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Productive and Reproductive Efficiency of Imported and Local Born Jersey Breed of Cattle in the Subtropical Environment of Pakistan

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Abstract

Data concerning productive and reproductive traits, was collected from 1985-91 and analyzed. The analysis, for local born Jersey and imported Jersey cows, revealed that the, age at first calving average 771.48 ± 7.88 and 800.51 ± 8.48 days, services per conception were 1.83 ± 0.069 and 1.88 ± 0.072 , services period was 100.99 ± 4.63 and 107.03 ± 2.77 days, gestation period was observed to be 279.26 ± 0.51 and 277.49 ± 0.36 days and was longer in cows carrying male calves than those carrying female calves; calving interval averaged 380.93 ± 6.36 and 387.18 ± 0.3 days, local jersey cows showing shorter calving interval than imported jersey but non-significant, 305-days milk production average 2194.52 ± 57.24 and 3150.48 ± 46.18 litters, showing that local born Jersey group produced less milk than their imported dams and results were highly significant, dry period was found to be 157.91 ± 9.70 and 133.30 ± 5.77 days respectively. Whereas the effect of season of birth on age at first calving was found to be non significant.

Introduction

The population of cattle and buffaloes in Pakistan is 18 and 20.7 million respectively but the cattle contribute 24 percent of the total milk production of the country (Anonymous, 1997). Attempts have been made to increase the milk production of cattle through genetic improvement, for this purpose government of the Punjab imported a herd of 86 Holstein Fresian and 100 Jersey cows from USA during November, 1985 to produce the bulls of high genetic potential to insure the regular and adequate supply of good quality semen for cross breeding with low yielding non descriptive cows. The present study was designed to evaluate and compare the various parameters of reproductive and productive performance in Jersey cows and their local born progenies. The information/results obtained from this study would be helpful to know the adaptability of the exotic breed of cattle "Jersey" in the local environment of Pakistan.

Materials and Methods

Data concerning reproductive and productive performance of the imported as well as the local born Jersey cows (Two genetic group) maintained at Livestock Experimental Station Bhunikey (Pattoki) Distt. Kasur was collected from 1985-91. Incomplete records and milk yield of less than 180 days were excluded from the data. To determine the effect of season on various parameters, the months of the years were grouped in four seasons to minimize the season effect on under consider parameters. Following parameters 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 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); Seasons 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 Discussions

The means along with standard errors for different reproductive and productive traits are presented in Table 1. The age at first calving in imported Jersey cows took more days for their first calving than the local born Jersey heifers (800.51 ± 8.43 vs 771.48 ± 7.88 days), the effect of season of birth on age at first calving was found to be non-significant. Roy *et al.* (1987) reported 795.31 days for Jersey cows which accord with our findings for the imported jersey. The average number of services per conception for local born jersey and imported jersey were 1.83 ± 0.069 and 1.88 ± 0.072 respectively. Whereas the difference between 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 Fresian and Jersey cows respectively and are in line with the findings of

the present study. The average service period for local born Jersey and imported Jersey was 100.99 ± 4.63 and 107.03 ± 2.77 days, respectively, showing that local born Jersey took less days to conceive after calving than imported Jersey dams. The effect of season of calving on subsequent service period was found to be non significant. The result reported by Slabkina and Denisova (1986) for Jersey cows was 103 days and is similar to the ones for Jersey cows in the study under report. The average gestation period of 279.26 ± 0.51 and 277.49 ± 0.36 days were observed in local born jersey and imported jersey cows respectively. Moreover in all cows carrying male calves had longer gestation period than those of carrying female calves, in both groups. Gurra and Menendez (1983) also reported a similar effect of the sex of calf on gestation length. The mean calving interval in the local born jersey was 380.18 days. The imported jersey cows produced significantly ($p < 0.05$) higher milk yields than their respective local born jersey (3150.48 ± 46.18 vs 2194.52 ± 57.24 liters). Bozo (1984) in Hungary reported a higher milk yield (5233 kg) for Holstein Fresian. The average dry period for local born jersey and imported jersey cows was 157.91 ± 9.70 and 133.30 ± 5.77 days respectively, showing that it was significantly high in local born jersey as compare to imported jersey dams. The dry period as observed in the present study in higher than most of the reports available. This variation might be due to difference in the managerial practices, environmental factors, fertility status of the breeding cows etc.

Table 1: Traits regarding productive and reproductive efficiency of jersey breed of cattle in Pakistan

Traits	Jersey breed	
	Local	Imported
Age at first calving	771.48 ± 7.88	800.51 ± 8.43
Services per conception	1.83 ± 0.069	1.88 ± 0.072
Service period	100.99 ± 4.63	107.03 ± 2.77
Gestation period	279.26 ± 0.51	277.49 ± 0.36
Calving interval	380.93 ± 6.36	387.18 ± 3.0
305-days milk yield	2194.42 ± 57.24	3150.48 ± 46.48
Dry period	157.91 ± 9.70	133.30 ± 5.77

The findings of this study regarding most of reproductive traits indicate that both local born and imported jersey

performed better than Holstein Fresian cows under subtropical climatic conditions of Punjab. However, local born groups 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.

References

- Andersen, H. and E. Nielsen, 1968. [Investigation of the relationship between yield and fertility and between different measures of fertility at the Danish progeny testing stations]. Annual Report. Sterility Research Institute, The Royal Veterinary and Agricultural College, Copenhagen.
- Anonymous, 1997. Agricultural statistics of Pakistan. Ministry of Food, Agriculture and Livestock Division, Government of Pakistan, Islamabad.
- Bozo, S., 1984. Experiments with cattle breeding and the possibilities of further developments in Hungary. *Nas. Chov.*, 44: 367-369.
- Duncan, D.B., 1955. Multiple range and multiple F tests. *Biometrics*, 11: 1-42.
- Gurra, D. and A. Menendez, 1983. Incidence of stillbirths in Holstein-Friesian cows. 1. Effects of non-genetic factors. *Memorias Asociacion Latinoamericana Prod. Anim.*, 18: 162-163.
- Ponce de Leon, R. and M. Gomez, 1988. Genetic and environmental factors affecting long term reproduction and longevity in the Holstein breed. *Cuban J. Agric. Sci.*, 22: 9-15.
- Roy, T.C., B.G. Katpatal and M. Kumar, 1987. Genetic studies on age at first calving in Jersey cattle. *Indian Vet. J.*, 64: 301-308.
- Slabkina, A.I. and T.A. Denisova, 1986. Results of acclimatization of purebred Jersey cattle at the Malino farm. *Sbornik Nauchnykh Trudov Moskovskaya Vet. Akad.*, 147: 38-42.
- Steel, R.G.D. and J.H. Torrie, 1982. Principles and Procedures of Statistics: A Biometrical Approach. 2nd Edn., 3rd Printing, Mcgraw-Hill Publishing Co., Auckland, Pages: 633.