN THE HIGH-RAINFALL TROPICS

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The correction of soil nutrient deficiencies is a cheap and efficient means of maintaining beef production from improved pastures on the high-rainfall tropical coast of north Queensland. However, we observed that cattle grazing well-fertilized pastures became unthrifty at some sites. As cobalt deficiency was suspected, we measured the effect of cobalt supplementation on the growth rate of steers at one such site.

The experimental site was a 29 ha grazing trial located at King Ranch, 17 km west of Tully. The soil was an alluvial/colluvial derived from granite. Brahman-cross steers grazed 12, 2.4 ha paddocks of *Panicum maximum*, *Centrosema pubescens* and *Brachiaria decumbens* at about 2.5 beasts/ha, and removed when fat. Stock numbers varied from 74 to 80 head at any one time, with animals remaining in the experiment for a minimum of 9 months. Half the steers in each paddock received a commercial cobalt bullet and grinder. Supplementation commenced on 30 January 1981 and cattle live weights were regularly measured until 31 March 1983.

Cobalt supplementation increased the average growth rate of cattle over the experimental period, from 0.24 kg/hd/d to 0.36 kg/hd/d. However, the response to cobalt was distinctly seasonal. Responses to supplementation occurred only during spring and summer (September to March) and ranged from 0.19 to 0.22 kg/hd/d (Table 1). Average concentrations of cobalt in pasture were 0.019 mg/kg for *P. maximum* and 0.038 mg/kg for *C. pubescens*, with the lowest concentrations occurring in May (Barry 1984). Preference of cattle for legume during autumn and winter may have improved their cobalt status during this time, since the legume consistently had a higher cobalt concentration than that in the grasses. Winter et al. (1977) reported a marked response to cobalt supplementation in cattle grazing improved pasture on Cape York Peninsula, but there was no seasonal pattern.

Table 1. Liveweight gains (kg/hd/d) of cobalt-supplemented and control steers

Treatment	Apr-Aug 1981	Sep 1981-Mar 1982	Apr-Aug 1982	Sep 1982-Mar 1983
Control	0.29	0.19	0.29	0.23
Cobalt	0.30	0.38	0.28	0.45 ⁺
SE difference	0.04	0.06	0.07	0.05

+ Significantly different from control group in same column (P<0.05)

We conclude that on the high-rainfall tropical coast, sub-clinical cobalt deficiency may limit cattle production from improved pastures growing on soils similar to those at our experimental site.

BARRY, G.A. (1984). *Qld J. Agric. Anim. Sci* 41: 73-81.

WINTER, W.H., SIEBERT, B.D. and KUCHEL, R.E. (1977). *Aust. J. Exp. Agric. Anim. Husb.* 17: 10-15.

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