OPTIMISING FEED SUPPLY, REPRODUCTIVE EFFICENCY AND PROGENY GROWTH TO MEET MARKET SPECIFICATIONS. 1. BACKGROUND AND EXPERIMENTAL DESIGN

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The Mediterranean climate of southern Western Australia involves a dry summer/autumn, with breaking rains generally in late autumn. This climatic environment results in rapid growth of high quality pasture in late winter and spring, with associated high cattle growth rates. In summer and autumn, the quantity and quality of pasture declines, resulting in reduced liveweight growth. Traditionally, calving in southern Western Australia is between February and April when pasture quantity and quality are low and declining. Feed supplements are required to keep animals growing during this period. This production pattern means lactating cows are in peak lactation when pasture nutrition is low, and the cows will require supplements to maintain or optimise milk production. A major cost in this system is associated with supplementing the lactating cow.

In Victoria, Cummings (1976) suggested there are good reasons to move calving from autumn to spring. As there are generally no summer rains in southern WA, calves are weaned in December/January so calving in winter provides more time for the calf to grow before weaning than calving in spring. In a whole farm system, this approach may have economic benefits in the breeder phase: (i) higher stocking rates result in more calves/ha, (ii) need for less conserved feed, (iii) joining on a rising plane of nutrition, and (iv) a longer period between weaning and calving when associated with earlier weaning. Negative aspects may include: (i) likelihood of increased levels of dystocia, (ii) increase in calf scours, (iii) wetter conditions and shorter day length during calving, compromising husbandry, and (iv) lighter calves at weaning.

An experiment investigating 2 times of calving (autumn and winter) and 3 nutritional growth paths of the progeny from weaning to slaughter, at heavy domestic liveweight, commenced in 2001. The reproduction phase was located at the Alcoa Farmlands at Wagerup and Pinjarra. The cows were randomly allocated to 3 replicates for each of the autumn and winter calving groups, and mated using a 1-off AI program, followed by back-up bulls for 6 weeks, in June or September each year (Read *et al*. 2004). Pasture quantity and quality were measured at regularly intervals throughout the year (Smart *et al*. 2004).

Following weaning in early January, the progeny were transported to the Vasse Research Station for finishing on 3 growth paths. The projected growth paths for the progeny were: (1) fast growth from weaning to slaughter, with entry into a feedlot finishing phase at approximately 400 kg liveweight, (2) slow growth (~0.6 kg/head/day) from weaning to approximately 400 kg, followed by feedlot or pasture finishing, and (3) weight loss (10%) from weaning, followed by compensatory growth and finishing on pasture or feedlot. All cattle were MSA graded (McIntyre *et al*. 2004). Economic analyses of the production systems were also conducted (Della Bosca *et al*. 2004)

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