

Reproductive Performance of Different Crossbred and Indigenous Dairy Cattle Under Small Holder Farming Condition in Bangladesh

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Abstract: In the study areas records of 100 dairy cows collected from small holder dairy farms out of which were 20 Friesian cross, 19 Sahiwal cross, 29 Sindhi cross, 32 indigenous dairy cows. Those dairy farm were considered to evaluate post partum heat period, dry period, services per conception (SPC), age at first calving, calving to first service, lactation period and calving interval. The average post partum heat period of Friesian cross, Sahiwal cross, Sindhi cross and indigenous dairy cows were 98.75 ± 40.58 , 97.63 ± 36.03 , 114.65 ± 21.54 and 108.46 ± 36.32 days, respectively and the average length of dry period were 127 ± 46.66 , 136.05 ± 23.42 , 138.39 ± 41.78 and 170.00 ± 68.89 days, respectively. The average services per conception for Friesian cross, Sahiwal cross, Sindhi cross and indigenous dairy cows were 1.65 ± 1.65 , 2.05 ± 1.17 , 2.206 ± 1.01 and 1.41 ± 0.56 , respectively and age at first calving were 36.25 ± 3.48 , 37.26 ± 3.01 , 37.65 ± 5.21 and 40.03 ± 3.54 months, respectively. Calving to first service of different crossbred and indigenous dairy cows were 109 ± 37.26 , 114.47 ± 38.89 , 113.10 ± 27.20 and 124.53 ± 43.33 days and calving interval were 373.25 ± 35.25 , 383.42 ± 34.44 , 397.77 ± 37.07 and 418.78 ± 36.74 days, respectively. The length of lactation period of different crossbred and indigenous dairy cows were 253 ± 24.73 , 256.31 ± 24.31 , 255.86 ± 27.58 and 230.62 ± 30.68 days, respectively. The post partum heat period and calving to first service did not differ significantly among the different crossbred and indigenous dairy cows. The traits like, services per conception, age at first calving, calving interval and lactation period however differed highly significantly ($P < 0.01$). The dry period also significantly ($p < 0.05$) different among the genetic groups. The results obtained in this study indicated the reproductive performances of crossbred cows were superior to indigenous cows.

Key words: Crossbred, indigenous cows, reproductive performance

Introduction

Bangladesh is country of rural based subsistence agricultural farming system. People of Bangladesh are rearing their cows using traditional method. They have very little knowledge about the scientific methods of rearing cattle. The number of milking cows in Bangladesh are 3.79 million which is 35 % of all cows, 18 % all cattle, 45 % of all adults of the total milking cows. Of the total milking cows only 1 percent were crossbred (BBS, 1986). The cattle of Bangladesh mostly indigenous type with few crossbred such as Friesian cross, Sahiwal cross, Sindhi cross, Jersey cross. There is a controversy about crossbreeding program still the number of crossbred cattle is increasing day by day with the spread of artificial insemination practices throughout the country. It is observed that small holders can play an important role and would get far better opportunities to organize themselves as functional group for livestock development. In the production of large animals like cattle and buffaloes both men and women integrate together in the rearing and management of these two aspects. However similarly to the government, several organizations and non governmental organization (NGO's) are also trying to organized and establish rural people specially land less and marginal land holding as the acting income generating group and at the same time to increase the over all productivity of livestock in the country. Government farm, private farm and the rural farmers are rearing crossbred cattle for milk and meat production. Many workers (Hussain *et al.*, 1984; Nahar *et al.*, 1989; Alam *et al.*, 1994) have reported reproductive performance of crossbred cattle in Bangladesh. More detail information on various crossbred and indigenous cattle are needed to formulate a cattle-breeding programme in Bangladesh.

This study was therefore, designed with following objectives: To compare the productive and reproductive performance of crossbred and indigenous dairy cows. To recommend farmers about the breed and type of animals which are to be suitable in existing ecological condition of Bangladesh.

