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PJBS

ISSN 1028-8880

**Pakistan
Journal of Biological Sciences**

ANSI*net*

Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Comparative Performance between Imported and Local Born Holstein Friesian Cows Maintained at LES Bhunikey

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Abstract

Productive and reproductive traits data was collected from 1985-91 and analyzed. For local born and imported Holstein Friesian cows revealed that the age at first calving average 787.38 ± 13.61 and 822.46 ± 10.63 days, services per conception were 1.76 ± 0.10 and 1.87 ± 0.089 , services period was 161.48 ± 14.45 and 132.92 ± 5.11 days. Gestation period was observed to be 278.65 ± 0.78 and 279.92 ± 0.63 days and was longer in cows carrying male calves than those carrying female calves; calving interval average 443.77 ± 18.67 and 415.66 ± 5.09 days, 305 days milk production average 3543.23 ± 121.26 and 4114.40 ± 115.96 liters, showing that local born group produced less milk than their imported dams, dry period was found to be 192.71 ± 18.14 and 191.07 ± 13.11 days respectively.

Introduction

Pakistan is an agro-based country. Agriculture sector contribute the 25.38 percent of the total GDP and livestock in the agriculture GDP share is 42.38 percent, while it is 10.84 percent of the total GDP. The population of cattle in Pakistan is 18 millions and its contribution toward the total milk production of the country is 24 percent (Anonymous, 1997a, b). The policies of the Government of the Punjab is to increase the milk production of cattle through genetic improvement. For this purpose, a herd of 86 Holstein Friesian and 100 Jersey cows from USA during November, 1985 was imported for cross breeding with low yielding non descriptive cows. This study would be helpful to evaluate and compare the various parameters of productive and reproductive performance in imported Holstein Friesian and local horn progenies, in the local environment of the central Punjab.

Materials and Methods

Productive and reproductive performance data of imported as well as local born Holstein Friesian (Two genetic group) maintained at Livestock Experimental Station Bhunikey Kasur, Punjab, was collected from 1985-91. Incomplete records and milk yield of less than 180 days were excluded from the data. The effect of four seasons were studied by using the pertinent statistical techniques; Age at first calving (period in days, from the date of birth to the date of first calving); Services per conception (this parameter was calculated as total number of inseminations divided by total number of conception); Service period (period in days, between date of calving and date of subsequent conception was taken as service period); Gestation period (it denotes the interval between the date of successful service and the date of normal calving); Calving interval (the period between two consecutive calving was considered as calving interval); Milk yield (production of milk in 305-days); Dry period (the interval between date of drying and subsequent normal parturition was considered as dry period); Season of

calving (This observation was calculated in percentage after dividing the number of animals calved in any season by total number of animals in four seasons and multiplying it with 100). The arithmetic means with standard error for the above mentioned reproductive and productive parameters were calculated using the standard statistical procedures (Steel and Torrie, 1982). Further analysis was done using analysis of variance technique. Significant results were subjected to multiple range test (Duncan, 1955).

Results and Discussion

The means along with standard errors for different reproductive and productive traits are presented in Table 1. The age at first calving in the imported Holstein Friesian was significantly higher ($p < 0.01$) than the local born Holstein Friesian (822.46 ± 10.63 vs 787.38 ± 13.61 days). The results reported by Bozo *et al.* (1975) and Caput *et al.* (1985) in Holstein Friesian cows averaged 812 and 765 days, respectively, and are similar to the ones for the Imported Holstein Friesian and the local born Holstein Friesian of the present study. The effect of season of birth on age at first calving was found to be non-significant. The average number of services per conception for the local born Holstein Friesian and the imported Holstein Friesian were 1.76 ± 0.10 and 1.87 ± 0.089 respectively. Whereas the difference between the groups was found to be non significant. The average number of services per conception as reported by Ponce de Leon and Gomez (1988) and Andersen and Nielsen (1968) were 1.9 and 1.87 for Holstein Friesian and Jersey cows respectively and are in line with the findings of the present study. The average service period for local born Holstein Friesian and imported Holstein Friesian was 161.48 ± 14.45 and 132.92 ± 5.11 days respectively. The effect of season of calving on subsequent service period was found to be non significant. Fernandez *et al.* (1979) and Boujenane and Ba (1986) also observed similar results in service period of 153 and 139.4 days in Holstein Friesian respectively. The average gestation period

of 278.65 ± 0.78 and 279.92 ± 0.63 days was observed in local born Holstein Friesian and imported Holstein Friesian cows respectively. Moreover in all the genetic groups except local born Holstein Friesian cows carrying male calves had longer gestation period than those of carrying female calves. Guerra and Menendez (1983) also reported a similar effect of the sex of calf on gestation length. The mean calving interval in the local born Holstein Friesian and the imported Holstein Friesian cows was 443.77 and 415.66 days respectively, and it was significantly ($p < 0.05$) longer in the local born Mangurkar *et al.* (1985) and Alim (1985) also observed a shorter calving interval in Jersey than Holstein Friesian. The shorter calving interval in the present study was found after winter calving while longer calving interval was observed after summer and spring callings. The imported Holstein Friesian cows produced significantly ($p < 0.05$) higher milk yields than their respective local born Holstein Friesian (4114.40 ± 115.96 vs 3643.28 ± 121.26 liters). Bozo (1984) in Hungary reported a higher milk yield (5233 kg) for Holstein Friesian. The average dry period for local born Holstein Friesian and imported Holstein Friesian cows, was 192.71 ± 18.14 and 191.07 ± 13.11 days respectively. The dry period as observed in the present study is higher than most of the reports available. This variation might be due to difference in the management practices, environmental factors, fertility status of the breeding cows etc.

Table 1: Traits regarding productive and reproductive performance of Holstein Friesian maintained at LES Bhunikey, Kasur, Punjab, Pakistan

Traits	Holstein Friesian	
	Local	Imported
Age at first calving	787.38 ± 13.61	822.45 ± 10.63
Services per conception	1.76 ± 0.10	1.87 ± 0.089
Service period	161.48 ± 14.45	132.92 ± 5.11
Gestation period	278.65 ± 0.78	279.92 ± 0.63
Calving interval	443.77 ± 18.67	415.66 ± 5.09
305-days milk yield	3643.28 ± 121.26	4114.40 ± 115.96
Dry period	192.71 ± 18.14	191.07 ± 13.11

The findings of this study regarding most of reproductive traits indicate that local born Holstein Friesian performed better than imported Holstein Friesian cows under sub-tropical climatic conditions of Punjab. However, local horn group produced less 305 days milk than their imported dams. The production potential in the exotic herd can be increased by breeding the cows with semen of genetically superior sires, through intensive management and with more effective disease control programme.

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