

BEEF PRODUCTION FROM CHAROLAIS, CHAROLAIS X SHORTHORN AND SIMMENTAL  
SIRE CALVES FROM JERSEY AND JERSEY X HEREFORD COWS UNDER  
GRAZING CONDITIONS

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Summary

The value of Charolais, Charolais x Shorthorn and Simmental bulls in beef production from Jersey and Jersey x Hereford cows was assessed under grazing conditions in the South East of South Australia.

Steers from the 1973 calf drop were killed at an average age of 619 days and those from the 1974 drop at 281 days. There were no significant differences in growth rate between sire breed groups in either year.

Carcasses of 300 kg with 8 mm of fat were obtained from 619-day old steers,

Depending on breed of sire, calf weights at weaning (average age 281 days) were 73% to 90% of concurrent dam weight.

I. INTRODUCTION

Although Jersey and Jersey crossbreds are commonly thought to be poor meat producers, females used in small numbers on Struan Research Centre, South Australia, had high fertility and required little assistance whilst calving to the Charolais (M.P. Deland, unpublished data). The Jersey crossbreds had lower maintenance requirements than the straightbreds tested by Thomas and Cartwright (1971), and young Jersey crossbred cows had heavier weaned weight of calf per cow kept than did any other crossbreds tested at Clay Centre (U.S.D.A. 1975).

Jersey and Jersey crossbred females surplus to dairy requirements realise low market values due to low carcass weights; offspring from matings of Jersey sires over beef heifers also realise low prices. However, as cost of cows in a breeding herd is a major capital expenditure, use of these crosses could greatly reduce this overhead.

Use of sires of large European breeds such as the Charolais and Simmental should improve growth rate and carcass conformation of progeny of Jerseys. As there are only limited numbers of purebred bulls available, however, we compared the progeny from crossbred bulls with those sired by purebreds.

This trial was designed to find out if the progeny of Jersey and Jersey crossbred cows grazed at pasture under South Australian conditions would produce carcasses suitable for the vealer and pre-packaged cut trades.

II. MATERIALS AND METHODS

The private property on which the cattle grazed is situated 39 km SW. of Naracoorte, South Australia, being improved perennial pastures being of subterranean clovers, strawberry clover, phalaris and ryegrass.

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Jersey and Jersey x Herefordheifers were purchased in 1971 and 1972 at local and Victorian sales, In 1972 heifers and cows were mated. All animals had calved at least once before mating in 1973. Mating began in June each year.

Semen from 12 Charolais and 12 Simmental bulls was used. Semen from a Charolais x Shorthorn bull which ranked top out of 10 contemporaries on growth rate was used in 1972 and two Charolais x Shorthorn bulls of unknown rank were mated naturally in 1973.

Cows in oestrus were marked by epididectomised bulls fitted with chinball marking devices. The cows marked each day were yarded the next morning and inseminated. Semen was allocated to ensure proportional distribution, between breed of cow, of the semen of each bull. The Charolais x Shorthorn bulls were paddock mated with cows which had been selected at random prior to mating. The same mating- period was used for natural and artificial insemination. After mating, cows grazed as one mob.

At birth, calves were ear tagged and weighed. Difficult calvings were noted and assisted by the manager as he saw fit. All calves grazed at pasture throughout their lifetimes. Most male calves were castrated within 60-90 days of birth in 1973 and in 1974 all male calves were castrated at birth. Steer data only are used for 200-day weight and carcass analysis.

Calf weights (at c.200 days) were adjusted for date of birth to 200 days, Calves from the 1973 drop were weaned at an average age of 270 days and slaughtered at an average age of 619 days whereas all calves of the 1974 drop were weaned and slaughtered at an average age of 281 days. Livestock buyers determined when steers were ready for slaughter; those slaughtered at 281 days for the vealer trade, and those slaughtered at 619 days for the pre-packaged cut trade.

Carcass composition was assessed from shin dissection (Butterfield and Thomas 1973) and a note taken of carcasses considered yellow by the meatworks staff.

At weaning of the 1974 drop, cows and calves were weighed.

Weights were analysed by analysis of variance in a 2 x 3 factorial design and the subsequent calculation of least significant differences,

### III. -RESULTS

With the addition of one dead, assisted calf (Simmental x (Jersey x Hereford)), calving data are given in Table I.

TABLE I  
Calving data (1973 and 1974)

| Sire                 | Charolais |                       |                         | Charolais x Shorthorn |                       |                         | Simmental |                       |                         |
|----------------------|-----------|-----------------------|-------------------------|-----------------------|-----------------------|-------------------------|-----------|-----------------------|-------------------------|
| Dam                  | Births    | Live<br>Assi-<br>sted | Dead<br>Unas-<br>sisted | Births                | Live<br>Assi-<br>sted | Dead<br>Unas-<br>sisted | Births    | Live<br>Assi-<br>sted | Dead<br>Unas-<br>sisted |
| Jersey               | 37        | 0                     | 3                       | 28                    | 1                     | 0                       | 22        | 0                     | 0                       |
| Jersey x<br>Hereford | 58        | 3                     | 3                       | 56                    | 0                     | 1                       | 54        | 2                     | 0                       |

Jersey x Hereford dams gave birth to significantly heavier calves to the Simmental than did Jersey dams. There were no significant differences in 200-day weights of calves (table 2).

