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Study on the Performance of Red Chittagong Cows under Different Production System

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Abstract: The productive and reproductive traits of Red Chittagong cows were studied in both farm and rural conditions. Some traits like time of estrus after calving, calving interval, milk yield and lactation period was better in farm condition than the rural conditions. Productive and reproductive performance of Red Chittagong cows were comparable to that of the pabna cattle.

Key words: Red Chittagong cows, production system, performance

Introduction

More than 80 percent of rural people kept local cattle in Bangladesh. Among the traits (both quantitative and qualitative) the productive and reproductive traits are the major factor for a profitable livestock rearing. These traits of a germ plasm differ in various production systems. This is due to the differences in management and as well as the awareness of the people. The productive and reproductive performance of Red Chittagong Cattle has not yet been evaluated. The present study therefore was undertaken to evaluate the performance of Red Chittagong Cattle in different production systems.

Materials and Methods

A questionnaire was designed to collect data on productive and reproductive performance and also management of Red Chittagong cows (RCC) at farm and rural conditions.

Farmers of 6 (six) villages in Hathajary and Potia Thane of Chittagong district were interviewed to collect the data and at the same time the available data in the Government dairy farm at Hathajari and Agricultural University dairy farm, Mymensingh were collected. A total of 22 farm families, they are use to rear RCC were interviewed. Data on the productive and reproductive traits and also the managerial conditions were collected and were analyzed in a completely randomized design following model describe by Steel and Torrie (1980):

$$Y_{ij} = m + F_i + e_{ij}$$

Where:

Y_{ij} = Individual observation

m = General mean

F_i = Effect of production system

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

Results and Discussion

The results and discussion of various productive and reproductive traits of Red Chittagong Cows in different production systems were described below.

Age at sexual maturity: The age at puberty or first heat of RCC was 33.25 ± 2.75 months in farm condition and 33.41 ± 4.23 months in rural condition (Table 1) and the difference found did not vary significantly ($P < 0.05$). The age at puberty of indigenous cows was reported to vary from 36 to 42 months (Ahmed and Islam, 1987) and is longer than that of the RCC.

Services per conception: Services per conception indicate the fertility status of the cows. The average service per conception of Red Chittagong cows at farm conditions was 1.57 ± 0.53 and in rural condition was 1.47 ± 0.61 . The difference in service per conception between the two rearing systems was statistically significant ($P < 0.01$) (Table 1).

Age at first calving: Average age at first calving of Red Chittagong cows was the highest in rural condition 46.46 ± 4.11 months and the lowest in farm condition 44.75 ± 3.40 months and differed significantly ($P < 0.05$) (Table 2).

Postpartum heat period: Table 1 shows the difference on time of estrus after calving (Postpartum heat period) of Red Chittagong cows in different production systems. The highest period was found 73.42 ± 43.36 days in rural conditions and the lowest 54.28 ± 11.70 days. The difference was significant ($P < 0.01$).

Calving interval: The calving interval of RCC significantly ($P < 0.001$) differed between the farm condition 458.40 ± 71.82 days and rural condition was 529.35 ± 127.50 days. The calving interval of RCC found to be almost similar with that of the Local, Holstein-Friesian and Pabna cattle (Table 3).

Gestation Period: Average gestation period of Red Chittagong cows in different production system ranged from 281 to 282 days. There was no statistically significant difference ($P > 0.05$) in gestation period of Red Chittagong cows in different production system. Islam (1980) reported a similar period of gestation for the RCC.

Table 1: Reproductive performance of Red Chittagong cows in farm and rural conditions

Traits	Farm condition	Rural condition	LSD 0.05	Level of significance
Age at sexual maturity (months)	33.25 ± 2.75 (4)	33.41 ± 4.23 (17)	4.55	NS
Services per conception (times)	1.57 ± 0.53 (7)	1.47 ± 0.61 (19)	0.52	**
Age at first calving (months)	44.75 ± 3.40 (4)	46.64 ± 4.11 (17)	4.52	*
Postpartum heat period (days)	54.28 ± 11.7 (7)	73.42 ± 43.36 (20)	33.62	**
Calving interval (days)	458.4 ± 71.82 (5)	529.35 ± 127.54 (20)	120.96	**
Gestation period (days)	281.0 ± 2.94 (4)	282.14 ± 2.67 (7)	3.66	NS

