

# FACTORS AFFECTING CALVING DIFFICULTY AND CALF MORTALITY OF HEREFORD AND HEREFORD CROSS CATTLE

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## INTRODUCTION

One option for increasing beef production is the use of crossbreeding. At Grafton, New South Wales, a well-designed crossbreeding program aims to evaluate Herefords and their crosses in a number of diverse environments. The need to assist females at calving and the death of calves at birth or before weaning are two important factors that influence the productivity of a beef herd. This paper presents progress results of calving difficulties experienced by Hereford and first-cross heifers and cows over a maximum of eight calving seasons and mortalities (between birth and weaning) of calves born to these females.

## METHODS

For five years Hereford cows of mixed ages were artificially inseminated to four sire breeds representing the following breed 'types': a large European breed – Simmental (S); a dual-purpose dairy breed – Friesian (F); a *Bos indicus* or tropical breed – Brahman (B); the local British breeds (control group) – Hereford and Poll Hereford (H).

A total of 920 calves (progeny of fifty bulls per breed) was produced from five AI programs and run on clover/grass pasture until weaning at about eight months of age. The last first-cross calves were weaned in March 1978.

First-cross and Hereford heifers remained on the research station and were allocated to three pasture quality groups. *High* consists of best clover/grass pasture and irrigated ryegrass pastures on alluvial flats. Heifers are supplemented with grain and protein to allow joining at fifteen months of age. *Medium* is improved Kikuyu/carpet grass pastures with limited white clover. Heifers in this group are first joined at twenty-seven months of age. *Low* has unimproved carpet grass pastures on soils of poor fertility at low stocking-rates. Heifers are first joined at twenty-seven months of age.

Each nutrition group (comprising HxH, SxH, FxH and BxH) was managed as a separate breeding herd, and was backcrossed to Hereford and Poll Hereford bulls. Females were syndicate-joined for twelve weeks in spring to about 3 per cent of bulls and bulls were rotated weekly. Calves were weaned at about eight months of age.

Cows were inspected twice daily during calving, and those experiencing difficulty for at least 2 hours were assisted. Every female was scored for ease of calving (difficult or not) and whether the calf was born alive or dead. Calves that were born alive but died before weaning were grouped into those dying on days one to seven of life, and those dying after day seven.

The GENSTAT program (1) was used for all analyses. Models for calving difficulty and calf mortality included the main effects of breed of female, nutrition group, sex of calf born, and whether the calving was the first (primiparous) or a later calving (multiparous) for each female. All two and three-way interactions were initially included but were dropped from the model if they were non-significant. Also investigated were the relationship between calving difficulty and calf mortality and the birthweight of calf, cow live-weight and cow body condition at calving, and pelvic measurements of the female at the first joining.

## RESULTS AND DISCUSSION

### Calving Difficulty

The overall percentage of females having difficulty at calving was low [2.5 per cent (1456)\*]. Factors significantly influencing whether a female had a difficult calving were breed of dam [4.6(348), 2.5(378), 2.6(361), and 0.5 per cent(369) difficulty for HxH, SxH, FxH, and BxH respectively]; the pasture system grazed [3.6(614), 1.2(503), and 2.7 per cent(339) respectively for High, Medium, and Low]; sex of calf born [3.7(727) and 1.4 per cent (729) for male and female respectively], and whether the female was primiparous or multiparous [6.9(360) and 1.1. per cent (1096) respectively]. There were no significant interactions between these main factors.

For primiparous females, higher calf birthweights were associated with difficult calving [33.6 v. 30.2 kg (SED = 0.95) for some and no difficulty respectively]. This was not so for calves born to multiparous females. Neither liveweight and body condition at calving nor pelvic measurements were associated with calving difficulty in primiparous heifers.

### Calf Mortality

Of calves born to cows and heifers in this herd, 4.2 per cent(1456) died either at birth or before weaning. Most of these deaths (70 per cent) occurred perinatally (either at or within seven days of birth). Significantly more calves born to heifers died before weaning [9.3%(360)] than calves born to cows [3.0 per cent(1096)]. There was also a significant breed x sex interaction. Apart from the Friesian-cross male calves, Hereford calves were more likely than crossbred calves to die before weaning.

Table 1: Effect of breed and sex of calf on calf mortality (%)\*

Sex of Calf	Breed of Dam			
	HxH	SxH	FxH	BxH
Male	8.0(163)	2.1(193)	8.1(186)	2.3(175)
Female	8.2(182)	1.2(163)	2.7(185)	4.2(192)

\* Numbers in ( ) parenthesis refer to numbers of animals in the group.

Neither body condition of female at calving nor pelvic measurements were related to calf mortality, but birthweight of calf and cow weight at calving were. Heifers' calves that died perinatally had heavier birthweights ( $32.3 \pm 0.9$  kg) than heifers' calves still alive at one week of age ( $30.3 \pm 0.3$  kg). However, for calves born to cows, those calves dying perinatally had lighter birthweights ( $31.3 \pm 1.0$ ) than those alive at one week of age ( $34.2 \pm 0.1$  kg). Heifers whose calves died perinatally weighed less at calving than heifers with calves alive at one week of age (349 v. 396 kg respectively; SED = 12 kg).

In conclusion, the overall level of calving difficulty in the herd was low, but the per cent mortality was economically important. Straightbred Hereford females had more calving difficulties than BxH. Females grazing High pasture and first joined at fifteen months of age had more difficulty than females on Medium pastures and first joined at twenty-seven months of age. Heifers had more difficulty than cows at calving and lost more calves between birth and weaning. Of the heifers' calves born, the groups with calving difficulty and/or perinatal mortality had higher birthweights than other calves.

## REFERENCE

ALVEY, N. G. *et al.* (1977). GENSTAT. (Rothamsted Experimental Station: Harpenden, Hertfordshire.)