STUDIES ON SOME IMPORTANT FIRST LACTATION TRAITS OF HOLSTEIN FRIESIAN x DEONI BRED CATTLE

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ABSTRACT

The data on 110 Holstein Friesian x Deoni breds for a period of 15 years were considered for study. The data accumulated on two farms were evaluated for first service period (FSP), first lactation period (FLP), first dry period (FDP) and first intercalving period (FICP) and effect of farm, season and period on these traits was studied. The least squares means for FSP, FLP, FDP and FICP were 170.51 ± 101.00, 321.25 ± 39.56, 198.86 ± 120.41 and 524.96 ± 218.77 days, respectively. The effect of farm and season were significant on FLP and FOP whereas non-significant for FSP and FICP. The period effect was significant except for FLP.

INTRODUCTION

The Indian cattle breeds are believed to be the resultant groups, so developed from the pro-genitors having hump (Bos indicus). The Marathwada region of Maharashtra state has gifted with two important breeds of cattle viz. Deoni and Red Kandhari. Deoni is a dual purpose while Red Kandhari is draft purpose breed. To increase the production of milk in the country it required to alter the genetic composition of the individual animal. The fast change in the genetic composition can be achieved by the way of crossbreeding. In the present study the performance in terms of service period, lactation period, dry period and intercalving period and effect of farm, season and period on these traits was evaluated in Holstein Friesian x Deoni straight breds for first lactation. These are the important characters which affects the economics of milk production.

MATERIAL AND METHODS

The data on 110 Holstein Friesian Deoni straight bred cows were taken up from individual pedigree sheet and breeding records for a period of 15 years (1976-1990). The data accumulated on two farms under Marathwada Agric. Univ. Parbani viz. Cattle Cross Breeding Project and Agric. College Dairy for service period, lactation period, dry period and intercalving period were collected and classified into farm, season and period as follows:

Farm:
F₁ - Cattle Cross Breeding Project (CCBP)
F₂ - Agriculture College Dairy Farm (ACDF)

Season:
S₁ - Cold season (December to February)
S₂ - Hot season (March to May)
S₃ - South-West monsoon season (June to September)
S₄ - Post monsoon season (October to November)

Period:
P₁ - 1976 to 1980
P₂ - 1981 to 1985
P₃ - 1986 to 1990

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The effect of farm, season and period were evaluated by the method of Least Square Technique (Harvey 1976). Duncan’s multiple range test was used to compare the means (Kramer, 1957). The following mathematical model was employed to analyse the data.

\[ Y_{ijkl} = \mu + F_i + S_j + P_k + e_{ijkl} \]

where,

- \( Y_{ijkl} \) is the record of \( i \)th cow calved during \( k \)th period in \( j \)th season on \( l \)th farm.
- \( \mu \) is the population mean common to all the observations.
- \( F_i \) is the effect of \( i \)th farm (1, 2).
- \( S_j \) is the effect of \( j \)th season of calving (1,...4).
- \( P_k \) is the effect of \( k \)th period of calving (1,...3).
- \( e_{ijkl} \) is the random error assumed to be NID (0, \( \sigma^2 e \)).

RESULTS AND DISCUSSION

**Farm effect:** The effect of farm was non-significant for FSP and FICP, and significant for FLP and FDP (Table 1). The significant differences in FLP and FDP may be due to variable management and feeding practices.

**Season effect:** The season of calving had no significant effect on FSP and FICP (Table 1). Similar type of results were revealed in the literature (Chaudhary et al., 1977; Deshpandey and Bonde, 1983; Rao et al., 1984; Thalkari, 1984). However, effect of season of calving on FLP and FDP was also reported earlier (Thalkari, 1984).

**Period effect:** The period of calving had significant effect on all traits (Bhat, 1978; Deshpandey and Bonde, 1983; Nagarrenkar and Rao, 1982; Rao et al., 1984; Thalkari, 1984) except for FLP (Table 1). The significant differences in FSP, FDP and FICP due to periods may be due to variation in management levels over the years.

The overall least squares means of Holstein Friesian x Deoni straight breds were FSP 170.51 ± 101.00 days, FLP 321.25 ± 39.56 days, FDP 198.86 ± 120.41 days and FICP 524.93 ± 218.75 days (Table 2). Holstein Friesian x Deoni straight breds calved at Agriculture College Dairy have better performance for all traits (Table 2). The post monsoon calvers had maximum FLP and FICP (Table 2). The LSM for FSP, FDP and FICP were significantly higher among cows calved in period 3 (Table 2).

