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Research Article

Effect of period on service period and dry days length of Jersind crosses

Rahul Shah, Sarvjeet Herbert, Ram Pal Singh, Neeraj, Ramesh Pandey

Abstract

The study was carried out in the Department of Animal Husbandry and Dairying, Dairy Farm, SHUATS, District – Prayagraj, Utter Pradesh. The objective of the study was to evaluate the effect of periods on service period and dry days length of Jersind crosses. All the data were collected from the history records of Jersind crosses. Four Cross Groups were selected for the study 1/2 J X 1/2 RS - (JRS1), 3/8 J X 5/8 RS - (JRS2), 1/4 J X 3/4 RS - (JRS3), and 1/8 J X 7/8 RS - (JRS4). It was observed that the mean first period, service period was 104.86 ± 3.8 days, 107.33 ± 8.25 days, 104.38 ± 3.12 days, and 88.50 ± 5.1 days in JRS1, JRS2, JRS3, and JRS4. The mean second period, service period was 110.00 ± 4.76 days, 84.75 ± 4.2 days, 109.30 ± 3.5 days, and 85.20 ± 7.55 days in JRS1, JRS2, JRS3, and JRS4. The mean third period, service period was 107.00 ± 6.99 days, 113.33 ± 2.88 days, 84.57 ± 5.79 days, and 116.83 ± 4.57 days in JRS1, JRS2, JRS3, and JRS4. The mean first period, dry days length was observed 62.14 ± 1.13 days, 60.33 ± 0.98 days, 65.88 ± 1.72 days, and 62.00 ± 1.4 days in JRS1, JRS2, JRS3, and JRS4. The mean second period, the dry days' length was 59.60 ± 1.88 days, 60.50 ± 2.84 days, 62.20 ± 1.56 days, and 63.60 ± 1.08 days in JRS1, JRS2, JRS3, and JRS4. The mean third period, dry days length was 61.60 ± 1.40 days, 62.00 ± 0.94 days, 63.14 ± 2.86 days, and 65.50 ± 2.12 days in JRS1, JRS2, JRS3, and JRS4. In reproductive traits period indicated a significant effect on the second and third period service period, whereas indicated a non-significant on first, second, and third period dry days length of Jersind crosses (JRS1, JRS2, JRS3, and JRS4).

Keywords dry days length, Jersind, service period

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Introduction

India is mostly a rural country, with two-thirds of the people living in rural areas. Agriculture is the mainstay of the rural economy. Dairy contributes significantly to the rural economy by supplementing rural household income. Landless, tiny, and marginal farmers in India, in particular. It also serves as a secondary activity in semi-urban areas and, more specifically, for individuals living in mountainous, tribal, and drought-prone areas when crop productivity is insufficient to support the family. Animal husbandry is an important element of agriculture in India, especially among livestock, cattle are considered the backbone of the rural community since they provide nutritional and livelihood security. Dairy cow profitability is determined not only by milk output but also by non-production qualities such as fertility. Many secondary qualities, such as reproductive traits (Service Period, Dry Days Length, and so on), are critical in lowering costs and increasing net returns in the dairy industry. Reduced reproductive performance could have an impact on culling

rates and hard life, as well as lower genetic gain from basic features. The dairy herd's reproductivity success is a key measure of a dairy farming system's long-term viability. However, the assignment of reproductive and productive performance is based on a composite measure that is used to evaluate overall performance [1]. The length of the ideal dry period (46–67 days) is ideal for maximum yield. As a result, it is important to dry out pregnant cows to obtain an optimum DP to boost productivity in the following lactation, as both extremely short and very lengthy DP impair the economic profitability of dairy animals [2].

The number of days between calving and re-fertilization is known as the service period. It can also be defined as the time between calving and conception. It's best if it's between 60 and 90 days following calving [3].

Methodology

Materials

The data for this study was collected from history records of Jersind crosses maintained in the Department of Animal Husbandry & Dairying, Dairy Farm, Sam Higginbottom University of Agriculture Technology and Sciences, Prayagraj, Utter Pradesh for the period from 1945 to 1972.

Management practices: Animals were reared, fed, and managed by skilled persons under the similar condition of house management and environments.

