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## Reproductive Performance of Jersey and Local Cows under Field Condition

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### Abstract

Present study was made on the basis of 2 genetic group viz: Jersey & Local, data collected from field condition of Allahabad district, to determine the effect of service period, gestation period and calving interval. Least square mean of service period, gestation period and calving interval for Jersey cows were 120.51±9.06, 277.10±10.18 and 394.92±10.81 days, respectively. The corresponding values for Local cows as 268.12±12.06, 276.4±10.37 and 520.25±16.73 days, respectively. The effect of genetic group, season of calving and parity was highly significant ( $p < 0.01$ ) on service period and calving interval. The gestation period was significantly ( $p < 0.05$ ) influenced by genetic group.

### Article Info

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### Keywords

Reproductive,  
Jersey cows,  
Field Condition

### Introduction

In dairy industry, reproductive efficiency of cow is inseparably associated with the profitability. Although milk production of cattle is largely governed to a large extent by the genetic makeup, but there are some other associated factors which may influence the level of production.

Milk production in predominantly the domain of landless labourers, small and marginal farmers in India who keep about 70% of Indian milch animals. This group of people have dearth of knowledge about scientific rearing of crossbred dairy animals and as a result low productivity and reproductive inefficiency of the animals are the common problems. Although studies on reproductive

performances of crossbred dairy cattle in organised dairy farms are available, but systematic study on different reproductive traits of crossbred dairy animals particularly under field condition is essential to formulate selection and breeding strategy.

### Objective

To determine the effect of Genetic Group on all reproductive traits of Jersey and Local breeds of cows.

To determine the effect of Season of Calving on all reproductive traits of Jersey and Local breeds of cows.

To determine the effect of Lactation Order of dam on reproductive traits of Jersey and Local breeds of cows.

## Materials and Methods

The present investigation was conducted under field condition of Allahabad district of Uttar Pradesh during 2011 – 2012. Data were generated through questionnaires from the farmers having classified from the record of service period, gestation period and calving interval were calculated. The data thus obtained were classified according to genetic group as *Jersey* ( $G_1$ ) and *Local* ( $G_2$ ) cows, season of calving as Summer : March to June ( $S_1$ ), Rainy Season : July to October ( $S_2$ ) and Winter: November to February ( $S_3$ ) and according to lactation order as 1<sup>st</sup> ( $L_1$ ), 2<sup>nd</sup> ( $L_2$ ), 3<sup>rd</sup> ( $L_3$ ), 4<sup>th</sup> ( $L_4$ ), and 5<sup>th</sup> ( $L_5$ ) parity.

Simple means and standard errors for the traits studied were estimated using SPSS-11.5 (statistical packages for social science) computer package program. To find out the level of significance for the effect of parity of calving and season of calving, least significant difference (LSD) procedure using SPSS was performed. The mathematical model used was as follows:  $Y_{ij} = \mu + P_i + e_{ij}$  [Where,  $Y_{ij}$  = Dependent variables (Genetic Groups, Seasons of Calving and Lactation Orders);  $\mu$  = Population mean;  $P_i$  = Effect of  $i^{\text{th}}$  lactation number (where  $i = 1, 2, 3, 4 \& 5$ );  $P_i$  = Effect of  $i^{\text{th}}$  season of calving (where  $i = 1, 2 \& 3$ ) and  $e_{ij}$  = Random error associated with  $Y_{ij}$  observation.] Least squares analysis of variance showing the effect of various sources of variation on service period, gestation period and calving interval in cows were made. The observations were tabulated and statistically analysed (ANOVA).

## Results and Discussion

### Service Period

The least square means of service period for  $G_1$  was  $120.51 \pm 9.06$  days,  $G_2$  was  $268.12 \pm 12.06$  days, respectively. The present estimation of service period was similar to the reports of Goni *et al.*, (2001) reported non-significantly shorter service period of  $G_1$  than that of  $G_2$  cows.

