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A Study on Some Productive Parameters of Local X Friesian Upgraded Dairy Cows

M.S. Islam, M.A. Mazed, [1]M.M. Rahman, [2]M. A. Islam and [3]M.A. Kadir
Youth Training Center, Department of Youth Development, Sirajganj, Bangladesh
[1]Department of Animal Science, Bangladesh Agricultural University, Mymensingh, Bangladesh
[2]Youth Training Center, Department of Youth Development, Kustia, Bangladesh
[3]Imam Training Academy, Islami Foundation, Sylhet, Bangladesh

Abstract: The study was conducted at two dairy farms namely, Government Dairy Farm, Faridpur and Cntral Cattle Breeding Station, Savar, Dhaka to investigate the effect of milk yield, lactation length and disease incidence on Local X Friesian upgraded dairy cows. From the study, it was reveled that the average milk production per lactation per cow was 1820.75, 1861.00, 1871.00 and 1890 liters for first, second, third and fourth lactation, respectively. There was an increasing tendency in milk yield from first lactation to fourth lactation. Average lactation length of respective cows were 335.50 ± 29.26, 333.12 ± 29.97, 325.87 ± 19.91 and 323.87 ± 13.75 days for first, second, third and fourth lactation, respectively. In case of disease incidence the experimental cows were infected by Foot and Mouth Disease, Black Quater and ephemeral fever. In conclusion, it can be said that Local X Friesian cows are reared successfully allover Bangladesh.

Key words: Cross bred cow, milk yield and lactation length

Introduction

Bangladesh, a densely populated (128 million people) and developing country, occupied on area of 1,47,570 sq. Km (BBS, 2001). Its economy is agro-based and livestock contributes about 6.5% of total Gross Domestic Products (BBS, 1999). It generates about 13 per cent of the total foreign exchange earnings and provides full time employment to about 20 per cent of the rural people (Rahman *et al.*, 1993).

Dairy is one of the most important sector of livestock industry in Bangladesh that provides nutritious milk for human consumption. Dairy production has got momentum during last one decade in our country. But the dairy farmers could not cope well with the higher price of cross bred dairy heifers. Successful dairy farming depends on many important factors like availability of quality dairy heifers and quality feed at a reasonable cost in addition to proper management followed during rearing and production period. There is a great possibility and feasibility of growth and expansion dairy farming at domestic and commercial level in Bangladesh. In order to save nation by increasing physical and mental health, we must give emphasis on milk production for our dairy cows. Bangladesh Government is trying hard to expand dairy industry throughout the country. The population of cattle in Bangladesh is about 24.13 million (FAO, 1994). According to FAO, 1994 pure bred and their crosses comprises 0.25 million and the rest of the total population of cattle are indigenous type. The annual milk production in Bangladesh is about 1.4 million metric tons (Mannan *et al.*, 1992). But our requirement is about 9 million metric tons milk per year DLS, 1990). Availability of milk is only 34 ml per head per day where as our need is 250 ml milk per head per day (DLS, 1992). So, it is necessary to increase the milk production to mitigate the people's requirement. The number milking cows in Bangladesh was reported 3.79 million which was only 18 per cent of all cattle. 35 per cent of all cows and 95 per cent of all adult cattle, Out of the total milking cows, only 1.09 per cent were reported to the cross bred (BBS, 2001). Generally cross bred cows (rearing tinder village condition) yield from 600 to 800 litre per lactation of 210 to 240 days (Islam, 1992). In recent the demand for cross bred cows are very high due to higher production of milk (ranging from 8-10 kg per day under farm condition). Some limitations are influencing in these regard.

Recently Directorate of Livestock 'Services (DLS) of Bangladesh is applying the artificial insemination technique for getting higher productive animals through cross breeding programme. Data for reproduction and productive performances of the cross between indigenous and Holstein-F cows are very limited. With a view to establish future plans for development we have to know details about the performances of the cross bred (dairy) available in our country. But we do not have enough informations about milk yield, lactation length and disease incidence. Therefore, the study was undertaken with the following specific objectives to gear up milk production in our country.