Materials and Methods

The study area was selected from 8 villages under municipality in Faridpur district namely Goulchimat, Rhoghononpur,

Shovarumpur, Komorpur, Middle Alipur, South Alipur, North Alipur and Aembikapur. Data were collected during April to August 1999. In this study the information from individual farmer was collected like other survey works. The researchers visited every farm of selected areas during the study period. The data were collected through direct interviewing of farm owners of selected farm, investigation of AI cards and general records of insemination and calving data etc. The information on the productive and reproductive performance of 100 cows of difference crossbred and indigenous were collected from 30 small dairy farms in study area. The cows were divided into four group such as 20 Friesian cross, 19 Sahiwal cross, 29 Sindhi cross and 32 indigenous dairy cows. The following traits were used to measure the reproductive performance of different crossbred and indigenous cows: Calving interval, service per conception, post partum heat period (PHP), calving to first services, age at first calving, dry period. The collected data were analyzed by analysis of variance, using the completely randomized design. Duncan's new multiple range test was performed to separate the significant mean where found.

Results and Discussion

The mean values with standard errors of the different traits investigated on four different genetic groups of cows are in (Table 1). In this experiment dry period was considered the time starting from the end of lactation up to next calving period. It was observed that the dry period of Friesian cross, Sahiwal cross, Sindhi cross and indigenous dairy cows were 127 ± 46.66 , 136.05 ± 23.42 , 138.39 ± 41.78 and 170 ± 68.89 days, respectively (Table 1). The average dry period for crossbred cows was significantly lower than indigenous dairy cows ($P > 0.05$). The present results are nearly similar with Nahar *et al.* (1989) who found that average dry period for F_1 graded Sindhi and Sahiwal was 145.90 ± 4.29 and 127.21 ± 5.84 days, respectively. The average post partum heat period of Friesian cross, Sahiwal cross, Sindhi cross and indigenous cows were 98.75 ± 40.58 , 97.63 ± 36.03 , 114.65 ± 21.54 and 108.46 ± 36.32 days, respectively. In the present study the post partum heat period was highest (114.65 ± 21.54 days) for Sindhi cross and lowest (97.63 ± 36.03 days) for Sahiwal cross cows. The differences

Table 1: Reproductive performance of different crossbred and indigenous dairy cows

Parameters	Friesian cross	Sahiwal cross	Sindhi cross	Indigenous cows	Significant value
Dry period (days)	127.00 ^a ± 46.66	136.05 ^b ± 23.41	138.39 ^b ± 41.78	170.00 ^a ± 68.89	*
Post partum heat period (days)	98.75 ± 40.58	97.63 ± 36.03	114.65 ± 21.54	108.46 ± 36.92	NS
Service per conception (no.)	1.65 ^a ± 1.65	2.05 ^b ± 1.17	2.206 ^b ± 1.01	1.046 ^a ± 0.559	**
Age at first calving (months)	36.25 ^a ± 3.48	37.26 ^a ± 3.01	37.65 ^a ± 5.21	40.03 ^b ± 3.54	**
Calving to first service (days)	109.00 ± 37.26	114.47 ± 38.89	113.10 ± 27.20	124.53 ± 43.39	NS
Lactation period (days)	263.00 ^a ± 24.73	256.31 ^a ± 24.31	255.86 ^a ± 27.07	230.62 ^b ± 30	**
Calving interval (days)	373.25 ^a ± 33.25	382.42 ^a ± 34.44	377.77 ^a ± 37.07	418.78 ^b ± 36.74	**

NS = Non significant * = P < 0.05 ** = P < 0.01

among the genetic groups for the traits post partum heat period were found to be non-significant by the analysis of variance. The results of this experiment agree nearly with the finding of Ali (1998). That the services per conception of Friesian cross, Sahiwal cross, Sindhi cross and indigenous dairy cows were 1.65 ± 1.65, 2.05 ± 1.17, 2.21 ± 1.01 and 1.05 ± 0.56, respectively. Statistical analysis showed that there were significant differences (P < 0.01) within the service per conception of different genetic groups of cows. Sahiwal cross and Sindhi cross cows required more SPC than Friesian cross and indigenous cows. Ghosh (1995) also reported that the number of service per conception were 1.56 ± 0.16, 1.69 ± 0.18, 1.69 ± 0.18 and 1.75 ± 0.19 for Friesian x local, Sahiwal x local, Jersey x local and Sindhi x local cows, respectively. From another study Chowdhury (1995) reported that average SPC for local, local x Friesian, Sahiwal x Friesian cows were 1.70 ± 0.91, 1.72 ± 0.88 and 2.01 ± 1.03, respectively. The results of the present study nearly agree with the finding of Chowdhury (1995).

