

A COMPARISON OF CALVES FROM TWO BREED (HEREFORD X SHORTHORN) AND
THREE BREED (CHAROLAIS X HEREFORD-JERSEY) CROSSBREEDING SYSTEMS OF PRODUCTION

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SUMMARY

In 1976 and 1977 Shorthorn cows were mated to Hereford bulls while Hereford-Jersey cows were mated to Charolais bulls of either high or low growth performance (United Kingdom progeny test) to test two terminal sire breeding systems. Calf weaning weight, carcass weight, fat thickness and carcass value were used to assess productivity. No significant differences in live weights or carcass weights were noted. The Hereford x Shorthorn system produced calves which were fatter ($P < 0.001$) than calves from the Charolais x Hereford-Jersey system. cows were mated to common sires in 1975 (Hereford bulls) and 1976 (3/4 Charolais bulls). 1976 calves from Hereford-Jersey cows had carcasses which were heavier ($P < 0.05$) and fatter ($P < 0.05$) than calves from Shorthorn cows ($P < 0.05$).

INTRODUCTION

Many beef producers in the South East of South Australia and other higher rainfall areas of Australia traditionally use Shorthorn cows obtained from low rainfall areas as the basis of their breeding herds. However, the supply of such cows has become unreliable. Although cows of dairy origin offer an alternative it is a common belief among beef producers that these cows, particularly Jerseys and their crosses, produce smaller calves of lower carcass quality than cows of British breeds. Deland and Saunders (1976) reported that 281-day-old calves from such cows produced carcasses suitable for the Adelaide butcher shop trade while 618-day-old steers of the same crosses produced carcasses of the weight and fat cover required for the pre-packaged cut trade. Deland et al. (1978) reported higher production per cow for young Hereford-Jersey cows than most other crosses tested and attributed this to a combination of high fertility of young dairy cows as well as high growth rate of the progeny.

The selection and price of bull semen imported into Australia are often based on performance or progeny tests carried out overseas where calves are not reared on their dams as they would be under Australian conditions.

The experiment reported here was designed to compare two breeding systems of production, one based on the traditional system of Shorthorn cows mated to Hereford bulls and the other based on Hereford-Jersey cows mated to Charolais bulls selected on the basis of either high or low rank in a U.K. progeny test.

MATERIALS AND METHODS

The private property on which the cattle grazed is situated approximately 12 kilometres south west of Tintinara, South Australia. Pastures consisted of improved pastures of Hunter river lucerne, (Medicago sativa), subterranean clover (Trifolium subterranean), ryegrass (Lolium spp.), perennial veldt grass (Ehrharta calycina) and Kingston grass (Bromus rigidus).

Shorthorn cows of mixed age were purchased from northern South Australia and were all aged over four years. Hereford-Jersey cows originated from dairy areas of Victoria and were also over four years of age at commencement of the experiment. All cows had run together for 12 months prior to commencement of observations.

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In July 1975 cows were joined with Hereford bulls for a nine-week mating period whereas in July 1976 and 1977 oestrus was synchronised in cows using two injections each of 500 µg cloprostenol† eleven days apart followed by 500 µg oestradiol benzoate‡ 28 hours after the second cloprostenol. Cows were inseminated two days after the oestradiol benzoate, irrespective of oestrus. Semen from five Hereford bulls was used for Shorthorn cows and semen from two Charolais bulls for Hereford-Jersey cows. The Charolais bulls were selected from the same U.K. progeny test group. In this test the bull Argent (Ar) sired 43 progeny which grew at the fastest rate (mean 0.9 kg/day) of the 16 bulls tested while the 51 progeny from the bull Ajaccio (Aj) grew at the lowest (mean 0.8 kg/day) rate. In the U.K. test calves were artificially reared on many farms whereas in the experiment reported here all calves grazed at pasture with their dams in the one herd. One week following insemination in 1976 3/4 Charolais bulls were introduced to the herd for an eight week joining period.