To determine the feasibility of expansion of dairy industries at the farmers levels.

To determine the milk production and lactation length of the mentioned cross bred (Indigenous x Holstein -Friesian) in our country.

To know the different diseases of dairy cows in our country and to mention the way to solve these difficulties (disease).

Materials and Methods

The study involved collection of data from two dairy farms viz., Government Dairy Farm, Faridpur and Central Cattle Breeding Station, Savar, Dhaka. The present work was conducted at Government Dairy Farm, Faridpur from October, 1997 to December '97 and at Central Cattle Breeding Station (CCBS), Savar, Dhaka from September, 1998 to November '98.

A total of 108 dairy cows belong to cross breeding between indigenous and Holstein-Friesian were selected and their information regarding, milk yield, lactation length and disease incidence parameters were collected from farm records. Out of these 108 cows, 100 dairy heifers/cows were from government Dairy Farm Faridpur and the rest 8 cows were from Central Cattle Breeding Station (CCBS), Savar, Dhaka. The data were collected for a period of last five years (1991-95). The overall managemental conditions of the animals were similar to the conditions prevailed in these two Dairy Farms.

The following parameters were studied to determine the productive performance of different cows.

Milk yield Lactation length Disease incidence

Milk yield means total amount of milk produced per day. Milk yield is the most economic trait of a lactating cow. It is the most important criterion to chose a dairy cows. Milk yield in litre per day or total milk yield can be measured from the total lactation length (days). Generally cows give milk for a certain period without any interruption after calving. The periods considered as lactation length and measured in days. Disease incidence means the total number of diseases by which a cow suffered from. In this study some diseases like foot and mouth disease (FMD), black quater (BQ), ephemeral fever (3 days sickness) coccidiosis etc. were found dominant. Data were recorded in numbers.

The collected data were statistically analysed as per Steel and Torrie (1980) using Completely Randomized Design (CRD). Analysis of variance test was done to find out the significance of productive traits of the cross bred cows. Standard Error Deviation (SED) values were also calculated to find the significant differences among the different treatment means

Results and Discussion

Cross bred cows are significantly better than the indigenous cows. The analysis of variance of the collected data showed the significant effect of age at first service, conception rate, age at first calving, calving difficulties, birth weigh of calves, calving interval milk yield, lactation length and diseases incidence or dairy cattle as well as dairy farm enterprises. The results and detailed discussion of the influence of different parameters observed on dairy production have been presented below. Milk yield is presented into two decision viz. total production (litre/lactation) and milk yield (litre/day).

Total milk production is shown in, Table 1 indicated that there was no significant differences among the treatments (different lactation period). The highest total milk production was (1890.875 litre) at fourth lactation period. Total milk production of third and second lactation was 1871.00 litre and 1861.00 litre, respectively and followed the first one. The lowest milk production (1820.75 liters) was in first lactation period. There was a increasing trend of milk production from first lactation to fourth lactation. Singh and Singha (1982) in their study revealed that milk production in the first lactation was 1084 ± 330.50, 1150.60±360, 1047± 33.50 and 1037.60 ± 40.91 kg in the first four lactation period, respectively. In another experiment Nahar *et al.* (1989) reported about total mill production which was (averaged) 1529.53 ± 39.72 and 1992.39 ±.19.57 liters in Jersey and Holstein-Friesian cows, respectively. These two findings were in conformity with of the present study.

Total milk production (litre/lactation) may differs due to environmental, feeding and managemental effects. Milk yield (litre/day) is shown in Table 2. There was no significant variations among the treatment (different lactation periods). It was clear that the highest milk yield was 5.834 litre/day in the fourth lactation period. The milk yield (litre/day) in the third and second lactation was 5.736 and 5.6, respectively. The lowest milk yield (5.43 litre/day) was in the first lactations. There was a increasing trend of milk yield from first lactation to fourth lactation.

From the experiment, it was clear that the highest milk yield (litre/day) was in the second lactation and at third month after starting of lactation. Linear graph showed an increasing trend firstly in milk production (litre/month) from first month of the lactation. At third month all the lactation period gave the highest peak in milk production. Then the milk production for all lactation period drastically reduced and at twelfth month the milk production for all lactation was lowest.