For Jersey cows, the least square mean of service period for  $S_1$  was  $203.66 \pm 5.62$  days,  $S_2$  was  $185.17 \pm 20.44$  days and  $S_3$  was  $174.50 \pm 1.06$  days respectively. For Local cows, the least square mean of service period for  $S_1$  was  $200.60 \pm 6.42$  days,  $S_2$  was  $165.43 \pm 11.96$  days and  $S_3$  was  $173 \pm 19.8$  days respectively. It indicates that summer calved cows had the highest length of service period.

For  $G_1$  cows the least square mean of service period for  $L_1$  was  $189.60 \pm 12.70$  days,  $L_2$  was  $180.53 \pm 6.28$  days,  $L_3$  was  $173.52 \pm 8.15$  days,  $L_4$  was  $169.15 \pm 7.16$  days and  $L_5$  was  $171.40 \pm 9.25$  days, respectively. For  $G_2$  cows the least square mean of service period for  $L_1$  was  $201.95 \pm 8.14$  days,  $L_2$  was  $169.12 \pm 7.97$  days,  $L_3$  was  $183.83 \pm 10.13$  days,  $L_4$  was  $185.11 \pm 10.82$  days and  $L_5$  was  $189.56 \pm 16.2$  days, respectively. Highest value was recorded in 5<sup>th</sup> parity of  $G_2$  cows, while the 4<sup>th</sup> parity of  $G_1$  showed the least value. Such variation was highly significant ( $p < 0.001$ )

### Gestation Period

The least square means of gestation period for  $G_1$  cows were  $274 \pm 10.18$  days and  $G_2$  cows were  $276.4 \pm 10.37$  days respectively. The present estimation was almost similar to the report of Ao (1992) in Jersey and Local cows.

For  $G_1$  cows, the least square mean of gestation period for  $S_1$  was  $280.95 \pm 8.36$ ,  $S_2$  was  $246.33 \pm 17.19$  and  $S_3$  was  $289.75 \pm 28.59$  days respectively. For  $G_2$ , the least square mean of gestation period for  $S_1$  was  $295 \pm 20.19$  days,  $S_2$  was  $306 \pm 41.01$  days and  $S_3$  was  $244.33 \pm 19.24$  days respectively.

Significant variation ( $p < 0.01$ ) due to season of calving on gestational length was recorded, the value of  $G_1$  being lowest in monsoon calved cows.

For  $G_1$  cows, the least square mean of gestation period for  $L_1$  was  $275.85 \pm 12.84$  days,  $L_2$  was  $266.2 \pm 9.85$  days,  $L_3$  was  $276.25 \pm 25.03$  days,  $L_4$  was  $273.95 \pm 22.02$  days and  $L_5$  was  $274.44 \pm 10.73$  days, respectively. For  $G_2$  cows, the least square mean of gestation period for  $L_1$  was  $290.38 \pm 5.11$  days,  $L_2$  was  $282.47 \pm 9.15$  days,  $L_3$  was  $283.44 \pm 12.36$  days,  $L_4$  was  $274.4 \pm 12.20$  days and  $L_5$  was  $273.14 \pm 14.89$  days, respectively. The variation due to lactation order or parity was observed to be non-significant ( $p > 0.05$ ).

### Calving Interval

The least square means of calving interval in  $G_1$  cows were  $394.92 \pm 8.73$  days and for  $G_2$  cows were  $520.25 \pm 16.73$  days, respectively. The report of Saha *et al.*, (2000) was in agreement with the present report.