Table 2: Productive traits of Red Chittagong cows in farm and rural conditions

Traits	Farm condition	Rural condition	LSD 0.05	Level of significance
Birth Weight (Kg)	17.28 ± 0.76 (7)	16.00 ± 1.52 (20)	1.15	NS
Mature live weight (Kg)	234.28 ± 5.91 (7)	206.5 ± 20.97 (20)	16.38	NS
Av. Milk Yield (Kg/d)	2.0 ± 0.65 (7)	1.80 ± 0.87 (20)	0.25	*
Lactation Period (days)	222.85 ± 16.03 (7)	214.7 ± 21.68 (20)	17.75	**

Table 3: Age at sexual maturity, age at first calving, gestation period, calving interval and service per conception in different genetic groups of cows in farming conditions.

Genetic group	Age at sexual maturity (day)	Age at first calving (day)	Gestation period (day)	Calving interval (day)	Service per conception (day)
Red Chittagong	997.5 ± 82.5	1343.47 ± 102	281 ± 2.94	458.40 ± 71.82	1.57 ± 0.53
Pubna	686.4 ± 50.70	1269.29 ± 42.0	283.11 ± 0.75	450.50 ± 17.50	1.29 ± 0.60
Friesian	659.4 ± 33.59	939.97 ± 45.66	283.11 ± 0.75	492.57 ± 62.86	1.27 ± 0.19
Local	1140	1470	273.48 ± 0.90	484.21 ± 11.80	1.76 ± 0.08
Sahiwal	1080	1500	279.19 ± 0.09	502.25 ± 13.32	1.90 ± 0.12

Source: Ahmed and Islam (1987) and Majid *et al.* (1994)

Birth weights and mature live weight: Table 2 shows the birth weight of calves and was 17.28 ± 0.76 kg in farm condition and 16.00 ± 1.52 kg in rural. The table also shows the mature live weight of RCC and was 234.28 ± 5.91 kg in farm conditions and 206.5 ± 20.97 in rural condition.

Milk yield: Average milk yield (litre/d) and lactation period (days) of Red Chittagong cows in different production systems is shown in Table 2. The average milk yield of Red Chittagong cows was 2.0 ± 0.65 kg in farm condition and 1.80 ± 0.87 kg in rural conditions. The average milk production was significantly ($P < 0.05$) higher in farm condition. The level of milk production of RCC in rural condition was found to be lower than that was reported by Ahmed and Islam (1987) and Hague *et al.* (1988), they found daily milk yield of Local cows in farm condition was 2.56 kg/head and 2.50 kg/head respectively. The lactation period of Red Chittagong cows is found 222.85 ± 16.03 kg in farm conditions and 214.71 ± 21.68 kg in rural conditions. There was a significant difference ($p < 0.05$) in lactation period of RCC in the two rearing systems.

It may be concluded from the above results and discussions that the productive and reproductive performance of Red Chittagong cows differed between the production systems in organized farms or farmers conditions. Their production and reproduction performance were comparable with that of other cattle. Further study is required to evaluate their performance and improve it through proper breeding, feeding and management.

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References

- Ahmed, Z. and T.S. Islam, 1987. Cattle Breeding Program through Artificial Insemination in Bangladesh. CCBS, Dhaka, pp: 68.
- Hague, K.S., Q.M.E. Huque and M.A. Jalil, 1988. Milk production potentialities of native and crossbred cows and prospect of small daring in Bangladesh. Bangladesh Animal Husbandry Association, Dhaka, Bangladesh.
- Islam, M.N., 1980. A quantitative study of some reproductive traits in indigenous cattle. M.S. Thesis, Bangladesh Agricultural University Mymensingh.
- Majid, M.A., T.N. Nahar, A.I. Talukdar and M.A. Rahman, 1994. Reproductive performance of pure breed F_1 , F_2 and F_3 cows raised in Saver dairy farm. Bangladesh J. Livestock Res., 2: 63-71.
- Steel, R.G.D. and J.H. Torrie, 1980. Principles and Procedures of Statistics: A Biometrical Approach. 2nd Edn., McGraw Hill Book Co., New York, USA., ISBN-13: 9780070609266, Pages: 633.