After fourth month of the lactations the milk yield reduced drastically. It might be accounted due to activities of lactogenic hormone. From first month to 6th month the lactial cells remains in highly active condition, for this reason milk yield is relatively higher in that month. After sixth month the activities of lactial cell gradually decreases and cobnsequently milk yield also reduced. Lactation length of the respective cow (Local x Friesian cows) are presented in Table 3 revealed that the average lactation period 335.5±29.26, 333.12±29.97, 325.87±19.91

Table 1: Total milk yield (litre/lactation) of Lx Fri upgraded cows in different lactation

Type of lactation	Number of cows	Mean	Standard Deviation (SD)	Standard Error (SE)	Level of Significance
1st lactation	8	1820.750	217.20	76.79	
2nd lactation	8	1861.000	216.64	76.59	
3rd lactation	8	1871.000	198.22	70.08	NS
4th lactation	8	1890.875	186.71	66.01	

Note: NS means not significant

Table 2: Milk yield (litre/lactation) of L x Fri upgraded cows in different lactation

Type of lactation	Number of cows	Mean	Standard Deviation (SD)	Standard Error (SE)	Level of Significance
1	8	5.413	0.60	0.19	
2	8	5.595	0.60	0.19	
3	8	5.736	0.46	0.19	NS
4	8	7.834	0.52	0.19	

NS = Not Significant

Table 3: Lactation Length (days)

Sl. No.	Lactation length (days)			
	1st Lactation	2nd Lactation	3rd Lactation	4th Lactation
1	390	395	360	350
2	305	307	301	320
3	360	350	330	310
4	335	340	305	330
5	301	315	330	312
6	320	302	329	310
7	342	335	342	330
8	331	321	310	329
Mean	335.5	333.12	325.87	323.87
SD	29.26	29.97	19.91	13.75

Table 4: Disease incidence

Type of animal (L x Fri) Sl. No.	Name of Disease			
	FMD	BQ	Ephemera fever	Coccidiosis
1	-	-	1	2
2	-	-	1	1
3	-	-	-	-
4	-	-	1	1
5	-	1	1	-
6	-	-	1	1
7	1	-	-	-
8	-	-	1	1
9	1	-	1	-
10	-	-	1	-
11	-	-	1	1
12	1	-	1	-
13	-	-	-	1
14	-	-	1	-
15	1	-	1	1
16	-	1	-	-
17	-	-	1	1
18	-	-	-	-
19	-	-	-	-
20	-	-	1	1

and 323.87 ± 13.75 days was for first, second, third and fourth respectively.
First Lactation included the highest number of days. Second and third lactation period followed the 1st lactation period. The lowest number of days was included in fourth lactation period (first lactation to fourth lactation). Nagare and Patel (1997) reported about lactation length which, was 334.68 days. This findings are in conformity with the present study. Sekerden (1996) in his study revealed that the lactation length was 305 days. This findings supported the present study. Variations in the lactation length was possibly due to environmental and managemental effects. Another cause may be coming the lacting, cows under heating condition for next conception. Data related to disease incidence of the cows Local x Friesian are presented in the Table 4. From the Table 4, it was obvious that out of 20 cows 4 were infected, foot and mouth disease (FMD), 2 were affected by black quater (BQ), 14 were infected by ephemeral fever and 10 were suffered from coccidiosis disease.
From the Experiment, it was observed that ephemeral fever occupied the highest per cent disease of the respective cows. Coccidiosis occupied the second high, percentage of diseases and foot and mouth disease occupied the third highest percentage of the diseases. The lowest percentage occupied by black quater disease (BQ). In their study, Umehata *et al.* (1993) revaluated that zebu heifer were infected by FMD. Differences in incidence of diseases were possibly due to weather condition, environmental effects. Hot and humid climate is more suitable for disease infection. It may be concluded from above results and discussion that milk yield lactation length and diseases incidence are almost similar but in few cases these were some extent variations. These might be due to environmental, feeding, managemental practices, physobiological conditions of the cows and lack of proper managemental knowledge.

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