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## **Productive and Reproductive Performance of Non-descript (Local) and Crossbred Dairy Cows in Costal Area of Bangladesh**

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**Abstract:** This study was conducted with a view to investigate the productive and reproductive performances of non-descript and crossbred dairy cows in costal area (Barisal Division) of Bangladesh. For this purpose a total of 105 dairy cows were selected from rural farmers, of which 30 cows local (L), 49 cows Local  $\times$  Friesian (L $\times$ F) and 26 were Local  $\times$  Sahiwal (L $\times$ SL) crossbred dairy cows. The traits studied were age At First Heat (AFH), age At First Calving (AFC), Services Per Conception (SPC), Post Partum Heat Period (PPHP), Daily Milk Yield (DMY), Total Lactation Yield (TLY) Lactation Length (LL) and Calving Interval (CI). From the result, it was revealed that age At First Heat (AFH), age At First Calving (AFC) and Services Per Conception (SPC) of L $\times$ F crossbred dairy cows were significantly ( $p < 0.01$ ) lower than other groups. Post Partum Heat Period (PPHP) of L  $\times$  SL crossbred cows were significantly ( $p < 0.01$ ) lower. Average Daily Milk Yield (DMY), Total Lactation Yield (TLY) and Lactation Length (LL) of L $\times$ F groups were  $5.9 \pm 0.14$ ,  $1836.7 \pm 18.2$  L and  $339.2 \pm 7.4$  days, respectively, which is significantly ( $p < 0.01$ ) higher than L and L $\times$ SL groups. The Calving Interval (CI) was found highest in L  $\times$  F crossbred cows compared to others.

**Key words:** Production reproduction crossbred local, Costal area

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### **Introduction**

Livestock plays an important role in the livelihood of a large sector of the population. Cattle are an inseparable and integral part of the existing small-holder subsistence farming of Bangladesh. The number of milking cows in Bangladesh is 3.8 million, which represents 36% of the total cows (BBS, 2001). The productive and reproductive performances of our indigenous cattle is very low due to their poor genetic potentiality. On the contrary, exotic crossbred cows are more productive in good nutrition and proper management. Therefore, programs have been taken to improve the genetic potential as well as productivity of non-descript indigenous cows through crossbreeding since, 1970s (Bhuiyan, 2006). Rapid improvement in dairy productivity for food security and livelihood leading to poverty reduction is needed in Bangladesh. Therefore, the need for planning to intensify dairy productivity is a crying need of time. In order to maximize overall productivity, the herd must have appropriate combination of genetically high potential breeds along with good feeding and management system. In costal area, feed scarcity is the main problem for livestock production as well as dairy cows. Therefore, the objectives of this study were to discuss certain productive and reproductive performances of indigenous and crossbred dairy cows in existing farming system of costal area.

### **Materials and Methods**

This study was carried out on 105 cows, to investigate the reproductive and productive performances of indigenous and crossbred dairy cows. For this purpose, two southern costal area

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*Barisal* and *Patuakhali* district of Bangladesh were selected. Data on the productive and reproductive performances of dairy cows were collected by questioning the owners about each animal specifically. In addition the data on husbandry practices was collected. But usually, most of the rural farmers do not use to keep any written information (records) on their livestock. So, the researcher had to depend on the memory of the respondent for obtaining information.

The experimental animals were divided into three genetic groups, Local (n = 30), Local × Friesian (n = 49) and Local × Sahiwal (n = 26). The reproductive performances considered were age At Maturity (AM), Post Partum Heat Period (PPHP) and Services Per Conception (SPC). Whereas productive performance were age At First Calving (AFC), Daily Milk Yield (DMY), Total Lactation Yield (TLY), Lactation Length (LL) and Calving Interval (CI). The collected data were statistically analyzed according to Steel and Torrie (1980) using Completely Randomized Design (CRD).

## **Results and Discussion**

### *Animal Feed Resources in Costal Area*

Bangladesh is densely populated country in the World. It has very limited natural pasture. With an increasing population natural pastures have been reduced to small areas mixed with crops and housing constructions. The quality of grasses in natural pastures is poor. The stakeholder of dairy cows are economically poor, they could not ability to cultivate high quality green grass. Re-growth of natural grasses is not strong enough and wild weeds easily dominate it. Rice straw is the basal feed, plays an important role in feeding dairy cows. Normally, costal area has once rice cropping pattern per year and in some places two crops per year. Rice straw is used as ruminant feed, fuel and litter. Buffalo and cattle are stall fed with rich straw at night or on rainy and cold days when they cannot graze. Other agricultural by products are used as animal feed. Although the quality of agricultural by products is low but they are important for the development of animal in costal area as well as Bangladesh.

