

DYSTOKIA AND ASSOCIATED EFFECTS IN A CENTRAL QUEENSLAND HEREFORD HERD

R.J. WEBBER*, C.R. ESDALE*, P.K. O'ROURKE** and T.H. RUDDER**

SUMMARY

The incidence of dystokia was studied in 12 Hereford calf crops (1339 calves) sired by 45 bulls. Most cases occurred in primiparous cows calving as two or three year olds (13.9 and 4.6%, respectively), and in older multiparous cows the incidence was 0.8%.

The incidence of perinatal mortality from assisted births amongst the two and three year old primiparous cows was 78.6 and 87.5% ($P>0.05$) compared with 14.5 and 5.5% ($P<0.01$) from unassisted births, respectively. Amongst the two and three year old primiparous cows, a higher proportion of male than female calves required assistance at birth (14.3 vs 4.9%, $P<0.01$) and subsequently died (21.2 vs 12.4%, $P<0.05$). The death rate of primiparous cows that had to be assisted at birth was 19.4%.

Birth weights of calves from assisted births were heavier than those from unassisted births, 31.9 vs 28.1 kg and 37.5 vs 31.0 kg, ($P<0.01$) for two and three year old primiparous cows, respectively. Males had heavier birth weights than females, 30.7 vs 29.3 kg and 34.9 vs 33.5 kg, ($P<0.05$) for the two cow age groups in logical sequence.

It was not possible to identify any particular sires with high dystokia levels and sire effects for birth weight occurred in only two of the 12 years.

(Key words: Hereford, primiparous, dystokia, mortality, birth weight.)

INTRODUCTION

Dystokia is widely recognised as a source of economic loss in beef herds in southern Australia including southern Queensland, especially among Hereford and Poll Hereford primiparous cows (Wythes et al. 1976). The extent of this problem in central and northern Queensland is not documented but is not generally regarded as a major problem by producers who breed Hereford cattle in these regions.

The incidence of dystokia in a Hereford herd in the southern brigalow region of central Queensland is reported in this paper.

MATERIALS AND METHODS

The Hereford breeders were maintained at Brigalow Research Station (24°50'S 149°48'E) approximately 190 km south west of Rockhampton, Queensland. Predominant pasture species grazed by the herd were buffel grass (*Cenchrus ciliaris*), rhodes grass (*Chloris gayana*) and green panic (*Panicum maximum* var. *trichoglume*) growing on duplex and cracking clay soils. Average annual rainfall is 722 mm of which approximately 70% falls from November to April, inclusive. Maximum and minimum ambient temperatures vary from a mean of 33°C and 21°C in January to 21°C and 6°C in July. This climatic pattern results in pastures supplying high nutritional levels from October/November to April/May and maintenance to sub-maintenance levels during the rest of the year.

* Queensland Department of Primary Industries, M.S. 586, Theodore, Qld 4719.

** Queensland Department of Primary Industries, GPO Box 46, Brisbane, Qld 4001.

The Hereford cows were originally purchased from a central Queensland commercial herd in 1964. Since then, bulls to breed herd replacement heifers have been purchased from 10 central Queensland and two south Queensland studs. The 45 sires used were representative of the bulls offered for sale by the studs.

Breeders were joined in single sire groups for c. 10 weeks commencing c. December 10, 1972 to 1983 to produce calf crops born September to December, 1973 to 1984, inclusive. During the calving season the breeders were inspected daily when calving date, calf birth weights, cow/calf identification, sex of calf and type of birth (assisted or unassisted) were recorded. Calving assistance was given to any cases that failed to make progress two to four hours after the first sighting. Manual traction was sufficient for the majority of cases but with the more difficult cases embryotomy or caesarian section were used. Calf survival and cow survival rates were categorised into failure to survive for seven days post partum and lived for eight days or more.

Data on calving assistance and perinatal mortality were analysed using the chi-square test. Birth weights were analysed using a standard least squares method for unequal sub-class numbers. The factors included in the final model were year, sex, cow age and calving assistance because preliminary analyses showed that interactions were unimportant.

RESULTS AND DISCUSSION

Multiparous cows aged three years and older had very few assisted births (Table 1). Primiparous two and three year old cows had a higher incidence of assisted births ($P<0.01$) and within the primiparous group, two year olds had more assisted births ($P<0.01$) than three year olds.

