

REPRODUCTIVE PERFORMANCE OF INDIGENOUS CATTLE IN KOKRAJHAR DISTRICT OF ASSAM

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The present study was undertaken to evaluate the performance of some reproductive traits of native cattle having some efficient reproductive capabilities. The effect of parity on these traits was also studied. Data pertaining to reproductive traits of 375 numbers observations were collected from the statement given by farmers. The traits considered for this study were Age at first calving, Dry period, Service period, Gestation period and calving interval. The mean (\pm SE) values of the said traits are 42.041 \pm 0.185 months, 222.208 \pm 1.753 days, 188.629 \pm 1.50 days, 274.562 \pm 0.371 days and 463.463 \pm 1.623 days, respectively. All traits studied did not differ significantly ($P>0.05$) between different parities. Therefore, the data generated from this study for indigenous cattle for reproductive performance would be useful to characterize them.

Keywords: reproductive trait, parity,

Since, reproductive efficiency of cow is inseparably associated with the profitability, comprehensive study on reproductive traits of indigenous cattle is essential for improving the breeding efficiency and to formulate selection and breeding strategy. It is also an important tool of a breeder to evaluate the factors affecting the reproductive traits of indigenous cattle of Assam. Assam possesses 80.4 lakhs indigenous cattle out of which 3.12 lakhs indigenous cattle found in Kokrajhar district (as per sample survey, 2010-2011 by Directorate of Economics and Statistics, Govt. of Assam). It is observed that, indigenous cattle of Kokrajhar district of Assam having some superb reproductive efficiency which can be comparable to other native breeds of India. Considering the

above facts and circumstances the present study was conducted with a view to know the reproductive potential of native cattle in village condition.

MATERIALS AND METHODS

Location of study: The data used in this study were collected from the statement given by farmers during the period from September, 2011 to October, 2012 in three blocks viz., Gossaigaon, Dotoma and Titaguri of Kokrajhar district, Bodoland Territorial Administrative District, Assam. As a part of the first phase, a preliminary survey was conducted in the three blocks to ascertain the local cattle. Subsequently, five villages under each block, thus a total of 15 villages were randomly selected to conduct the study. A person who had a minimum of 5 numbers of local cattle was considered as a farmer, thus a total of 375 numbers of observations were collected pertaining to the present study for collection of data on reproductive traits and prevailing managemental practices. Details of the observation were recorded in a standard questionnaire (modified form) prepared as per the guideline provided by the National Bureau of Animal Genetic Resources, Karnal, Haryana for cattle genetic resources.

Traits considered for the study:

Traits included for this study were age at first calving, dry period, service period, gestation period and calving interval.

Age at first calving (AFC): Age at first calving was calculated as the difference between date of birth and the date of first calving and was expressed in months.

Dry period (DP): Dry period was obtained by subtracting the date of drying off from the date of next calving and was expressed in days.

Service period (SP): Service period was calculated as the time interval between the date of calving and the date of next fertile service and was expressed in days.

Gestation period (GP): Gestation period was calculated as the time interval between the date of successful service and the date of calving and was expressed in days.

Calving Interval (CI): Calving interval was calculated as the period between two consecutive calving and was expressed in days.

Data analysis and statistical model:

The least squares analysis of variance technique suggested by Harvey (1975) was carried out in order to study the effect of parities on reproductive traits. The mathematical model used was as follows:

$$Y_{ij} = \mu + P_i + e_{ij}$$

Where, Y_{ij} = Dependent variables (AFC, DP, SP, GP & CI)

μ = Population mean

P_i = Effect of i th lactation number (where $i = 1, 2, 3, \dots$) and

e_{ij} = Random error associated with Y_{ij} observation

RESULTS AND DISCUSSION

Feeding and management:

Traditional managerial practices were followed by the farmers. Animals were let loose during day time for open grazing and were housed inside the shed during night. All categories of animals viz. Cow, calf, heifer and bullock were kept together in the same house. Amount of feeds and fodders and water consumed by cattle could not be estimated as they grazed during day time in fields. Of course milking cows were sometimes offered more or less home mixed concentrates. The common ingredients of home mixed concentrates were wheat bran, rice polish, bason, matikali, gur/molasses and common salts. Similar feeding practices were also observed by Hussain (2002) in local cattle of Assam. Farmers were not aware of regular health check up and disease preventive measures of their animals and those were treated only when the symptoms of disease were pronounced. Vaccination against FMD, HS and BQ were done without maintaining the regularity of booster doses.

