Research Article

STUDIES ON PERSISTENCY OF LACTATION IN JERSEY, H.F. AND THEIR CROSSES WITH ASSAM LOCAL CATTLE

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Abstract: The present study was conducted utilizing a total of 1474 lactations record pertaining to 497 nos of cows maintained in private farms of the areas covered under Intensive Cattle Development Programme of Kamrup, Marigaon and Nagaon district of Assam. The study involved seven genetic groups of cattle *viz.*, Jersey x Local (50:50), Jersey x Local (75: 25), Jersey (Pure), Jersey x Holstein Friesians (50:50), Jersey x Holstein Friesians (75:25), Holstein Friesian x Local (50:50) and Assam local respectively. The least square means for persistency of first lactation were 0.90±0.005 days, 0.91±0.006 days. 0.92±0.005 days, 0.91±0.006 days, 0.90±0.01 days, 0.89±0.01days and 0.79±0.01 days in different genetic groups *viz.*, G_1, G_2, G_3, G_4, G_5, G_6 and G_7 respectively. The overall persistence of lactation (μ) for all the genetic groups were 0.89 ±0.01 days. The effect of season of calving on persistency of first lactation was non-significant. The least square means for persistency of first lactation were 0.89±0.005, 0.89±0.005, 0.88±0.005 and 0.89±0.006 days in S1(summer monsoon season), S2(south west monsoon season), S3(post monsoon season) and S4(winter season).

Keywords: Persistency of milk yield, Jersey, H.F, Crossbreds, Local cattle

Introduction

Performance of the pure breed Jersey, H.F. and their crosses with Assam local cattle is documented to the lesser extent particularly in Assam, where this exotic breed of cattle have been introduced has not documented to the greater extent. Keeping this view in mind, the research work was carried out to study persistency of milk yield in Jersey, H.F. and their crosses with Assam local cattle. Persistency can be defined as the extent to which the maximum secretion of milk flow continues after reaching peak. An animal with high persistency index is good producer of milk, which is supposed to be kept in the herd. Therefore, it acts as an important tool for selection.

Materials and Methods

The persistency of first lactation was determined [1]. After excluding first 30 days yield, the entire lactation period was divided in to 9 parts of 3 days each.
The following persistency index formula was used:

$$P = \frac{\dfrac{X_2(n)}{X_1} + \dfrac{X_3(n-1)}{X_2} + \ldots\ldots + \dfrac{X_n}{X_{n-1}} \quad \dfrac{n-(n-2)}{2}}{n(n-1)-(n-1)(n-2)}$$

Where, P is the persistency index;
   X_i is the production at any particular i^{th} period (i=1,2,....n);
   n is the number of divisions of lactation period after excluding first 30 days.

Results

The least square means for persistency of first lactation were 0.90±0.005, 0.91±0.006, 0.92±0.005, 0.91±0.006, 0.90±0.01, 0.89±0.01 and 0.79±0.01 days in different genetic groups *viz.*, G_1, G_2, G_3, G_4, G_5, G_6 and G_7 respectively. The overall persistence of lactation (μ) for all the genetic groups were 0.89 ±0.01

Days along with the least square means of season of calving [Table-1].

Table-1 Least square constant, Least square means, their standard erros (S.E.) and the results of the DMRT for various factors affecting persistency of first lactation (days)

Effect	Least squares constatnt	Least squares means	S.E	Number of observation
μ		0.89	0.003	497
Genetic groups				
G1	0.01	0.90ad	0.005	118
G2	0.01	0.91abd	0.006	77
G3	0.03	0.92b	0.005	116
G4	0.02	0.91d	0.006	101
G5	0.01	0.90ad	0.01	31
G6	0.004	0.89a	0.01	33
G7	-0.10	0.79c	0.01	21
Season of calving				
S1	-0.0009	0.89	0.005	117
S2	0.005	0.89	0.005	146
S3	-0.0009	0.89	0.005	130
S4	0.00006	0.89	0.006	104

Least square means for the factor with different superscript differed significantly (P<0.05)

Table-2 Least square analysis of variance showing the effect of various factors on persistency of first lactation:

Sources of variation	d.f.	MSS	F
Genetic group	6	0.05	14.58**
Season of calving	3	0.002	0.56
Error	487	0.003	

** P<0.01

Effect of genetic groups
Least square analysis of variance revealed that the effect of genetic group was highly significant (P<0.01) on persistency of first lactation. In respect of this Jersey had the highest persistency of lactation and lowest in Assam local cattle.

Effect of season of calving
The effect of season of calving on persistency of first lactation was non-significant [Table-2]. The least square means for persistency of first lactation were 0.89±0.005 days, 0.89±0.005 days, 0.88±0.005 days and 0.89±0.006 days in S1, S2, S3 and S4 respectively.

Heritability estimates: The heritability estimates for the first lactation was 0.13±0.10.

Discussion
The average persistency of first lactation of milk yield for different genetic groups iz., G_1, G_2, G_3, G_4, G_5, G_6 and G_7 were 0.90±0.005, 0.91±0.006, 0.92±0.005, 0,91±0.006, 0.90±0.01, 0.89±0.01, 0.79±0.01 respectively. The overall least square means of persistency was found to be 0.89±0.003. Lower persistency values were also reported in other cattle by Gupta and Johar, (1983) [3]. The estimate of heritability of persistency of first lactation was found to be 0.13±0.10. Similarly, Roy and Katpatal, (1987) [5] found the comparable results with the present finding in different breeds of cattle. Singh and Shukla, (1985) [4] in Gir cattle indicated the mass selection for higher persistency might not be effective since the heritability estimate was low. Muir, *et al*., (2004) [7] estimated a high heritability for persistency of first lactation may likely to be brought about by selection.

Application of research: The application of research will help the farmers as well as breeders to select the best performing animals which will prevent the economic loss of the farm by managing the unproductive/ low producing animals and it will help the farmers for commercially viable dairy farm for economic upliftment.

Research Category: Veterinary Science

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