

Genetic studies on various production and reproduction traits of Sahiwal and crossbred cattle (HF × Jersey × Sahiwal) of an organised farm

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Abstract

The present investigation was undertaken on data of 30 Sahiwal cattle and 30 crossbred cattle (HF × Jersey × Sahiwal) from Instructional Dairy Farm (IDF), G.B. Pant University of Agriculture & Technology, Pantnagar, Uttarakhand. Significant ($P < 0.01$) variations were observed in birth weight, first service period, milk yield in first 305 days (first lactation milk yield), second lactation milk yield, average daily milk yield during first lactation and days in milk in first lactation between Sahiwal and crossbred cattle. Non-significant variations were observed in first calving interval between Sahiwal and crossbred cattle. Correlation coefficient showed a significant ($P < 0.01$) relationship among birth weight, first calving interval, first service period, milk yield in first 305 days (first lactation milk yield), second lactation milk yield, average daily milk yield during first lactation and days in milk in first lactation. Our present investigation showed that the overall performance of crossbred (HF × Jersey × Sahiwal) is better than Sahiwal.

Keywords: Production, reproduction, Sahiwal, crossbred

Introduction

The Sahiwal, constituting 18% of the indigenous breeds in India, is the best breed of the subcontinent because of its higher milk production, body growth, lesser calving interval, and early age at first calving. Majority of the cattle of the Indian subcontinent belong to a non-descript group known as the desi cattle, while significant genetic improvement in indigenous cow has been achieved through cross breeding with exotic breeds. The present study was carried out to compare the various production and reproduction traits of Sahiwal and crossbred cattle (HF × Jersey × Sahiwal).

Materials and Methods

The present investigation was carried out by randomly selecting 30 Sahiwal cattle and 30 crossbred cattle (HF × Jersey × Sahiwal) from a cattle herd maintained at Instructional Dairy Farm (IDF), G.B. Pant University of Agriculture & Technology, Pantnagar, Uttarakhand. All animals are kept under similar environment condition with a similar management practices. The traits studied were birth weight, first calving interval, first service period, milk yield in first 305 days, milk yield in second lactation, average daily milk yield during first lactation and days in milk in first lactation. Means and standard error for growth, milk

production and reproduction traits in Sahiwal and crossbred cattle were estimated. The results were analyzed using a one-way ANOVA. The data obtained related to various production and reproduction traits of Sahiwal and crossbred cattle were analysed for average correlation coefficient as per Snedecor and Cochran (1986).

Results and discussion

The overall means were 26.8 ± 0.63 Kg, 500.13 ± 35.35 days, 263.17 ± 6.67 days, 2700.52 ± 144.84 Kg, 3459.45 ± 291.46 Kg, 9.19 ± 0.43 Kg and 344.57 ± 19.36 days for birth weight, first calving interval, first service period, milk yield in first 305 days, milk yield in second lactation, average daily milk yield during first lactation and days in milk in first lactation, respectively in crossbred cattle. These are in agreement with the findings of Fadlemoula et al. (2007). The overall means were 20.833 ± 0.599 Kg, 522.63 ± 27.99 days, 284.50 ± 1.29 days, 1468.293 ± 34.059 Kg, 1676.284 ± 104.131 Kg, 6.183 ± 0.163 Kg and 276.33 ± 11.54 days for birth weight, first calving interval, first service period, milk yield in first 305 days, milk yield in second lactation, average daily milk yield during first lactation and days in milk in first lactation, respectively in Sahiwal cattle. Significant ($P < 0.01$)

variations were observed in birth weight, first service period, milk yield in first 305 days (first lactation milk yield), second lactation milk yield, average daily milk yield during first lactation and days in milk in first lactation between Sahiwal and crossbred cattle (Table 1). Non-significant variations were observed in first calving interval between Sahiwal and crossbred cattle (Table 1). Correlation coefficient showed a significant ($P < 0.01$) relationship among birth weight, first calving interval, first service period, milk yield in first 305 days (first lactation milk yield), second lactation milk yield, average daily milk yield during first lactation and days in milk in first lactation (Table 3). Analysis of Variance of various production and reproduction traits of crossbred and Sahiwal cattle is shown in Table 2. In crossbred animal birth weight, milk yield in first 305 days (first lactation milk yield), second lactation milk yield, average daily milk yield during first lactation and days in milk in first lactation showed higher value than Sahiwal cattle. First calving interval and first service period were lower in crossbred than Sahiwal cattle. These results are in agreement with the findings of Miazi et al. (2007) and Mondal et al. (2005). Our present investigation showed that the overall performance of

crossbred (HF x Jersey x Sahiwal) is better than Sahiwal.

Acknowledgment

Authors are grateful to the Dean, College of Veterinary and Animal Sciences, G.B. Pant University of Agriculture & Technology, Pantnagar, Uttarakhand for providing facilities and fullest co-operation for carrying out present study.

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Table-1. Comparison of means and standard errors for various production and reproduction traits of crossbred and Sahiwal cattle

Breed	Parameters						
	BW	FCI	FSP	FLMY	SLMY	ADMY	DMFL
Crossbred (30)	26.8±0.63a	500.13±35.35	263.17±6.67b	2700.52±144.84a	3459.45±291.46a	9.19±0.43a	344.57±19.36a
Sahiwal (30)	20.833±0.599b	522.63±27.99	284.50 ± 1.29a	1468.293 ± 34.059b	1676.284 ± 104.131b	6.183 ± 0.163b	276.33 ± 11.54b

Table-2. Analysis of Variance of various production and reproduction traits of crossbred and Sahiwal

Source	D.F. Mean sum of square							
	BW	FCI	FSP	FLMY	SLMY	ADMY	DMFL	
Between	1	534.017**	7593.750	6826.667**	22775615.148**	47695250.417**	135.601**	69836.817**
Error	58	11.361	30490.904	693.132	332063.847	1436906.133	3.150	7618.483

Table-3. Correlation coefficient among various production and reproduction traits of crossbred and Sahiwal cattle

Parameters	BW	FCI	FSP	FLMY	SLMY	ADMY	DMFL
BW	-	0.0654	0.381**	-0.736	-0.603**	-0.653**	-0.369**
FCI		-	-0.225	0.736	0.560**	0.604**	0.368**
FSP			-	-0.121	-0.0208	-0.202	-0.0166
FLMY				-	-0.188	-0.0527	-0.0721
SLMY					-	0.686**	0.620**
ADMY						-	0.506**
DMFL							-

BW = Birth weight (Kg), FCI = First calving interval (days), FSP = First service period (days), FLMY = Milk yield in first 305 days (First lactation milk yield) in Kg, SLMY = Second lactation Milk yield (Kg), ADMY = Average daily milk yield during first lactation (Kg), DMFL = Days in milk in first lactation
