THE DESIGN OF THE WOKALUP SINGLE AND MULTI-BREED SELECTION EXPERIMENT

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The Wokalup selection experiment is conducted on two 300-cow herds of cattle and is to be run for a period of 15 years. The responses to selection for pre-weaning growth rate are compared in straight-bred Herefords and Wokalup Multi-breeds" or "Wokalups". These were formed by crossing Charolais, Brahman, Friesian and Angus or Hereford. Thus the two herds are expected to differ widely in genetic variation and it is an aim of the study to determine the practical economic value of such variation. Hypotheses relating both to direct and correlated responses will be studied in the long term, using as a control, semen stored from the base year bulls (1978). Twelve sires per line per year are used and cows are randomized each summer into replicates which form the following year's mating groups. Females are mated as yearlings and bulls as two-year-olds. Bulls and heifers are selected on preweaning growth rate and empty cows are culled at pregnancy test in the summer.

Estimation of genetic parameters will be difficult in the short term as a result of the truncation of sire variance caused by selection. However the two lines differ phenotypically in a number of important ways, allowing the various interrelationships among phenotypic and maternal traits to be described in the shorter term while gathering data for later genetic analyses. Thus observations are being made which provide data on the components of production which are of economic importance: growth, reproductive rate, maternal ability, carcass maturity type, calving ease and cow size. The replicated structure of the herd makes these observations easier to manage and additionally will allow the pasture intake side of the production equation to be accounted for. A brief summary of observed differences follows:

(i) Calf Birth Weights. Wokalup multibreed calves were born 9% heavier than Hereford calves. Wokalup heifers had first calves which were 12% heavier than the equivalent Herefords.

(ii) Pre-weaning growth. The calves of Wokalup heifers grew 25% faster than their Hereford contemporaries, and calves of mature Wokalup cows 18% faster than Herefords.

(iii) Reproductive Rate. During the first three years, Wokalups have shown a 3% lower calving rate than Herefords.

(iv) Milking ability. Wokalups produce about 50% more milk than Herefords (See Sprivilis et al. 1980 for more details).

(v) Calving. Assisted calvings occur equally in the two breeds and are confined to cows calving as 2 or 3 year olds, averaging 15% in the 2 year olds and 5% in the 3 year olds.

(vi) Puberty and post-calving oestrus. Observations have recently begun but it is too early to describe conclusive differences, although the Wokalups appear to return to oestrus later after calving than the Herefords.


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