Age at first calving: Table:1 shows that the AFC was found to be 42.041 ± 0.185 months. Relatively longer AFC (46.719 months) was found by the study of Hussain (2002) for the local cattle of Assam. A number of previous works indicated that management factors especially nutrition determines growth rate and reproductive development (Masama *et al.*, 2003).

Dry period: The least squares mean for DP derived from 375 records distributed over first to fourth calving was found to be 222.208 ± 1.753 days which was longer than the findings of Islam *et al.* (2002) in nondescript cattle of Bangladesh (170.00 ± 68.89 days) and Gaur *et al.* (2004) in Ponwar breed of cow (110.0 ± 2.6 days). Since the trait is management dependent, longer dry period in the population under study was indicative of relatively poor managerial practices. Non significant effect of parities on dry period in the present study was also reported by Nagarcenkar and Rao (1982) in crossbreds of Tharparkar with exotic breeds.

Service period: The mean SP was obtained as 188.629 ± 1.50 days (Table:1) which was higher with the result of Goshu *et al.* (2007) for Friesian cattle (177 ± 5.4 days). Comparatively shorter SP was reported (159 ± 1.56 days) for Sahiwal cow by Zafar *et al.* (2008). The effect of calving parity on SP did not differ significantly ($P < 0.05$) (Table:1). The result is not in agreement with the results found by Yifat *et al.* (2009) and Zafar *et al.* (2008).

Gestation period: The mean GP was found to be 274.562 ± 0.371 days which is almost similar to the findings of Rahman *et al.* (2001) in Zebu cattle of Bangladesh (274.50 days). However, higher than present value for GP was reported by Habib *et al.* (2010) in Red Chittagong cattle (282.11 ± 0.579 days). GP was not significantly affected by different order of lactation (Table:1). The results are in accordance with the results of Yifat *et al.* (2009).

Calving interval: The least square mean for CI was found to be 463.463 ± 1.623 days (Table: 1) which was similar with the findings reported by Dahiya *et al.* (2003) in Haryana cows (460.49 ± 14.67 days). No significant effect of lactation order on CI in

the present finding was in accordance with reports of Bhatnagar *et al.* (1983) in Sahiwal

cows and Das (1984) in Jersey cows.

Table:1 Reproductive traits of Indigenous cattle affected by different parities in Kokrajhar district

Traits	No of observations	Mean \pm SE	Parity/ Lactation order				Significance
			1 st	2 nd	3 rd	4 th	
Age at first calving	375	42.041 \pm 0.185 months					
Dry Period	375	222.208 \pm 1.75 days	227.265 \pm 4.225 (75)	219.127 \pm 2.620 (145)	223.123 \pm 3.1 51 (95)	219.319 \pm 4. 439 (60)	NS
Service period	375	188.629 \pm 1.50 days	186.741 \pm 3.553 (75)	192.372 \pm 2.312 (145)	190.123 \pm 2.6 01 (95)	185.281 \pm 3. 656 (60)	NS
Gestation period	375	274.562 \pm 0.371 days	274.132 \pm 0.508 (75)	275.678 \pm 0.334 (145)	274.125 \pm 0.4 02 (95)	274.316 \pm 0. 621 (60)	NS
Calving interval	375	463.463 \pm 1.623 days	461.131 \pm 3.423 (75)	468.180 \pm 2.272 (145)	465.734 \pm 2.3 10 (95)	458.810 \pm 3. 632 (60)	NS

The Age at first calving, Calving interval and numbers of services per conception are considered to be a good indicator of breeding efficiency. Majority of farmers responded that their animals calved first at the age of 3-3.5 years and in respect of calving interval and numbers of services per conception were up to 1.2 years and not more than 3 times respectively which can comparable with the indigenous cattle of Assam Hussain (2002).

CONCLUSION

It is very difficult to draw any conclusion on the present traditional farming system of the cattle owners, as they do not follow any scientific managerial practices for feeding, breeding and health care management. Therefore, there is a need for systematic research for improvement of the reproductive traits of these indigenous cattle of this region.

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