**CONCLUSIONS**

It can be concluded from above findings that in Holstein Friesian x Deoni straight breds the farm, season

<table>
<thead>
<tr>
<th>Effect</th>
<th>DF</th>
<th>FSP</th>
<th>FLP</th>
<th>FDP</th>
<th>FICP</th>
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<tr>
<td>Farm</td>
<td>1</td>
<td>2101.45</td>
<td>11086.25*</td>
<td>88500.32*</td>
<td>35003.29</td>
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<tr>
<td>Season</td>
<td>3</td>
<td>7473.93</td>
<td>8253.61*</td>
<td>69575.36*</td>
<td>91561.76</td>
</tr>
<tr>
<td>Period</td>
<td>2</td>
<td>138046.25*</td>
<td>3309.15</td>
<td>345687.25*</td>
<td>340612.55*</td>
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<tr>
<td>Error</td>
<td>103</td>
<td>10343.60</td>
<td>1565.12</td>
<td>14500.06</td>
<td>47861.21</td>
</tr>
</tbody>
</table>

*Significant at 5% level.
Table 2. Least squares means and standard error for factors affecting first service period, first lactation period, first dry period and first inter calving period (days)

<table>
<thead>
<tr>
<th>Source</th>
<th>Sample size</th>
<th>FSI'</th>
<th>FLP</th>
<th>FDP</th>
<th>FICP</th>
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<tbody>
<tr>
<td>Overall</td>
<td>110</td>
<td>170.51 ± 101.00</td>
<td>321.25 ± 39.56</td>
<td>198.82 ± 120.41</td>
<td>524.96 ± 218.77</td>
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<td></td>
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<td></td>
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<tr>
<td>F₁</td>
<td>37</td>
<td>170.48 ± 101.59*</td>
<td>321.22 ± 39.50*</td>
<td>198.82 ± 120.40*</td>
<td>524.93 ± 218.75*</td>
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<tr>
<td>F₂</td>
<td>73</td>
<td>171.86 ± 101.80*</td>
<td>331.27 ± 39.76*</td>
<td>170.47 ± 120.52*</td>
<td>507.10 ± 218.87*</td>
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<td></td>
</tr>
<tr>
<td>S₁</td>
<td>28</td>
<td>170.49 ± 101.70*</td>
<td>321.23 ± 39.56*</td>
<td>198.83 ± 120.41*</td>
<td>524.93 ± 218.76*</td>
</tr>
<tr>
<td>S₂</td>
<td>32</td>
<td>170.49 ± 101.71*</td>
<td>321.23 ± 39.56*</td>
<td>198.84 ± 120.41*</td>
<td>524.93 ± 218.80*</td>
</tr>
<tr>
<td>S₃</td>
<td>21</td>
<td>170.49 ± 101.72*</td>
<td>321.23 ± 39.57*</td>
<td>198.83 ± 120.41*</td>
<td>524.93 ± 218.77*</td>
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<tr>
<td>S₄</td>
<td>29</td>
<td>158.31 ± 101.70*</td>
<td>341.66 ± 39.61*</td>
<td>183.80 ± 120.41*</td>
<td>527.22 ± 218.79*</td>
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<tr>
<td>P₁</td>
<td>26</td>
<td>170.50 ± 101.70*</td>
<td>321.24 ± 39.54*</td>
<td>198.84 ± 120.41*</td>
<td>524.95 ± 218.27*</td>
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<tr>
<td>P₂</td>
<td>62</td>
<td>170.50 ± 101.70*</td>
<td>321.24 ± 39.56*</td>
<td>191.84 ± 120.41*</td>
<td>524.95 ± 218.78*</td>
</tr>
<tr>
<td>P₃</td>
<td>22</td>
<td>202.99 ± 101.72*</td>
<td>313.71 ± 39.57*</td>
<td>259.47 ± 120.50*</td>
<td>562.75 ± 218.77*</td>
</tr>
</tbody>
</table>

Means superscribed by same letter do not differ significantly from one another.

...and period effect which are basically of non genetic origin have contributed in the manifestation of production characteristics and thereby these non genetic factors have partly masked the genetic effect. The management is the major component. Whereas, the genotype is the major respondent to interact with the non genetic factors.

REFERENCES