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Performance of Sahiwal Cattle Under Tarai Conditions in India

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Abstract

A study was carried out for studying the performance of Sahiwal cattle under tarai conditions based on the records on 204 cows, spread over 15 years (1961-1977) and belonging to 8 sires, in first lactation. The least squares means of Age at First Calving (AFC), Weight at First Calving (WFC), Peak yield in First Lactation (FPY), First Lactation Period (FLP), First Lactation Milk Yield (FLMY) and First Calving Interval (FCI) were found to be 42.06 ± 1.64 months, 328.55 ± 15.17 kg., 8.56 ± 0.33 kg., 290.73 ± 10.08 days, 2050.32 ± 73.35 kg and 426.06 ± 32.60 days, respectively.

Introduction

In India there are 43 well defined breeds of cattle. Sahiwal is the best milch breed of indigenous cattle in India. The breed has been evolved over many years of selection and due to well adaptability of the breed under tropical conditions. This has been exported to Sri Lanka, Kenya, many countries in Latin America and West Indies where a new breed called Jamaica Hope has been evolved out of Sahiwal and Jersey crossbreds. The performance of the breed varies under different climatic conditions in India. The present study was done for studying the performance of Sahiwal cows under tarai conditions for the first lactation traits viz., Age at First Calving (AFC), Weight at First Calving (WFC), Peak yield in First Lactation (FPY), First Lactation Period (FLP), First Lactation Milk Yield (FLMY) and First Calving Interval (FCI).

Materials and methods

The study was carried out by collecting the data on 204 Sahiwal cows maintained at Livestock Research Centre of GBPUA&T, Pantnagar (UK), spread over 15 years from 1961-1977 and belonging to 8 sires. The records with incomplete lactations (less than 180 days), abortions, terminations of pregnancy due to sickness, death or other abnormalities were not considered.

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The first lactation milk yield was corrected for 305 day milk yield by using the formula as, M = Y + bxy .N, whereas, M= estimated 305 day milk yield, Y= observed milk yield of a cow, b= regression coefficient of observed milk yield (Y) on lactation period (x), which was found to be -1.60 in the present case and N= 305- actual lactation period. In order to avoid the effect of non-orthogonality of the data due to unequal sub-class frequencies the mixed model least square and maximum likelihood programme of Harvey [7] was used to analyse the data.

The livestock farm lies between 28º 52' to 28º 25' North latitude and 78º 58' to 79º 42' East longitude. The climate of the farm is subtropical in nature. The minimum temperature may be as low as 3ºc in winter and maximum temperature as 40ºc in summer season. The tarai region receives about 1300 to 1400 mm of rainfall annually. The animals were kept in a loose housing system where feeding and watering was done in the house itself in common under standard feeding and management conditions.

Results and discussion

The least squares means for different traits are given in Table 1. The AFC in Sahiwal cows was observed as 42.06 ± 1.64 months which was in accordance with the report by Sharma et al. [13]. Few workers [14,15] reported lowers estimates. Whereas higher estimates were reported by other workers [9,10]. These differences in mean value of AFC could be due to within breed differences, differences in the feeding systems as well as managemental conditions and different climatic conditions too. The value of WFC was found as 328.55 ± 15.17 kg. The WFC is a mirror reflection of feeding and management during heifer-hood and conception to first calving. It is a physiological function of a cumulative index indicating the overall adaptability for almost all environmental factors acting favorably or adversely with the type of the individual. It is an important economic trait in dairy cattle and there is need to increase the body weight at first calving so that the physiological maturity is obtained earlier to get more milk yield. The same estimate was reported by Dhillon and Jain [6]. However, some workers [12,13] found higher mean value and the other workers [1,15] lower values.

The observed mean of FPY (8.56 ± 0.33kg) was not in agreement with the report of Yadav and Rathi as they found higher FPY value [15]. The LS mean value of FLP was found to be 290.73 ± 10.08 days which was in close agreement with the report by Yadav and Rathi [15] but was lower than the reports of Chopra et al. and Viz and Basu [5,14]. Present result of FLMY mean (2050.32 ± 73.35 kg) was not in conformity with few reports [11,15] as the values were much higher or lower than the result of this study. The mean value of FCI was found to be 426.06 ± 32.60 days. However, Kumar [9] reported higher value than the result of the study. Shorter calving interval is a desirable character because it regulates production cycles in dairy animals. The calving interval may be controlled by providing optimum feeding and management as well as keeping an eye on oestrus cycle of an animal.

Conclusion

The Sahiwal cattle performed well under tarai conditions with the satisfactory level of milk production and satisfactory level of other economic traits also in first lactation. The average values for AFC, WFC, FPY, FLP, FLMY and FCI were 42.06±1.64 months, 328.55 ± 15.17 kg, 8.56 ± 0.33 kg, 290.73 ± 10.08 days, 2050 ± 73.35 kg and 426.06 ± 32.60 days, respectively.

Table 1: Least squares means for various economic traits in Sahiwal cows

Sl. No.	Traits	LS mean ± S.E.
1.	Age at first calving (months)	42.06 ± 1.64
2.	Weight at first calving (kg)	328.55 ± 15.17
3.	Peak yield in first lactation (kg)	8.56 ± 0.33
4.	First lactation period (days)	290.73 ± 10.08
5.	First lactation milk yield (kg)	2050 ± 73.35
6.	First calving interval (days)	426.06 ± 32.60

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