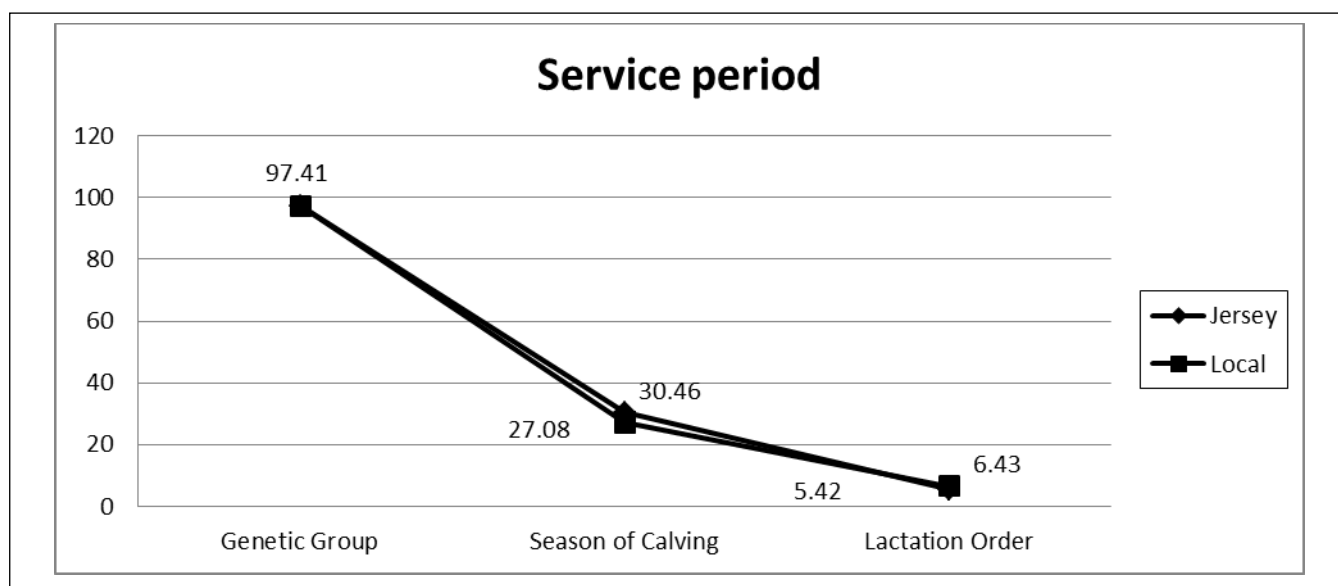
For  $G_1$  cows, the least square mean of calving interval for  $S_1$  was  $463.33 \pm 18.15$  days,  $S_2$  was  $428.80 \pm 21.43$  days and  $S_3$  was  $448.43 \pm 19.22$  days respectively.

