

RELATIONSHIPS OF PLASMA B-CAROTENE LEVELS TO OVARIAN ACTIVITY AND PREGNANCY
IN BOS INDICUS CROSS HEIFERS

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Low dietary β -carotene levels in cattle (despite inclusion of Vitamin A in diets) have been associated in some studies (Lotthammer et al. 1978; Jackson 1981) but not in others (Wang et al. 1982) with reduced reproductive performance including alterations in oestrous activity and reduced ovarian activity. The latter has been suggested to be due to impaired steroidogenesis (Jackson et al. 1981).

As part of a separate experiment examining ovarian activity, plasma B-carotene levels were determined (Van Steveninck & De Goeij 1973) in blood samples taken at 6 weekly intervals from two groups (Group 1, n=30, 16-17 mths old; Group 2, n=20, 28-29 mths old) of non-pregnant Bos indicus cross heifers grazing spear grass pastures in subcoastal northern Queensland. The sampling period in 1981 covered both wet and dry seasons, and ovarian activity was assessed from measurements of plasma progesterone concentrations in paired samples taken 10 days apart at 6 weekly intervals.

There were marked seasonal variations in plasma β -carotene levels which were significantly ($P < 0.05$) lower in the dry season in both Group 1 (10.9 ± 0.8 v 4.1 ± 0.2 $\mu\text{g/ml}$) and Group 2 (10.2 ± 0.9 v 3.9 ± 0.1 $\mu\text{g/ml}$) heifers. Plasma B-carotene levels were similar in both-age groups at all sampling times and live weights showed only minor variations between wet and dry seasons in both Group 1 (228 ± 8 v 223 ± 10 kg) and Group 2 (286 ± 11 v 279 ± 8 kg) animals. There were no consistent relationships of β -carotene levels to ovarian activity except for two sampling periods (May and November) when levels in cycling heifers (275 ± 9 kg) were significantly ($P < 0.05$) higher than they were in non cycling (261 ± 15 kg) heifers (May 16.6 ± 1.3 v 11.7 ± 1.2 $\mu\text{g/ml}$, November 6.1 ± 0.4 v 4.0 ± 0.1 $\mu\text{g/ml}$). Plasma B-carotene levels at the commencement of joining were not related to subsequent pregnancy status in either group.

The results indicate that in the seasonally dry tropics, despite marked seasonal variations, B-carotene levels do not have an appreciable effect on ovarian activity and function.

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