SIMULATION OF LIVEWEIGHT CHANGE OF HEIFERS SUBJECTED TO VARIOUS SEASONAL AND NUTRITIONAL REGIMES

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Cattle grazing native pasture in tropical Australia during the dry season frequently lose live weight to such an extent that the sale of male cattle is delayed and the reproductive performance of young female cattle is seriously affected (Siebert et al. 1976).

Unseasonal rains, supplementation with concentrates, or pasture improvement are of benefit in increasing net liveweight gain, but research into the many variations of such stimuli is difficult. Subsequent to studies in north Queensland which enabled us to predict feed intake and liveweight gain of steers over a 4-month period (Siebert and Hunter 1977), we have now extended the work to simulate the growth of heifers over the 15-month period prior to their normal time of first mating. Liveweight change was computed by a program which considered the nitrogen content of the diet and the age, live weight and metabolic rate of the particular breed of animals involved. Growth curves, assessed for four possible situations are shown in the figure.

![Growth curves](image)

Fig. 1. The simulated live weight of heifers grazing (a) native pasture alone (-----), (b) native pasture which receives a single fall of rain in August (-----), (c) native pasture with a supplement of 200 bd/4 cottonseed meal during July and August (—— —) and (d) a pasture improved with Townsville stylo (—— —). The program was driven by data collected from animals grazing the situations mentioned. The animals were 14-month old Brahman X Shorthorn heifers initially, weighing 200 kg. It was considered that they needed to achieve 300 kg live weight to exhibit normal oestrus (Siebert and Field 1975). It can be seen that such a weight was not reached by heifers grazing native pasture although it was in the improved situations by accelerated gains at various times during the dry season. It is hoped to extend the simulation to herd systems so that possible improvements might be assessed simply and cheaply. Similar predictions have been carried out in South Australia with Shorthorn cattle.


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