Table 1 The number of calves born and incidence of assisted births by dam age at calving, and parity

Dam age	Parity	Total no.	% Assisted
2 years	Primi	201	13.9
3 years	Primi	173	4.6
3 to 10 years	Multi	965	0.8

These results are similar to the 11-18% incidence of assisted births in primiparous cows and 1% or less in multiparous cows reported from southern Queensland by Wythes et al. (1976). Also, these results are not markedly different from those of Strachan et al. (1980) showing an incidence of 17.9 and 38.1 for a low and a high dystokia herd each of 35 and 45 heifers, respectively. The levels of dystokia in the Brigalow Research Station herd indicate that the extent of the problem is not markedly different between southern Queensland and the brigalow region of central Queensland.

Effects of dystokia among primiparous cows

Because the incidence of dystokia was negligible in the multiparous group further analyses of these data were restricted to primiparous cows.

Table 2 Incidence of perinatal mortality by birth type and age of primiparous cows at calving

Dam age	Assisted births		Unassisted births	
	No.	%	No.	%
2 years	28	78.6	173	14.5
3 years	8	87.5	165	5.5

Perinatal mortality rates were high among assisted births with no significant difference ($P>0.05$) between two and three year old cows (Table 2). In the unassisted birth group, calf losses were higher ($P<0.01$) in the two year than in the three year age group. These losses may have been due to anoxia following undetected difficult births or the cows deserting their calves shortly after parturition.

The main advantage to calving supervision and assistance was improvement in survival rates of dystokia affected cows (Hodge et al. 1982) and animal welfare considerations. Amongst cows with unassisted births there were no known deaths for at least seven days post partum while in cows with assisted births 21.4% (6/28) of two year old and 12.5% (1/8) of three year old primiparous cows did not survive. The major cause of these deaths was posterior paresis following assistance.

Over all primiparous cows, more ($P<0.01$) male calves (14.3%) required assistance at birth than females (4.9%). Male calves had higher overall perinatal mortality rates than female calves (21.2 vs 12.4% $P<0.05$). Birth weights of male calves were heavier ($P<0.05$) than females; and calves from assisted births were heavier ($P<0.01$) than those from unassisted births for both dam age groups (Table 3).

Table 3 Effect of calf sex and birth type on birth weights for two dam ages

Dam age	Calf sex		Birth type		SD
	Females	Males	Assisted	Unassisted	
2 years	29.3	30.7	31.9	28.1	3.63
3 years	33.5	34.9	37.5	31.0	4.13

Hodge and Stokoe (1974) and Hearnshaw et al. (1984) found that the incidence of dystokia in primiparous cows was significantly correlated with calf birth weight. Therefore, a higher incidence of dystokia and mortality among male calves is to be expected.

Sire and year effects

From the data available, sire and year effects on the incidence of dystocia could not be separated. Generally sires were used for only one year and there was partial confounding with dam age, similarly year effects were confounded with sire effects. A significant ($P<0.01$) effect of sire on birth

weight occurred in only two years. In the 1979 calving the range between six sires was 27.2 to 31.4 kg (average 29.6 kg) and in 1984 the range between three sires was 35.4 to 39.4 kg (average 36.9 kg) birth weight. Ignoring sires, birth weights varied from 29.2 (1982) to 35.2 (1984) kg with an average for all years of 31.5 kg. Seasonal conditions for c. six months preceeding the 1982 calving were markedly below average while for the comparable period preceeding the 1984 calving were markedly above average.

Commercial implications

These results show that the incidence of dystokia in Hereford herds in the brigalow area of central Queensland is similar to that in comparable herds in southern Queensland. Given the high incidence of dystokia and associated calf losses, difficulties in regularly achieving target joining liveweights of 250 to 275 kg (Rudder et al. 1985) and the small extra economic return (Taylor and Rudder 1984), it is doubtful whether first calving at two years of age is justified in central Queensland Hereford herds.

The inability to discriminate between sires for incidence of dystokia and the infrequent effects of sire on birth weight indicate that it is unlikely that low dystokia risk sires could be reliably identified in most commercial bull breeding herds. Therefore, mitigation of this problem appears to be restricted to calving supervision or a change to breeds with lower dystokia levels.

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