DIURNAL PATTERNS OF HEART RATE RELATED TO TIME OF DAILY FEEDING

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Summer heat load can cause a reduction in productivity and even mortality in grain fed cattle (Young and Hall 1993). Reduction of the energy concentration in the diet and provision of shade have been advocated as methods to relieve heat load (Brosh *et al*. 1993).

The effect of feeding on the heart rate (as an index of metabolic rate) of cattle during the summer months in south-east Queensland was investigated.

Four 12 month old Hereford heifers, weighing 345 ± 10.8 kg, had heart rate radio transmitters (Telonics, Mesa, Arizona) implanted approximately 1 month prior to the trial. A high energy diet of 80% concentrate and 20% roughage (estimated metabolisable energy of 10.8 MJ/kg DM) was offered *ad libitum* to the animals. New feed was offered either in the morning (0830 hours) before the heat of the day or in the afternoon (1650 hours) after the heat of the day. Treatments were changed every 2 weeks so that all heifers were exposed to each treatment. The animals were kept individually in open feedlot pens each of 40 m^2. Shade was provided in half of the treatment pens.

The diurnal heart rates for the 2 feeding times are shown in Figure 1.

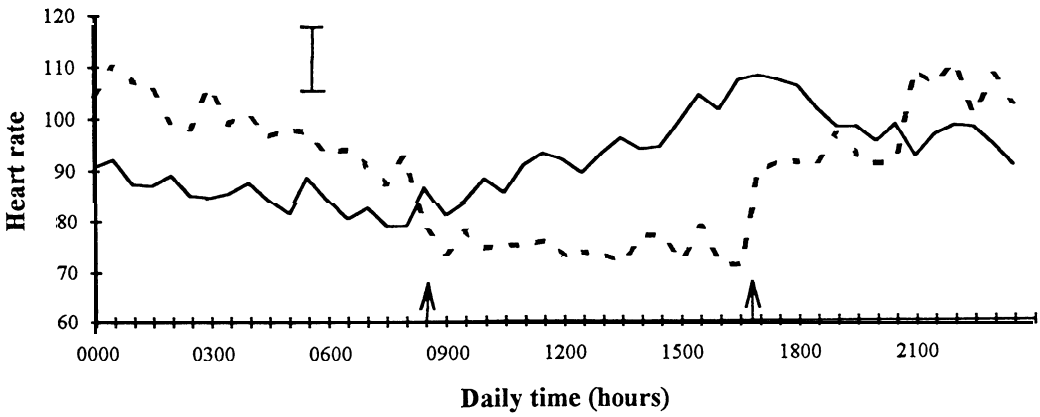

Figure 1. Heart rate response (s.d.) to morning feeding at 0830 hours (full line) and afternoon feeding at 1650 hours (dashed line). Heat of the day is between 1100 and 1530 hours

There was no significant shade effect. When the animals were offered a high concentrate diet in the morning, their heart rate increased during the heat of the day. This presented an added thermal load on the animal during the hottest part of the day. However, when the animals were offered their new feed in the afternoon, their heart rate was lower during the heat of the day. Thus, feeding a high concentrate diet to feedlot cattle should be done after the hot period of the day to reduce the metabolic heat impact during the summer.

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