Cross groups of animals

a) 1/2 J X 1/2 RS - (JRS1)
b) 3/8 J X 5/8 RS - (JRS2)
c) 1/4 J X 3/4 RS - (JRS3)
d) 1/8 J X 7/8 RS - (JRS4)

Parameter to be studied

1. Service Period
2. Dry Period Length

Treatment

The data were classified into various groups according to the year and period .

Year	Period
a. 1945 to1954	First Period
b. 1955 to 1963	Second Period
c. 1964 to 1972	Third Period

Methods

Average

$$\bar{X} = \sum X / N$$

Where,

$\sum X$ = sum of observations for each character
N = total number of observations

Standard error

$$SE = SD/\sqrt{N}$$

Where

SD = standard deviation, N = total no of observation

Statistical analysis of data

Least squares analysis of variance is used to determine the effect of sources of variation on period service period and period dry day's length in Jersind crosses.

Critical difference (C.D)

The critical difference was calculated with the help of the following formula:

$$C.D. = \sqrt{2MSS(E)/r} \times t \text{ error}$$

Where,

CD = Critical difference, r = no. of replications,
MSS(E) = error mean sum of square, terror = treatment error

Table 1. The observations were tabulated and statistically analyzed (ANOVA) as follows

Source of variation	d. f.	S.S.	M.S.S.	F. cal.	F. tab. (0.5 %)	Results
Treatments	t – 1	SS (T)	MSS(T) = SS(T)/(t-1)	MSS(T)/MSS(E)		S or NS
Error	tr – 1	SS (E)	MSS(E) = SS(E)/(tr-t)			
Error	**tr – 1**	**TSS**				

Where, t = number of treatments, r = number of replications per treatment,
d. f. = Degree of freedom, S.S = Sum of square, M.S.S = Mean sum of the square,
S = Significant, NS = Non – Significant.

Results and Discussion

This study was carried out at the Department of Animal Husbandry and Dairying, Dairy Farm, SHUATS, Prayagraj. All data was collected from history records of Jersind crosses. After investigation following, results were obtained.

First period (1945 to1954) effect on service period of Jersind crosses

In general, the service period in the first period of Jersind crosses was shortest to longest from 74 days to 122 days. In the first period, the service period of JRS1, JRS2, JRS3, and JRS4 were shortest to longest from 85 days to 120 days, 88 days to 122 days, 87 days to 118 days, and 74 days to 113 days. The mean first period, service period was 104.86 ± 3.8 days, 107.33 ± 8.25 days, 104.38 ± 3.12 days, and 88.50 ± 5.1 days in JRS1, JRS2, JRS3, and JRS4 respectively. The overall mean first period, service period of Jersind crosses was 100.92 ± 2.53 days. The difference in the mean value of the first period, service period of all cross groups was indicated as non-significant. The longest mean first period, service period 107.33 ± 8.25 days was recorded in JRS2 followed by 104.86 ± 3.8 days in JRS1, 104.38 ± 3.12 days in JRS3, and 88.50 ± 5.1 days in JRS4. The differences in the first period, service period of Jersind crosses were indicated non - significant; it indicated a non - significant effect of period first (P1) on service period Jersind crosses. A similar finding was reported by Kunbhar et al., [4] but the result reported by different researchers [5-10], does not agree with the present finding.

Second period (1955 to 1963) effect on service period of Jersind crosses

In general, service period in the second period of Jersind was shortest to longest from 68 days to 126 days. The service period of JRS1, JRS2, JRS3, and JRS4 were shortest to longest from 96 days to 126 days, 75 days to 94 days, 88 days to 126 days, and 68 days to 110 days. The mean second period, service period was 110.00 ± 4.76 days, 84.75 ± 4.2 days, 109.30 ± 3.5 days, and 85.20 ± 7.55 days in JRS1, JRS2, JRS3, and JRS4 respectively. The overall mean second period, service period of Jersind crossbred was 100.33 ± 3.35 days. The difference in the mean value of the second period, service period of JRS1, JRS2, JRS3, and JRS4 were indicated a significant result. The longest mean second period, service period 110. ± 4.76 days was recorded in JRS1 followed by 109.30 ± 3.5 days in JRS3, 85.20 ± 7.55 days in JRS4, and 84.75 ± 4.2 days in JRS2. The differences in the second period, service period of Jersind crosses were indicated a significant

result; it indicated a significant effect of the second period on service period of Jersind crosses. A similar finding was reported by different studies [5-10] but the result reported by Kunbhar et al., [4] does not agree with the present finding.