Male calves were castrated and all calves ear-tagged at birth. At a time corresponding to normal weaning time for the property (mean age of calves 10 months) all calves were weighed off pasture, 1975 calves were held for a further four months before slaughter, however, in both succeeding years calves were slaughtered within one month of this weighing. Calves were slaughtered at an Adelaide meatworks and carcass weight recorded. Fat thickness over the loin was measured after carcasses had set. Carcass values were determined on a weight and grade basis. Grade of each carcass was assessed by meatworks graders and the price per kilogram quoted by the purchaser for each grade was used to determine carcass value of the 1975 group. For 1976 and 1977 groups a flat rate per kilo was quoted as all carcasses were considered ideal for the Adelaide butcher shop trade. Graders were also asked to record yellow fat. After carcasses were halved, carcass length was measured on each side from the lowest edge of the suspension hook to the atlas bone and the mean of the values for the two sides used to calculate carcass weight per unit length. In 1977 cows were weighed off pasture with their calves to assess their value.

RESULTS AND DISCUSSION

Mean live weight of 32 Shorthorn cows ($469 \pm \text{S.D. } 48.7 \text{ kg}$) was similar to the 31 Hereford-Jersey cows ($467 \pm 50.8 \text{ kg}$).

Table 1 presents live weight and carcass data for calves from Shorthorn and Hereford-Jersey cows where common sires were used (Hereford in 1975 and 3/4 Charolais in 1976).

Calves reared by Hereford-Jersey cows and sired by 3/4 Charolais bulls had carcasses which were heavier, fatter and heavier per unit length than those from calves of Shorthorn cows. However, when Hereford bulls were used, no significant differences were noted.

Both fat thickness and carcass weight per unit length are sometimes used as indicators of fleshing quality of carcasses. The results indicate that use of Hereford-Jersey dams tends to increase the productivity and quality of calves when compared with Shorthorn cows.

Live weight at 10 months, carcass weight, fat thickness and carcass value of calves from the Hereford x Shorthorn and Charolais x Hereford-Jersey systems of crossbreeding are given in Table 2. There were no significant differences between progeny of the bulls Argent and Ajaccio. This result does not support the practice of assessing Charolais bulls on the basis of calf performance in U.K.

† Registered Estrumate ICI Australia.

‡ Intervet Australia.

surveys when bulls are to be used as terminal sires to produce calves which will be grazed with their dams at pasture in Australia.

The Charolais x Hereford-Jersey system tended to produce carcasses which were heavier and more valuable but which were significantly leaner than those from the Hereford x Shorthorn system. Only one carcass with yellow fat was recorded, this was of Hereford x Hereford-Jersey breeding.

Jersey cross heifers are relatively low priced when compared with heifers of the traditional beef breeds and their crosses. As the capital invested in a breeding herd represents a major investment on cattle breeding properties use of Jersey cross heifers offers a means by which this investment can be reduced while at the same time increasing beef production.

Both the dairy and beef industries are potential sources of Jersey cross females.

The use of Hereford bulls on Jersey cows which are not required for breeding dairy replacements would provide females for beef breeding herds and male calves which are superior to straightbred Jersey calves for beef production.

In the beef industry the use of Jersey bulls is an effective means of reducing dystocia in Hereford heifers, hence reducing losses of calves, heifers and supervision time. Carcasses from 15 month old Jersey x Hereford steers are of equal value to Hereford steers when sold at carcass auction (Struan Research Centre unpublished data).

It is therefore concluded that increased use of Hereford x Jersey crosses will have multiple benefits in both the dairy and beef industries.

ACKNOWLEDGEMENTS

Finance for this trial was provided by the Commonwealth Extension Services Grant. I am grateful to Mr. Dennis Rowe for the use of facilities, manpower and cattle on his property and to personnel of Struan Research Centre, particularly Dr. John Obst, who have assisted during this experiment.

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