

SELECTION AND CROSSING WITHIN A PUREBRED CHAROLAIS HERD FOR PRODUCTION AND EASE OF CALVING

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European-type cattle are often incriminated as having high levels of calving difficulty (Mason 1971). In Australia, this is mostly as a result of inherent problems with early sire importations, but it has also been exacerbated by the predominant use of heifers in both grading-up and purebred programs.

'Whyalla', a 1620-ha southern Queensland property on brigalow belah country, has developed a purebred herd of Charolais cattle through an ovum transplant program. During the initial AI breeding-up phase, purebred heifers were fed in the paddock with a high grain-roughage ration to supplement rather poor grazing conditions on the property at that time. Not surprisingly, an initial level of calving assistance of 38 per cent resulted in 1980, and this was of considerable concern. Consequently, Brahman sires were introduced to the program for subsequent heifer joinings, in an attempt to lower the level of dystocia and to diversify production.

Traditionally, breeders of European-type cattle have adopted one of two different philosophies when selecting for improved calving ability, namely:

- (i) To select for low-dystocia sires having very low birthweights.
- (ii) To breed heifers with above-average growth-rates and skeletal size. Then to select on individual female calving ability.

The second approach has been used exclusively on 'Whyalla'. For the 1980 and 1981 joinings, two Brahman sires were used over the 'lesser' heifers, based on their phenotypic and pelvic size. The same Brahman sires were used by AI in both years (calving seasons 1 and 2). Heifers were twenty to twenty-seven months of age at joining.

Table 1: Effect of breed of sire and calving season on calving performance and early progeny growth of Charolais heifers

Breed of Sire	n	Calving Season 1 - Spring 1981				
		Calf Birthwt (kg)	Pelvic Size at Joining (sq cm)	Calving Difficulty Index*	Gestation Length (days)	Adjusted 200-Day Calf Weaning Wt (kg)
Charolais	40	44.95	265.3	42.50	288.4	252.1
Brahman	32	40.47	224.3	40.62	290.8	272.3
		†	†	NS	NS	§

Calving Season 2 – Autumn 1982

6 months
prior joining

Charolais	31	43.26	222.0	18.55	285.4	190.5
Brahman	26	38.81	190.4	16.35	291.3	203.1
		†	†	NS	†	NS

Combined Breed Comparison

Season 1	72	42.96	243.1	41.67	289.9	261.8
Season 2	57	41.23		17.54	288.7	196.0
		§		§	NS	†

* Based on 00 natural birth, 25 easy calf pull, 50 moderate pull, 75 hard pull, 100 caesarean, 125 breech birth, 150 stillbirth.

† P < .01

§ P < .05

NS = non-significant

Results from 1981 and 1982 calving periods show the predominant influences of seasonal and management effects on calving ability compared with breed of sire differences. This relates to a high-level supplementary feeding situation before calving period 1 compared with a restricted paddock grazing regime for heifers in period 2 that resulted in more appropriately conditioned heifers. We must, however, remember that joinings were specially designed and not made at random. Heifers joined to the Brahman sires had pelvises 30 sq cm smaller on average compared with those joined to Charolais sires, yet they had similar calving results.

Price and Wiltbank (1978) found that dystocia score was highly related to calf size and pelvic area and they infer that a 30 sq cm difference in pelvic size could be responsible for up to a 20 per cent difference in dystocia rate in Charolais cross heifers.

Barlow and O'Neill (1980) used Brahman sires over Hereford heifers and markedly increased the levels of dystocia through significant increases in calf birthweight, particularly with male calves.

In our trial, multiple regression analysis suggests that calf sex (P < .01) and the birthweight/pelvic area ratio (P < .01) explained 57 per cent of the variation in the degree of calving difficulty of Brahman-sired calves.

While feed management during pregnancy is now considered to be the major influence on calving ease at 'Whyalla' (given adequate-sized heifers and near normal culling levels), we do consider that usage of Brahman sires has enabled younger and smaller heifers to be calved satisfactorily. However, selection within the Brahman breed for sires of low birthweight should further enhance calving results.

The current level of assistance in 'Whyalla' Charolais heifers (3 per cent in 1983) is now less than the mean level reported for British breed herds in the Roma-Miles district of southern Queensland (Strachan 1983).

The early growth performance of the Brahman-sired calves to weaning has shown an 8 per cent advantage over the pure Charolais calves. Resultant Charbray bull progeny are expected to have a contribution to make to commercial crossbreeding programs in southern Queensland where breeders wish to add 'easy-care' characteristics as well as more 'lean meat' production.

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