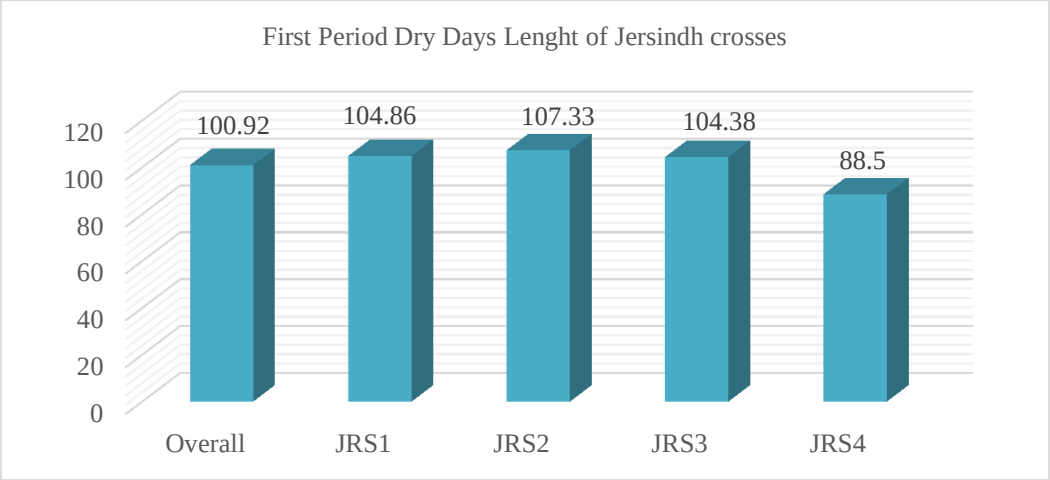

Figure 1. Least square mean first period service period (days) for Jersind crosses

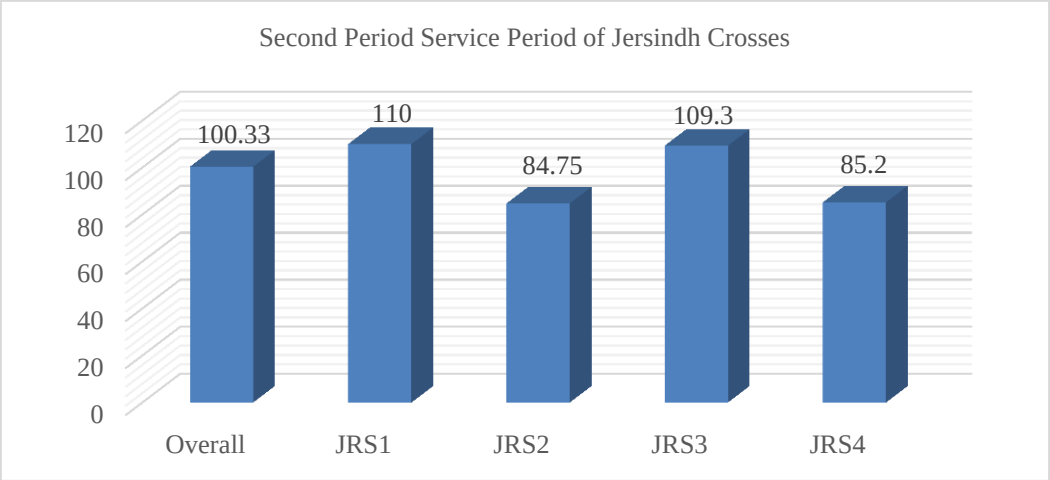

Figure 2. Least square mean second period service period (days) for Jersind crosses