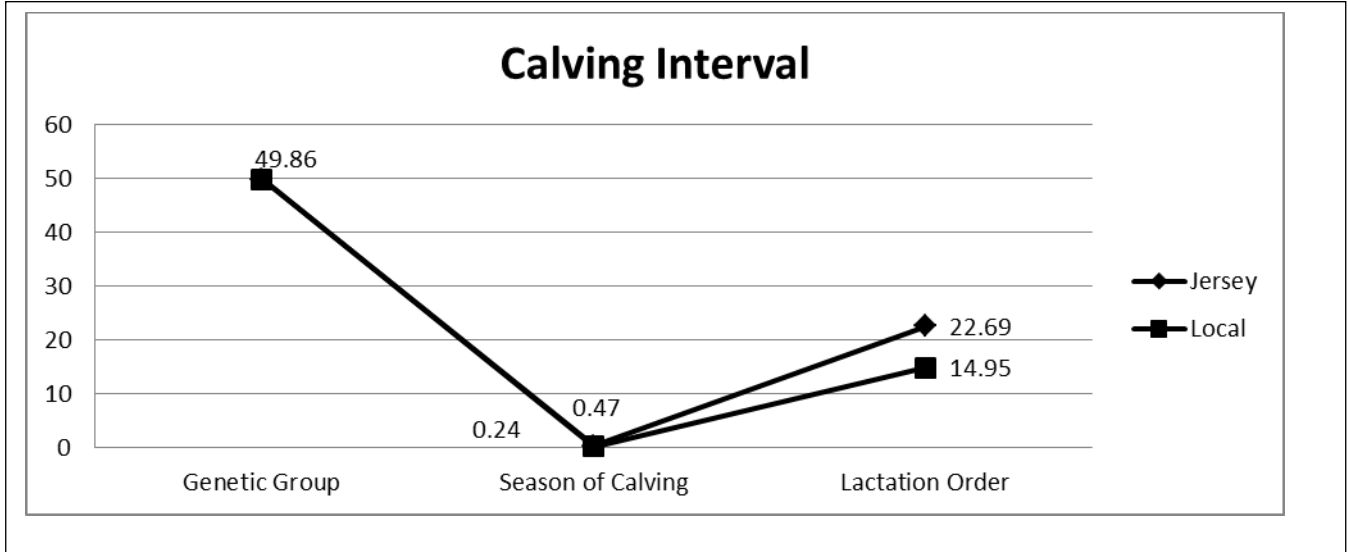
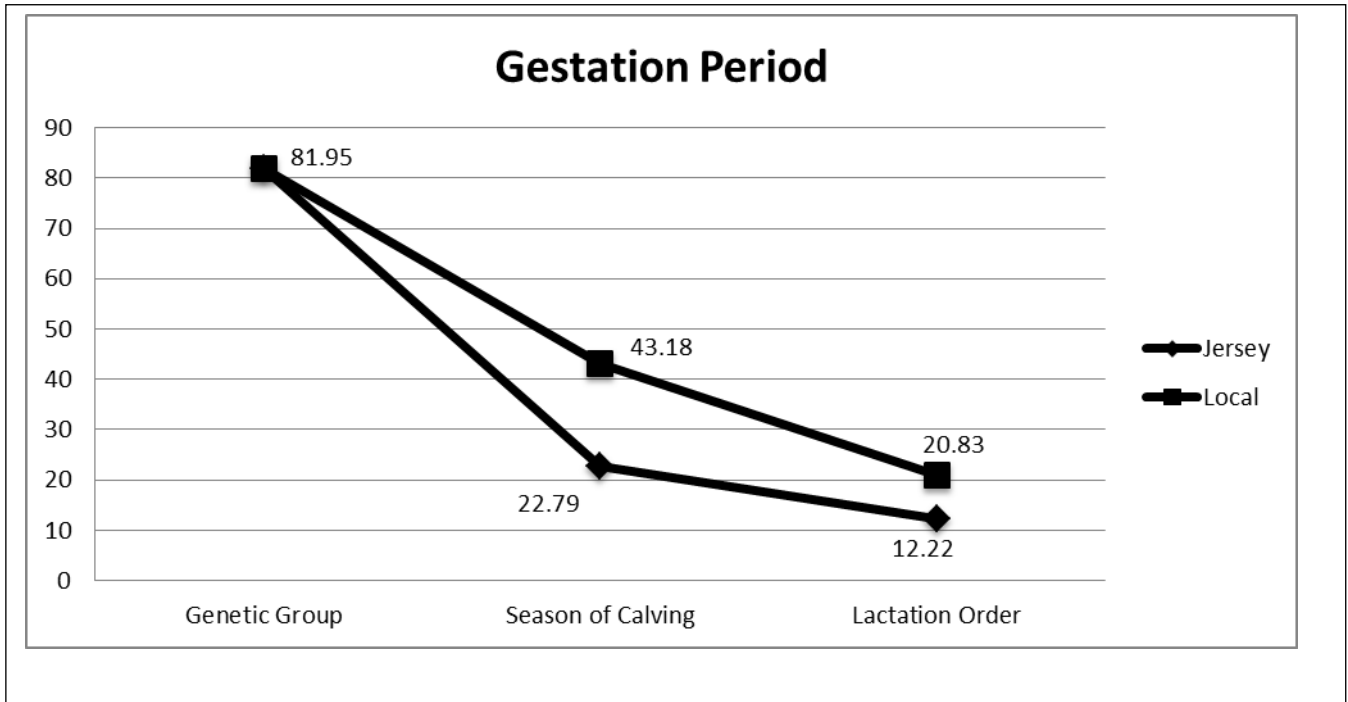
**Table.1** Least Square mean of SP, GP and CI

