



Supplementary Material

Evaluation of Lactation and Performance of Friesian Cow in Local Environment of Quetta, Balochistan, Pakistan

Madiha Khalil¹, Amjad Farooq¹, Asim Faraz^{2*}, Abdul Waheed², Nasir Ali Tauqir³, Riaz Hussain Mirza² and Hafiz Muhammad Ishaq²

¹Institute of Pure and Applied Biology, Bahauddin Zakariya University, Multan, Pakistan

²Department of Livestock and Poultry Production, Bahauddin Zakariya University, Multan, Pakistan

³Department of Animal Science, University of Sargodha, Sargodha, Pakistan

Supplementary Table I. Meta analysis of productive and reproductive traits from literature data.

Research	Parameters	Results
Afridi, 1999	To analyze productive performance of Holstein-Friesian cattle in NWFP	The overall performance of imported Holstein-Friesian was better than local born Holstein-Friesian. The milk yield and lactation length were maximum in autumn.
Javed <i>et al.</i> , 2004	To study environmental factors affecting milk yield in Friesian cows in Punjab	The milk yield ↑ with ↑ in lactation length, yet it did not seem advantageous to have lactations exceeding one year. The daily milk yield in the later stages of lactation ↓ and hence affects the lifetime production. Moreover, longer lactations prolong the calving interval, thereby decreasing the number of calves that could be obtained during the life span of a cow.
Sattar <i>et al.</i> , 2005	To investigate productive and reproductive performance of Holstein-Friesian cows in Pakistan	The reproductive and productive performance of Holstein-Friesian herd at Bhunikey is declining gradually, indicating that the managerial practices at the farm need to be improved for better reproductive and productive performance of the herd.
Dabdoub, 2009	To check milk production and reproductive efficiency in Friesian and Friesian×Sharabi cows	For improving efficiency in Friesian and crossbred cattle, it is necessary that functional traits interms of reproductive efficiency and age at first calving deserve primary consideration beside milk production into national breeding programs.
Irshad <i>et al.</i> , 2011	Performance analysis of Holstein-Friesian cattle herd under semi-intensive management at Pishin dairy farm Balochistan	The productive and reproductive traits of Holstein-Friesian cattle were low to moderate. Therefore, it is necessary to improve managerial practices at the farm for better reproductive and productive traits.
Sandhu <i>et al.</i> , 2011	Performance analysis of Holstein-Friesian cattle in intensive management at dairy farm Quetta, Balochistan, Pakistan	Productive and reproductive performance of Holstein-Friesian cattle were low to modest so it is required to improve managerial practices at the farm for better productive and reproductive performance.
Usman <i>et al.</i> , 2012	Performance traits study of Holstein Friesian cattle under subtropical conditions	Significant effect of calving season on the studied traits and low to moderate heritability and repeatability estimates depicted that these traits were highly influenced by non-genetic factors and efforts to improve subtropical environmental conditions will bring an improvement in these traits.

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* Corresponding author: drasimfaraz@bzu.edu.pk
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Research	Parameters	Result
Hassan and Khan, 2013	Performance of crossbred dairy cattle at military dairy farms in Pakistan	Performance of crossbred dairy cattle in first lactation may be lower than earlier reports on crossbred cattle in Pakistan. This poor performance may be due to existing culling procedures used at military farms. Every female offspring born at military farms are retained for raising as cow to produce milk. No clear criteria are followed for selection of female calves born at farms.
Faid-Allah, 2015	Genetic and non-genetic analysis for milk production and reproductive traits in Holstein cattle in Egypt	The Holstein breed in Egypt can show high milk production and good reproductive traits under adequate circumstances. Moderate heritability estimates and positive genetic correlation for most of traits studied suggested that genetic improvement of these traits would be achieved via multi-trait selection. The high positive genetic correlations between traits especially productive ones clarified that these traits could be improved simultaneously via multi-trait selection breeding program.
Fernando <i>et al.</i> , 2016	Productive and reproductive performance of Jersey cattle in the hill country of Sri Lanka	The values for total milk yield, birth weight, lactation length and number of services per conception falls within the average values observed in other tropical countries. However, values for calving interval, age at first calving, calving to service period and days open were higher than the optimum values recommended to maintain reproductive efficiency.