TABLE 2  
Birth and adjusted 200-day weights of steers

| Sire breed  | <u>Jersey dams</u> |                                 | <u>Jersey x Hereford dams</u> |                                 |
|-------------|--------------------|---------------------------------|-------------------------------|---------------------------------|
|             | Birth<br>wt. (kg)  | Adjusted<br>200-day<br>wt. (kg) | Birth<br>wt (kg)              | Adjusted<br>200-day<br>wt. (kg) |
| 1973 Drop   |                    |                                 |                               |                                 |
| Char.       | 35.2(15)*          | 259(12)                         | 36.8(12)                      | 242(6)                          |
| Char. x Sh. | 32.7b(7)           | 240(5)                          | 34.2a(16)                     | 255(8)                          |
| Simm.       | 32.5c(4)           | 276(3)                          | 38.7abc(13)                   | 272(7)                          |
| 1974 Drop   |                    |                                 |                               |                                 |
| Char.       | 34.7df(7)          | 250(6)                          | 35.6ab(12)                    | 256(9)                          |
| Char. x Sh. | 29.0bgi(5)         | 259(5)                          | 31.0acde(21)                  | 235(21)                         |
| Simm.       | 35.2ehi(9)         | 256(9)                          | 39.2cfgh(19)                  | 262(14)                         |

Within a drop, values with the same suffix are statistically different ( $P < 0.05$ ). \* Number of steers

Carcass weights of 1974 drop Simmental-sired calves were heavier than of calves sired by Charolais x Shorthorn bulls out of Jersey x Hereford cows. However, there were no significant differences in carcass composition between breed groups in this drop (table 3).

TABLE 3  
Carcass data of 1973 and 1974 steers

| Sire breed                       | <u>Jersey dams</u>  |             |          |           | <u>Jersey x Hereford dams</u> |             |          |           |
|----------------------------------|---------------------|-------------|----------|-----------|-------------------------------|-------------|----------|-----------|
|                                  | Carcass<br>wt. (kg) | Muscle<br>% | Fat<br>% | Bone<br>% | Carcass<br>wt. (kg)           | Muscle<br>% | Fat<br>% | Bone<br>% |
| 1973 Drop (Average age 619 days) |                     |             |          |           |                               |             |          |           |
| Char.                            | 295(12)*            | 56.6c       | 21.4b    | 17.1      | 289(6)                        | 61.1abcd    | 19.2a    | 17.0      |
| Char. x Sh.                      | 290(6)              | 55.2        | 21.4     | 17.3      | 306(8)                        | 54.6a       | 24.8ab   | 16.2      |
| Simm.                            | 284(2)              | 53.6d       | 23.0     | 16.4      | 302(6)                        | 56.8b       | 20.9     | 16.9      |
| 1974 Drop (Average age 281 days) |                     |             |          |           |                               |             |          |           |
| Char.                            | 174(5)              | 59.4        | 12.3     | 18.8      | 165(9)                        | 59.9        | 11.8     | 19.0      |
| Char. x Sh.                      | 153c(4)             | 60.0        | 12.0     | 18.6      | 157ab(19)                     | 59.0        | 14.2     | 18.3      |
| Simm.                            | 178b(8)             | 55.3        | 16.8     | 19.1      | 185ac(17)                     | 58.6        | 15.4     | 18.8      |

Within a drop, values with the same suffix are statistically different ( $P < 0.05$ ). \*Number of steers.

No significant differences in carcass weight were noted in the 1973 drop. However, Charolais-sired carcasses were generally leaner than other groups as measured by muscle and fat percentage.

No carcasses in the 1974 drop were considered yellow; four out of the forty 1973 drop were considered too pigmented for the Japanese market.

Calf weight, as a percentage of cow weight at weaning, is given in table 4. These values, and the growth rates achieved, are higher than

those for any other breed groups for which data (M.P. Deland unpublished) are available at Struan Research Centre.

TABLE 4  
Calf weight as a percentage of cow weight at weaning  
(1974 drop only)

| Sire Breed            | Jersey dams | Jersey x Hereford dams |
|-----------------------|-------------|------------------------|
| Charolais             | 89          | 74                     |
| Charolais x Shorthorn | 90          | 73                     |
| Simmental             | 81          | 79                     |

#### IV. DISCUSSION

The carcasses produced from systems using Jersey and Jersey x Hereford dams mated to Charolais, Charolais x Shorthorn and Simmental bulls have been described.

The vealer trade requires carcasses which are covered by fat but which weigh less than 180 kg. Most carcasses produced by the 281 day group were considered ideal for this trade.

There is an increase in the demand for pre-packaged cuts relative to demands for carcass beef. Carcasses of 300 kg and 8-12 mm of fat are sought for this trade because killing chains are fully utilized without penalty rates for over-weight carcasses. The 619-day old carcasses met this requirement and top prices were received for all except one carcass.

The adjusted 200-day live weights achieved are heavier than those for the Jersey crosses at Clay Centre (U.S.D.A. 1975) and for certain crosses observed in South Australia (Deland, Jakes and Giles 1974).

Although only three Charolais x Shorthorn sires were used, the results indicate that high growth rates are possible using such crossbred bulls

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#### VI. REFERENCES

- BUTTERFIELD, R.M. and THOMAS, P.L. (1973) - Manual of Techniques for Field Investigations with Beef Cattle. C.S.I.R.O., Canberra, 1973.
- DELAND, M.P., JAKES, J.E., and GILES, W. (1974) - Proceedings of the Australian Society of Animal Production. 10 : 17.
- THOMAS, R.C., and CARTWRIGHT, T.C. (1971) - Beef Cattle Research in Texas, 1971, Texas A & M University P.R. 2980.
- U.S.D.A. (1975) - Germ Plasm Evaluation Program Progress Report No. 2 ARS-NC-22 April 1975.