		Genetic Group	Season of Calving			Lactation Order				
			S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>
Service Period	G <sub>1</sub>	120.515 ± 9.06	203.66 ± 5.62	185.17 ± 20.44	174.50 ± 1.06	189.60 ± 12.70	180.53 ± 6.28	173.52 ± 8.15	169.15 ± 7.16	171.40 ± 9.25
	G <sub>2</sub>	268.12 ± 12.06	200.60 ± 6.42	165.43 ± 11.96	173 ± 19.8	201.95 ± 8.14	169.12 ± 7.97	183.83 ± 10.13	185.11 ± 10.82	189.56 ± 16.2
Gestation Period	G <sub>1</sub>	274 ± 10.18	280.95 ± 8.36	246.33 ± 17.19	289.75 ± 28.59	275.85 ± 12.84	266.2 ± 9.85	276.25 ± 25.03	273.95 ± 22.02	274.44 ± 10.73
	G <sub>2</sub>	276.4 ± 10.37	295 ± 20.19	306 ± 41.01	244.33 ± 19.24	290.38 ± 5.11	282.47 ± 9.15	283.44 ± 12.36	274.4 ± 12.20	273.14 ± 14.89
Calving Interval	G <sub>1</sub>	394.92 ± 8.73	463.33 ± 18.15	428.80 ± 21.43	448.43 ± 19.22	462.4 ± 18.59	454.4 ± 8.83	449.50 ± 4.86	444.33 ± 11.28	446.30 ± 6.19
	G <sub>2</sub>	520.25 ± 16.73	463.33 ± 18.15	465.43 ± 17.17	454.71 ± 16.93	456.89 ± 10.97	472.20 ± 14.51	444.67 ± 18.74	464.11 ± 10.11	409.80 ± 15.29

**Table.2**

		Genetic Group	Season of Calving	Lactation Order
Service Period	Jersey	97.41	30.46	5.42
	Local	97.41	27.08	6.43
Gestation Period	Jersey	81.95	22.79	12.22
	Local	81.95	43.18	20.83
Calving Interval	Jersey	49.86	0.47	22.69
	Local	49.86	0.24	14.95





For  $G_3$ , the least square mean of calving interval for  $S_1$  was  $463.33 \pm 18.15$  days,  $S_2$  was  $465.43 \pm 17.17$  days and  $S_3$  was  $454.71 \pm 16.93$  days respectively. Monsoon calved of  $G_2$  cows took maximum time before successive calving followed by summer and winter.

For  $G_1$  cows, the least square mean of calving interval for  $L_1$  was  $462.4 \pm 18.59$  days,  $L_2$  was  $454.4 \pm 8.83$  days,  $L_3$  was  $449.50 \pm 4.86$  days,  $L_4$  was  $444.33 \pm 11.28$  days and  $L_5$  was  $446.30 \pm 6.19$  days, respectively. For  $G_2$  cows, the least square mean of calving interval for  $L_1$  was  $456.89 \pm 10.97$  days,  $L_2$  was  $472.20 \pm 14.51$  days,  $L_3$  was  $444.67 \pm 18.74$  days,  $L_4$  was  $464.11 \pm 10.11$  days and  $L_5$  was  $409.80 \pm 15.29$  days, respectively. Little

higher value was recorded in cows in 2<sup>nd</sup> parity of  $G_2$  cows as compared to  $G_1$  cows with other parity but the differences were non-significant ( $p > 0.05$ ).

Lactation order and season of calving have influence on different reproductive traits of dairy animals. Animals with advancement of parity expressed better reproductive performances owing to reproductive sufficiency. Based on present performance for cows and other characters taken into consideration, this study concluded that Jersey play important role in genetic group and at the same time Jersey was reported to be an important trait in gestation period at Allahabad region. The present investigation registered high heritability along with high genetic

advance as percent of mean of service period, gestation period and calving interval which should be given top priority for effective selection. The present investigation further revealed that Jersey is most diverse to other. Therefore, genotypes present in these clusters are suggested to provide a broad spectrum of variability in segregating generations and may be used as parents for future hybridization programme to develop desirable type. Most of the reproductive parameters under the present study were not optimum in the animals of summer calving group. Elaborate field studies of different associated factors influencing reproductive parameters of dairy animals need to done for selection of superior animals.

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