The average age of Friesian cross, Sahiwal cross, Sindhi cross and indigenous dairy cows were 36.25 ± 3.48, 37.26 ± 3.01, 37.65 ± 5.21 and 40.03 ± 3.54 months, respectively. Statistical analysis showed that the average age at first calving between different cross bred and indigenous dairy cows differ significantly (P < 0.01) In this experiment the age at first calving for Friesian cross, Sahiwal cross, Sindhi cross were more or less similar (36.25 ± 3.48, 37.26 ± 3.01, 37.65 ± 5.21 months, respectively). But the average age at first calving is higher for indigenous dairy cows (40.03 ± 7.54 months). Age at first calving were studied by Kumar (1997) in India and observed that the average age at first calving for crossbred dairy cows was 1037.93 ± 5.93 days. From another study Singh and Disai (1961) observed that the age at first calving for cross dairy cows was 46.71 months. It was observed that the lactation length of Friesian cross, Sahiwal cross, Sindhi cross and indigenous dairy cows were 263 ± 24.73, 256.31 ± 24.31, 255.86 ± 27.58 and 230.62 ± 30.68 days, respectively.

The lactation period of this study are partially in agreement with the results of Hassan (1995) who found that average lactation length of Friesian cross, Jersey cross, Sahiwal cross and Sindhi cross were 272.0 ± 55.3, 285.6 ± 40.2, 262.4 ± 51.5 and 252.2 ± 61.5 days, respectively. But Mondal (1998) reported that the lactation length of Friesian cross, Jersey cross, Sahiwal cross, Sindhi cross and Red Chittagong cows were 249.50 ± 38.59, 280.92 ± 109.04, 244.54 ± 106.07, 228.23 ± 65.72 and 282.67 ± 58.74 days, respectively. In another experiment, Khan *et al.* (1991) reported that lactation period of Indigenous, Sindhi cross and Sahiwal cross cows were 200.0 ± 112.9, 251.0 ± 12.6 and 282.3 ± 96.5 days, respectively. In this study lactation length was highest for the Friesian cross (263.0 ± 24.73 days) and lowest in indigenous cows (230.62 ± 30.68 days). The calving intervals of Friesian cross, Sahiwal cross, Sindhi cross and indigenous dairy cows were 373.25 ± 33.25, 382.42 ± 34.44, 397.77 ± 37.07 and 418.78 ± 36.74 days, respectively (Table 1). Statistical analysis showed that there were significant differences (P < 0.01) within the calving interval of different types of dairy cows. In this

experiment calving intervals are approximately similar for crossbred cows (373.25 ± 33.25, 382.42 ± 34.44 days) and highest for indigenous cows (418.78 ± 36.74 days). The results contradicts to the finding of Mondal (1998) who found that the mean calving intervals of Jersey cross, Sahiwal cross, Sindhi cross, Friesian cross and Red Chittagong cows were 501.41 ± 86.41, 444.97 ± 94.93, 431 ± 98.53, 414.12 ± 51.42 and 469.30 ± 123.76 days, respectively in BAU dairy farm. This results are also contradicts with Nahar (1987) who found that the mean of calving intervals of Sindhi, Sahiwal, Jersey and Friesian crossbred cows under farm condition were 451.78, 485.40, 436.28 and 749.41 days, respectively. The results of present study indicates that dairy cow owners of Faridpur Municipal area are taking good care to their cows and hence, their calving intervals was lowest than the calving intervals of cows reported by above authors. The difference among the genetic groups for the traits dry period, service per conception, age at first calving, lactation period and calving intervals were found to be significant by the analysis of variance. It was observed that the average days of calving to first service of Friesian cross, Sahiwal cross, Sindhi cross and indigenous dairy cows were 109 ± 37.26, 114.47 ± 38.89, 113.10 ± 27.20 and 124.53 ± 43.33 days, respectively. The average of calving to first service within different type of breeds were not significant (P > 0.05). In another experiment, Ali (1998) showed that the average calving to first service of crossbred and indigenous dairy cows were 124.13 ± 27.89 and 113.98 ± 20.75 days, respectively. The results of study agree with the finding of Ali (1998). The results obtained in this study showed that all the genetic group used more or less were of equal merit, at least for two such important reproductive traits like post partum heat period, calving to first service. For the other traits like dry period, service per conception, age at first calving, lactation period and calving interval of different crossbred cows were superior to indigenous dairy cows. Hence the farmers of Faridpur municipal area are more interested for rearing crossbred dairy cows than that of indigenous cows.

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