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Relationship between Gestation Length, Birth Weight and Weight at Service on Jersind Crosses

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Abstract:*This experiment was conducted at the Department of Animal Husbandry, Sam Hingginbottom Institute of Agriculture, Technology and Science, India. The data was collected from the history sheet records maintained in the Department of Animal Husbandry, Sam Hingginbottom Institute of Agriculture, Technology and Science- Animals were managed by skilled persons under similar feeding and management condition and the following traits were studied; Gestation Length, Birth Weight, Weight at Service The data for the reproductive traits of Jersey× Red Sindhi crosses was tabulated and analyzed to determine the relationship between the above mention traits. Correlation and completely randomized design were used. TheBWof the calves ranges from 9.08 kg to 28.15kg for both sexes. The BWof male and female calves varies from 10.90 to 28.15 kg and 9.08 to 23.60 kg respectively. The average BWof male and female calf was 19.07 kg and 17.68 kg respectively. The male calves were heavier than the female calves at birth. It was observed that the cows which weighted 531- 635lbs at service gave birth to heavier calves.GL in case of male and female varied from 251 to 299 days and 267 to 304 days respectively. The average GL of male and female calves is 283.23 days and 284.18 days respectively. The female calves have longer GL than the male calves. It was observed that increase in WS did not result in the heavier BWof calves. These shows that, there is no significance difference between the group of BW according toWS. It was observed that the cows which weighted 531- 635lbs at service gave birth to heavier calves. Significance difference in BW due sex was observed. It was also observed that the increased in WS did not result in increase in the GL.There is significance difference between GL and BWof the calves and the GLwas positively correlated with the BW0.426**at 0.01 probability level.*

Keywords:*GL (gestation Length), BW (Birth weight) and WS (Weight at service)*

I. Introduction

Farming in India is characterized by very large number of animals with low productivity. According to recent estimate India has the 221.9 million cattle (16.24% of the total world cattle population) and 95.1 million buffaloes (56.9% of the world buffalo population) Bhasin, (2004).

Since 1934 the programme of crossbreeding for dairy cattle was started at the AAI. The impact of the crossbreeding of cattle was to increase the economic performances of the indigenous breed or zebu cattle. Now India rank first in milk production in the world (140.6MT) and milk output accounts for 9.8 percent of GDP in India.Indigenous breeds viz. Kankrej, Gir, Hariana, Sahiwal and Red Sindhi were crossed to Holstein Friesian, Brown Swiss, Jersey and Guernsey at AAI Bhasin, (2014). The idea was to increase the economic potentials of the indigenous breeds. The results of crossbreeding suggested that Red Sindhi ×Jersey crosses had the most desirable traits for Indian condition. This includes small body size, better adaptability and high fat percentage. The Jersey crossbred between 3/8 and 5/8 have been interbred and named Jersind. Jersind crosses gave milk yield between 1557 and 1861kg in first lactation. Due to its high productive performance and its adaptability to Indian condition we feel it is important to study the relationship between Gestation length, birth weight and weight at service on this breed, so that we can evaluate the relationship that exist between gestation length, birth weight and weight at service in Jersind crosses.

Therefore, the present study was carried out on the Relationship Between Gestation Length, Birth Weight and Weight at Service On Jersind Crosses and will be undertaken with the following objectives.

- To determine the relationship between Gestation Length and Birth Weight
- To determine the relationship between Gestation Length and Weight at Service
- To determine the relationship between Birth Weight and Weight at Service.

II. Materials and Method

Experimental Location

This experiment was conducted ta the Department of Animal Husbandry, Sam Hingginbottom Institute of Agriculture, Technology and Science- Deemed-University, Allahabad-21107(U.P), India.The data was collected

from the history sheet records maintained in the Department of Animal Husbandry, Sam Hingginbottom Institute of Agriculture, Technology and Science- Deemed-University, Allahabad-21107(U.P), Dairy Farm from 1940 to 1970. Animals were managed by skilled persons under similar feeding and management condition and the following traits were studied;Gestation Length, Birth Weight and Weight at Service. The reproduction parameters in animals are more influenced by environment Mukhopadhyay, *et al.*,(2010).