Third period (1964 to 1972) effect on service period of Jersind Crosses

In general, service period in the third period of Jersind was shortest to longest from 63 days to 129 days. The service period of JRS1, JRS2, JRS3, and JRS4 were shortest to longest from 82 days to 124 days, 108 days to 120 days, 63 days to 106 days, and 97 days to 129 days. The mean third period, service period was 107.00 ± 6.99 days, 113.33 ± 2.88 days, 84.57 ± 5.79 days, and 116.83 ± 4.57 days in JRS1, JRS2, JRS3, and JRS4 respectively. The overall mean third period, service period of Jersind crosses was 103.24 ± 4.25 days. The difference in the mean value of the third period on service period of all four cross groups was indicated as a significant result. The longest mean third period, service period 116.83 ± 4.57 days was recorded in JRS4 followed by 113.33 ± 2.88 days in JRS2, 107.00 ± 6.99 days in JRS1, and 84.57 ± 5.79 days in JRS3. The differences in the third period, service period of Jersind crosses were indicated a significant result; it indicated a significant effect of the third period on the service period of Jersind crosses.

Similar finding was reported by different studies [5-10] but the result reported by Kunbhar et al., [4] does not agree with the present finding.

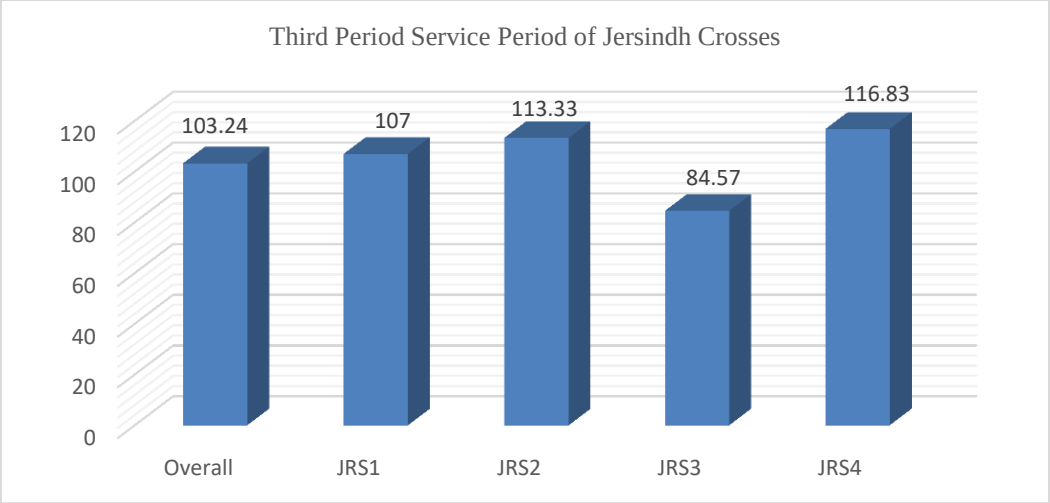

Figure 3. Least square mean third period service period (days) for Jersind crosses

First period (1945 to1954) effect on dry days length of Jersind crosses

In general, dry day's lengths in the first period of Jersind crosses were shortest to longest from 56 days to 72 days. In the first period, the dry period JRS1, JRS2, JRS3, and JRS4 were shortest to longest from 56 days to 66 days, 58 days to 62 days, 57 days to 72 days, and 58 days to 68 days. The mean first period, dry days length was observed 62.14 ± 1.13 days, 60.33 ± 0.98 days, 65.88 ± 1.72 days, and 62.00 ± 1.4 days in JRS1, JRS2, JRS3, and JRS4 respectively. The overall mean first period dry days length of Jersind crosses was 63.13 ± 0.82 days.

