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Influence of non genetic factors on birth weight, sex ratio and survivability of crossbred jersey calves

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The data on 88 crossbred calves (Jersey x Local) for a period of over six years *i.e.* from June 2004 to March, 2010 has been recorded for the study. The overall mean birth weight of jersey crossbred calves was found to be 18.23 ± 0.45 with coefficient of variation 15.9. The average birth weight of female calves was recorded to be 16.72 ± 0.23 kg the range being 14.12 kg in first parity to 21.35 kg in fifth parity. The average birth weight of the male calves was found to 20.25 ± 0.42 kg, the range being 16.58 kg in first parity to 23.38 kg in fifth parity. The birth weight of male calf is found to be slightly higher than the female calf but statistically no significant differences were observed. It is observed that parity and season has no influence on the birth weight and sex ratio of the calves. Lowest birth weights were observed in first parity and highest in fifth parity. The average survivability of calves was found to be 89.77% and the male calves have 2.74 % higher survivability than the female calves.

Key words : Birth weight, Sex ratio, Survivability, Crossbred Jersey calves

INTRODUCTION

The birth weight of calves reflects prenatal and postnatal growth and its survivability. The growth rate, life time expectancy of production and reproduction traits depends on birth weight of calf. The optimum birth weight of calf indicates good health. Birth weight plays a major role in determining the future productive and reproductive performance of the animals, which is greatly influenced by environment and managemental factors besides the genetic factor. Since body weight have a positive correlation with growth and development, therefore, it plays a pivotal role in selection of animals for future replacement stocks at early stages of life. Higher birth weight is associated with early attainment of puberty and maturity. As the puberty is associated with body weight which is usually attains when the heifer weigh about 55% of mature body weight. Producers want the replacement of heifers to fully develop their lactation potential at the preferred age with minimal expense (James and Collins, 1992) for which birth weight is important. Birth weight of the calves was shown by Bellows *et al*. (1971) to be related to calving difficulty and by Petty and Cartwright (1966) to be related to subsequent growth rate. Hence, the present study has been undertaken to find out the effect of non genetic factors on the birth weight, sex ratio and survivability of crossbred jersey calves.

MATERIALS AND METHODS

The present study had been carried out at Dairy farm, Faculty of Agriculture, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Wadura, Sopore (J & K). The data on 88 crossbred calves (Jersey x Local) for a period of over six years *i.e.* from June 2004 to March, 2010 has been recorded for the study. Pre- calving weight of cows was taken before one week of the expected date of calving, which was composed of the cow's weight plus weight of the fetus, fetal membranes and fluids. The body weight of the calves for males as well as females were taken separately immediately after birth. The survival rate of the calves was recorded from birth to 2 months of age. The dams were depended upon available forage consisting of Bermuda grass (*Cynodon dactylon*) Clovers (*Trifolium species*) Rye grass (*Lolium perenni*) Bromus grass (*Bromus species*) Motha grass (*Cyperus rotandus*) etc. during summer season (April to September) and paddy straw, maize straw plus limited quantity of concentrate during winter (October to

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Table 1 : Birth weights, sex ratio, survivability of calves and pre-calving body weight of dams

Parity	Birth weight (kg)	Sex		Sex ratio (M:F)	Survivability		Bodyweight of dam before parturition
		Male	Female		Male	Female	
First (P_1)	15.25 (10)	6	4	1.5:1	5	3	281 (10)
Second (P_2)	16.34 (12)	7	5	1.4:1	6	4	297 (12)
Third (P_3)	17.35 (14)	6	8	0.75:1	6	7	315 (14)
Fourth (P_4)	23.12 (13)	6	7	0.86:1	5	6	316 (13)
Fifth (P_5)	23.45 (10)	6	4	1.5:1	5	4	315 (10)
Sixth (P_6)	22.37 (11)	5	6	0.83:1	5	5	314 (11)
Seventh (P_7)	21.46 (11)	5	6	0.71:1	5	6	312 (11)
Eighth (P_8)	20.32 (7)	4	3	1.33:1	4	3	310 (7)
Total/ average	88	45	43	1.05:1	89.77%		307.5 ± 12.34

Figures in the parenthesis indicates number of observation
M=Male, F=Female

March). Grass supply increases as spring progressed and cows improved in condition which resulted in a shorter interval from calving to pregnancy. The data obtained are classified according to sex, parity and season of birth. The parity are divided into eight classes *viz.*, first (P_1), second (P_2), third (P_3), fourth (P_4), fifth (P_5), sixth (P_6), seventh (P_7) and above seventh (P_8). The whole year was divided into two seasons as summer (April to September) and winter (October to March). The data were analysed by Snedecor and Cochran (1967).

RESULTS AND DISCUSSION

The overall mean birth weight of jersey crossbred calves was found to be 18.23 ± 0.45 with coefficient of variation 15.9. These findings are in accordance with the findings of Hussain *et al*. (2007). However, the present findings were lower than that are reported by (Thamilavan *et al.,* 2001 and Sether and Govindaiah, 2000) in jersey crossbred calves. Madhuri and Suman (2008) also observed higher birth weight in Holstein Friesian and Hariana crossbreds calves than the findings of the present study. The average birth weight of female calves was recorded to be 16.72 ± 0.23 kg the range being 14.12 kg in first parity to 21.35 kg in fifth parity. The average birth weight of the male calves was found to 20.25 ± 0.42 kg, the range being 16.58 kg in first parity to 23.38 kg in fifth parity. The birth weight of male calf is found to be higher than the female calf in the same parity but statistically there were no significant differences observed between the birth weight of male and female. In contrary to this, Ulemale *et al.* (2008) found significantly ($p<0.01$) higher birth weight in male. The higher bodyweight in male might be due to anabolic effect of male sex hormones (Hafez, 1962). Slightly higher body weight was recorded in summer than those of winter but they do not differ significantly.Vasanthakumar *et al*. (2008) also reported that sex of the calf and seasons of calving did not have any significant influence on the birth weight. However, Ulemale *et al.* (2008) reported that the birth weight of male is significantly ($p<0.01$) heavier than female calves and birth weight of male and female calves is significantly ($p<0.01$) affected by season. In the present study, it is observed that parity and season has no influence on the sex ratio of the calves. The average survivability of calves was found to be 89.77%. The lower survivability is attributed due to severe cold during winter (temperature goes up to -8^0c), wind, damp ground and water logging due to poor drainage and low topography of the farm site. Maximum number of calves died during birth to 15days of age (5.68%) followed by 3.40% during 15 days to one month of age and 1.14% during one month to two months of age. This is in agreement with the findings of Temple (1967) who reported that an average of 89.4% of the calves born in Experimental Station herds in the 14 Southern States survived to weaning. Male calves had 2.74 % higher survival rates than the female up to two months of age, a difference which was attributed to the greater vigour of male calves at birth due to anabolic effect of sex hormone and the ability of males to withstand cold, rains, wind, damp ground and water that contributed to high calf losses (Reynolds *et al.*, 1980). Dystocia was not a problem to these cases. It has also been observed that calves born to older dams had a higher survival rates than calves born to young dams because of greater vigour of the calves and better mothering ability of the dams.

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