The data for the reproductive traits of Jersey× Red Sindhi crosses was tabulated and analyzed to determine the relationship between the above mention traits. The number of record sheets used were 46 sheets of $^{1}/_{4}$ Jersey $\times^{3}/_{4}$Red Sindhi crosses. The animals were grouped into four groups according to weight at service, the groups were as followed;

Group 1. **320-425**
Group 2. **426-530**
Group 3. **531-635**
Group 4. **636-740**

Statistical analysis

Completely randomized design and Correlation using IBM SPSS 20 Software were used.

III. Results and Discussions

- **Birth weight according to weight at service:**

The birth weight of the calves ranges from 9.08 kg to 28.15kg for both sexes.The birth weight of male and female calve varies from 10.90 to 28.15 kg and 9.08 to 23.60 kg respectively.The average birth weight of male and female calf was 19.07 kg and 17.68 kg respectively. The male calves were heavier than the female calves at birth.It was observed that the cows which weighted 531- 635lbs at service gave birth to heavier calves in case of male calves and the cows which weighted 320-425lbs at service gave birth to the heavier calves in case of female calves.Martin *et al.,* (1962), stated that, male calves are usually heavier at birth than female calves. This difference in average birth weight ranges from 3.5 to 7.2 pounds with an average of 5 pounds for beef and dairy breeds.

- **Gestation length according to weight at service:**

Gestation length in case of male and female varied from 251 to 299 days and 267 to 304 days respectively.

The average gestation length of male and female calves is 283.23 days and 284.18 days respectively.Spencer (2010),Reported to have made a details study of durham gestation, his result showed the average length of 762 gestations to be 283.3daysThe female calves have longer gestation length than the male calves though the difference is not significant.

Table 1: Analysis of variance of birth weight and gestation length (by weighted mean sum of square method)

Source of variance	**Gestation Length**		**Birth weight**	
	d.fMSS		**d.fMSS**	
Between treatments	**3**	**95.70266**	**3**	**18.35091**
Within treatments	**34**	**934785**	**34**	**4253.759**
Total	**37**		**37**	

The anovatable (Gestation Length) reveals that the calculated value of due to groups of weight at service was less than the table value on the degree of freedom 3 and 34 at 5% probability level, so the null hypothesis will be accepted.

Therefore, it can be concluded from the above tabulated data on birth weight that there is no significance difference between the four (4) groups of Weight at service.The anova table (Birth weight) reveals that the calculated value of due to groups of weight at service was less than the table value on the degree of freedom 3 and 34 at 5% probability level, so the null hypothesis will be accepted. Therefore, it can be concluded from the above tabulated data on birth weight that there is no significance difference between the four (4) groups of Weight at service.

Table 2: Correlation of gestation length and birth weight

	Gestation Length	Birth weight
Gestation Length	-	.426**
Birth weight	.426**	-

Correlation is significant at the 0.01 level

Significance difference in birth weight due sex was observed. There is significance difference between gestation length and birth weight of the calves and the gestation length was positively correlated with the birth weight 0.426^{**} at 0.01 probability level. Cows with longer gestation length gave birth to relatively heavier calves than those with shorter gestation length Forbes, J. (1967) Reported that a correlation of 0.30 between gestation length and birth weight in brown alpine and Friesian cattle have shown little or no correlation between gestation length and birth weight in dairy cattle.

IV. Conclusion

It was concluded that weight at service of the cow have no significance difference on the gestation length and also on the birth weight of the calves, though it was observed that the cows which weighted 531-635lbs at service gave birth to heavier calves. Significance difference in birth weight due sex was observed. There is significance difference between gestation length and birth weight of the calves and the gestation length was positively correlated with the birth weight 0.426^{**} at 0.01 probability level. Cows with longer gestation length gave birth to relatively heavier calves than those with shorter gestation length.

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