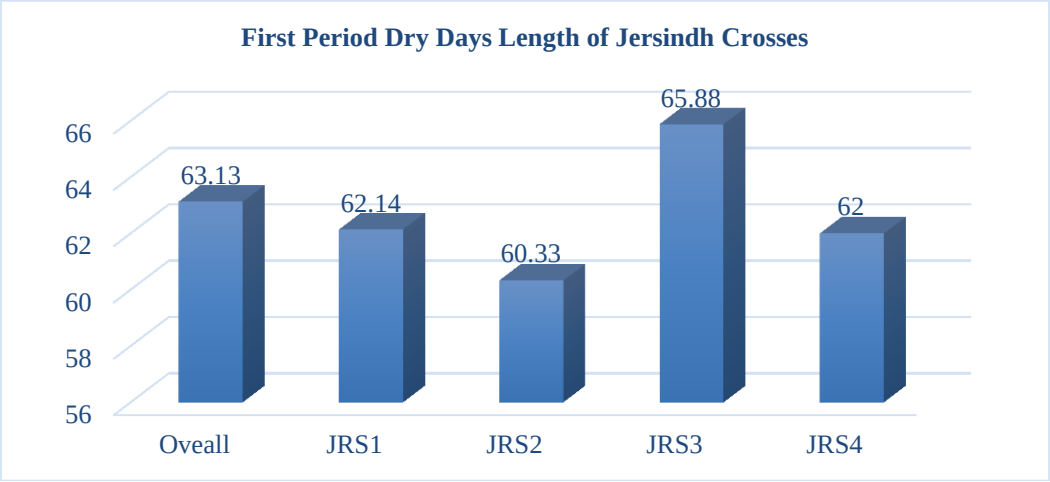

Figure 4. Least square mean first period dry days length for Jersind crosses

The difference in the mean value of the first period, dry days length of JRS1, JRS2, JRS3 and JRS4 have indicated a non – significant result. The longest mean first period, dry days length 65.88 ± 1.72 days was recorded in JRS3 followed by 62.14 ± 1.13 days in JRS1, 62.00 ± 1.4 days in JRS4, and 60.33 ± 0.98

days in JRS2. The differences in the first period, dry days length of Jersind crosses were indicated non – significant result; it indicated a non - significant effect of the first period, dry days length of Jersind crosses. A similar finding was reported by different researchers [6, 11-12] but the result reported by [5, 13-17] does not agree with the present finding.

Second period (1955 to 1963) effect on dry days length of Jersind crosses

In general, dry days' length in the second period of Jersind crosses were shortest to longest from 54 days to 71 days. In the second period, the dry day's lengths of JRS1, JRS2, JRS3, and JRS4 were shortest to longest from 54 days to 67 days, 54 days to 69 days, 54 days to 71 days, and 61 days to 67 days. The mean second period, the dry days' length was 59.60 ± 1.88 days, 60.50 ± 2.84 days, 62.20 ± 1.56 days, and 63.60 ± 1.08 days in JRS1, JRS2, JRS3, and JRS4 respectively. The overall mean second period, dry days length of Jersind crosses was 61.67 ± 0.21 days. The difference in the mean value of the second period, the dry days' length of JRS1, JRS2, JRS3, and JRS4 have indicated a non – significant result. The longest mean second period, dry days length 63.60 ± 1.08 days was recorded in JRS4 followed by 62.20 ± 1.56 days in JRS3, 60.50 ± 2.84 days in JRS2, and 59.60 ± 1.88 days in JRS1. The differences in the second period, dry day's length of Jersind crosses were indicated a non – significant result; it indicated a non - significant effect of the second period on dry day's length of Jersind crosses. A similar finding was reported by S. R. Zol et al., [11], Dangi PS. et al., [6] and Japheth et al., [12] but the result reported by Singh and Dubey [13], Chaudhari, M. et al., [5], Islam et al., [14], Mamun et al., [15], Raja and Gandhi [16] and W. Zewdu et al., [17] does not agree with the present finding.

