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Short Communication

Effect of Sex on Some Reproductive Traits of Rathi Cattle under Arid Conditions

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Rathi breed of cattle, found in Thar desert, is well recognised for its milk production. The information on different productive and reproductive parameters is very scanty. As such, the present investigation was undertaken to evaluate the effect of clinical and physiological parameters on the reproductive efficiency of animals under intensive farming conditions.

This study was conducted at Bikaner (20°01′N, 73°22′E), which is 152 m above the mean sea level. Twenty five primiparous Rathi cows, calving between 1988 and 1995, were compared to test whether the sex of offsprings had any effect on the traits like gestational weight gain, weight of calf at birth, time taken for expulsion of placenta and weight of placenta. Only clinically normal parturition cases were studied. All the cows were primiparous and were maintained under grazing-cum-stall fed management conditions. All the calves born were sired by the same bull. They were allowed 8 h of grazing in natural pasture, which had *Lasiurus sindicus*, *Elusine compressa* and *Cymbopogon jawarancusa* as perennial grasses, and *Aristida funiculata* and *Cenchrus biflorus* forming major component of annual grass species. In addition, they were daily given chaffed *L. sindicus* hay and pelleted cattle feed at the rate of 3 kg and 2 kg per head, respectively, from December to July. Water was provided before sending them out, and again on their return from grazing. The data were analysed as per Snedcor and Cochran (1967) (Table 1).

The minimum temperature ranged from 1.7 to 17.2°C during December and the maximum ranged from 40.0 to 48.1°C during June. The per cent relative humidity varied from 17 to 38 during June and 26 to 60 during December. The average annual rainfall during the period was 181 mm and 83% of the total rainfall was received between June and September.

The average body weights of cows at service and weight at calving were 228.41±3.29 and 302.27±8.49 kg, respectively. The cows which gave birth to male calves, gained more weight (79.67±3.41 kg) during gestation than those giving birth to female calves (68.83±6.37 kg). The pregnant animals gained body weight due to growth of conceptus as well as to increasing maternal body weight. The differences due to sex of the calves were observed to be significant.

Table 1. Average (mean ± S.E.) for productive and reproductive traits of primeparous Rathi cattle

Sex of calf	n	Weight at service (kg)	Weight at calving (kg)	Weight gain during pregnancy	Birth weight (kg)	Placenta weight (kg)	Time taken for expulsion of placenta (min.)
Male	12	229.33^{a}	309.00^{a}	79.67^{a}	20.67^{a}	2.67^{a}	214.17^{a}
		± 2.72	± 10.91	± 3.41	± 1.09	± 0.46	± 30.45
Female	13	227.50^{b}	296.33^{a}	68.53^{b}	18.67^{b}	2.18^{b}	295.00^{b}
		± 8.27	± 11.53	± 6.37	± 0.44	± 0.14	± 50.59
Overall	25	228.41	302.27	74.96	19.67	2.43	254.59
		± 3.29	± 8.49	± 2.45	± 0.69	± 0.27	± 29.49

Mean having different superscripts differ significantly ($P<0.05$).

The average birth weight of calves was 19.67±0.69 kg. It was higher (20.67±1.09 kg) in case of male than the female calves, however, the differences due to sex were significant. Similar findings were also reported by Bhatnagar *et al.* (1979).

The placentae, on an average, weighed 2.43±0.27 kg. They were heavier in the case of males (2.67±0.46 kg) than in female (2.18±0.14 kg). The differences due to sex were significant ($P<0.005$). The placenta weight was positively correlated with birth weight. It corroborates with the findings of Singh (1971).

A cow, on an average, took 254.56±29.49 minutes for expulsion of placenta. A cow which gave birth to female calf took longer time (295.00±50.59 minutes). The heavier placenta takes shorter time for expulsion (Singh, 1971). The differences due to sex of the calf for this stage were significant ($P<0.05$). Jainudeen and Hafez (1980) observed that the completion of this stage of parturition took 4 to 5 hours in cattle.

It can be concluded that the sex of an offspring affects the weight gain in pregnant cow during pregnancy, birth weight of the calf, and time taken for expulsion of the placenta in Rathi cows. The average values for weight gain during pregnancy, body weight and placenta weight were more in case of male offspring, however, the average time taken for expulsion of placenta was more in the case of female offsprings.

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References

Bhatnagar, D.S., Sharma, R.C. and Sundaresan, D. 1979. *Karan Swiss*. NDRI, Karnal.

Jainudeen, M.R. and Hafez, E.S.E. 1980. Gestation, parental physiology and parturition. In *Reproduction in Farm Animals* (Ed. E.S.E. Hafez), pp. 247-283. Lee and Febiger, Philadelphia, USA.

Singh, N. 1971. Studies on gestation length and process of parturition in cattle. *M.Sc. Thesis*, HAU, Hisar.

Snedcor, G.W. and Cochran, W.G. 1967. *Statistical Methods*. Iowa State University Press, Iowa, USA.