### *Reproductive Performance*

The reproductive performance like AFH, PPHP and SPC are presented in Table 1. Highest AFH were observed in local and lowest for L×F. Nahar *et al.* (1992) reported that the age at first heat of L×SL and L×F cows were 1057.6±26.8 and 919.6±17.4 days, respectively. Rahman *et al.* (1987) investigate the AFC of local cows was 1283.19±41.93 days, these value is higher than the result of present study. Fluctuation in AFH of various genetic groups of dairy cows might be due to the effect of feeding, management, environment and heredity.

Lowest value of PPHP were observed in L×SL crossbred cows followed by local and L×F. Nahar *et al.* (1992) reported that in different genetic groups PPHP ranged from 150.71±4.42 to 113.33±5.45 days. There were significant (p<0.01) difference in the PPHP in different genetic groups presented in Table 1. PPHP is highly influenced by body condition and proper nutritional management.

Maximum number of SPC was found in local and minimum in L×F genetic group. Khan *et al.* (1999) reported that SPC of Red Chittagong and Pabna cattle were 1.61±0.09 and 1.57±0.07, respectively. The present study showed that the different genotypes had a significant (p<0.01) effect on SPC. The reproductive performance of L×F crossbred dairy cows is better than other genetic groups in costal areas.

### *Production Performance*

The production performance of three genetic groups of dairy cows in costal area are presented in Table 2. The highest average AFC were found in local cows and lowest in L×F crossbred dairy cows. Ghose (1995) found that AFC was 1246.08±121.66 days for local Red Chittagong cows. The age at first calving among genetic groups was significant (p<0.01).

Table 1: Reproductive performance of different genetic groups of dairy cows (mean±SE)

Parameters	Genetic groups			Level of significance
	Local (n = 30)	L×F (n = 49)	L×SL (n = 26)	
AFH (days)	1179.0±2.06	750.0±31.0	911.0±134.0	**
PPHP (days)	130.0±6.73	110.0±2.81	91.0±3.25	**
SPC (No)	1.8±0.14	1.5±0.1	1.6±0.2	*

\*Significant differ at 1% level of probability, \*Significant differ at 5% level of probability, AFH = Age at First Heat, PPHP = Postpartum heat period, SPC = Services Per Conception

Table 2: Production performance of different genetic groups of dairy cows in costal area (mean±SE)

Parameters	Genetic groups			Level of significance
	Local (n = 30)	L×F (n = 49)	L×SL (n = 26)	
AFC (days)	1465.00±59.0	1029.00±49.0	1176.0±62.0	**
DMY (L)	2.36±0.2	05.90±0.14	04.2±0.50	**
TLY (L)	845.00±21.5	1836.70±18.2	1362.4±13.3	**
LL (days)	225.50±6.10	0339.20±7.40	0329.4±3.50	**
CI (days)	415.00±5.00	0452.25±6.6	0410.6±5.60	*

\*\*Significant differ at 1% level of probability, \* Significant differ at 5% level of probability, AFC = Age at First Calving, DMY = Daily Milk Yield, TLY = Total Lactation Yield, LL = Lactation Length and CI = Calving Interval

The highest DMY was (5.9±0.14 L) observed in L×F crossbred cows followed by L×SL (4.2±0.5 L) and local (2.36±0.2 L) cows. The result clarify that the different genetic group had a significant effect ( $p < 0.01$ ) on milk production. The significant effect in genetic group on DMY was also reported by Hussain and Mostofa (1985), Rahman *et al.* (1987), Bhuiyan *et al.* (1992) and Bhuiyan and Sultana (1994). The present findings support Rahman *et al.* (1987) who found that highest average DMY was in L×F crossbred cows (5.0 L) and poorest milk yield in local (3.32 L) cows. Differences in genetic architecture, feeding system, quality and quantity of ration, milk man and time of milking may be affecting the DMY of different genetic groups.

The highest TLY was observed in L×F followed by L×SL and local cows, presented in Table 2. These results are in agreement with the findings of Rahman *et al.* (1987) who reported that highest TLY was in L×F (1765.48 kg). Least squares analysis of variance showed a significant ( $p < 0.01$ ) variation on TLY (Table 2).

Lactation Length differs widely within different genetic groups. LL was highest in L×F that followed by L×SL and local cows. The shorter LL was observed in local animals. Nahar *et al.* (1989) reported that LL of L×SL and L×F were 295.54±3.33 and 361.95±2.89 days, respectively. Khan *et al.* (1999) studied LL of Red Chittagong cows were found 222.85±16.03 days under farm condition and 214.7±21.68 days under rural condition. This result is more closer with present study. Fluctuation in LL of various genetic groups of cows might be due to the effect of nutrition and heredity.

The CI was highest in L×F crossbred cows (452.25±6.6 days) and lowest in L×SL crossbred cows. Rahman *et al.* (1987) reported that 385.13±25.5 to 495.75±74.56 days CI in various types of local and their crosses. Habib *et al.* (2003) found CI of Red Chittagong cattle 409.9±17.8 days which is more closer with the present study.

Based on the above findings it can be concluded that L×F crossbred dairy cows were better performance than local and L×SL genetic groups in costal area of Bangladesh.

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