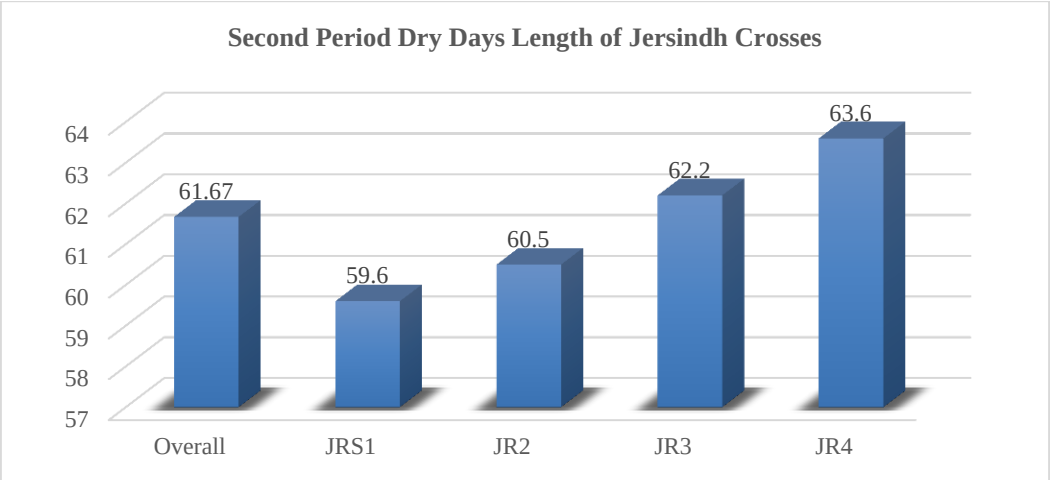

Figure 5. Least square mean second period dry days length for Jersind crosses

Third period (1964 to 1972) effect on dry days length of Jersind Crosses

In general, dry days length in the third period of Jersind crosses were shortest to longest from 50 days to 75 days. In the third period, the dry days' length of JRS1, JRS2, JRS3, and JRS4 were shortest to longest from 57 days to 66 days, 60 days to 64 days, 50 days to 75 days, and 57 days to 71 days. The mean third period, dry days length was 61.60 ± 1.40 days, 62.00 ± 0.94 days, 63.14 ± 2.86 days, and 65.50 ± 2.12 days in JRS1, JRS2, JRS3, and JRS4 respectively. The overall mean third period, dry days length of Jersind was 63.29 ± 1.07 days. The difference in the mean value of the third period, dry days length of JRS1, JRS2, JRS3, and JRS4 have indicated a non – significant result. The longest mean third period, dry days length 65.50 ± 2.12 days was recorded in JRS4 followed by 63.14 ± 2.86 days in JRS3, 62.00 ± 0.94 days in JRS2, and 61.60 ± 1.40 days in JRS1. The differences in the third period, dry days length of Jersind crosses were indicated a non – significant result; it indicated a non - significant effect of the third period on dry days length of Jersind crosses. A similar finding was reported by Zol et al., [11], Dangi et al., [6], and Japheth et

al., [12] but the result was reported by Dubey and Singh [13], Chaudhari et al., [5], Islam et al., [14], Mamun et al., [15], Raja and Gandhi [16] and Zewdu et al., [17] does not agree with the present finding.

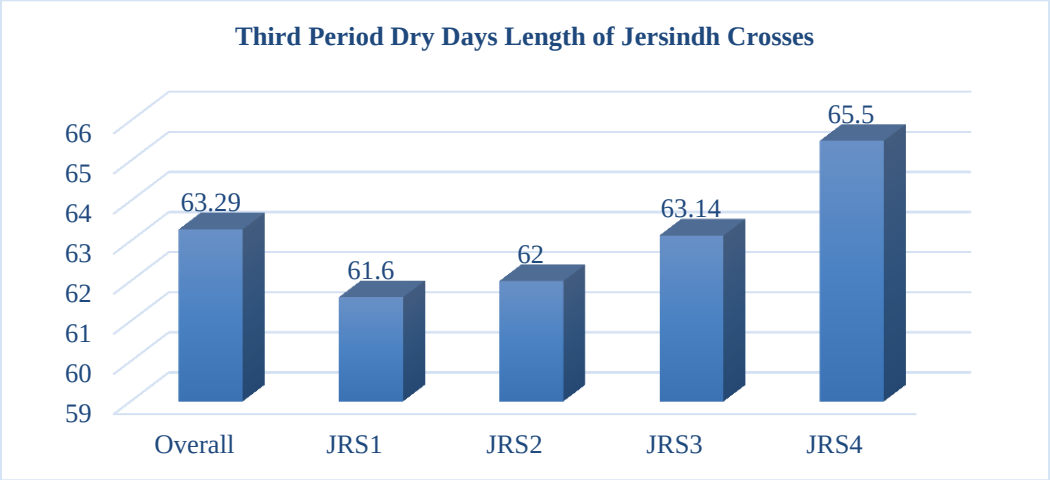

Figure 6. Least square mean third period dry days length for Jersind crosses

Conclusion

It was concluded that period had a significant effect on the Second and third period service period, whereas a non-significant on first period service period and first, second and third period dry days length of Jersind crosses (JRS1, JRS2, JRS3, and JRS4).

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