Influence of non-genetic factors on age at first calving in gangatiri cattle breed at organized farm, Araji Line, Varanasi

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Abstract
The present study was conducted on “Influence of non-genetic factors on Age at first calving in Gangatiri cattle breed at organized farm, Arajiline, Varanasi”. The data were collected from the history sheets of 40 cow maintained in State Livestock Cum Agricultural Farm Arajiline, Varanasi, for the period from 2003 to 2010 to determine the effect of period of birth and season of birth on age at first calving. A significant effect of period of birth on age at first calving was observed. And non-significant effect of season of birth on age at first calving.

Keywords: Gangatiri cow, period of birth, season of birth, age at first calving

Introduction
Various indigenous breeds of cattle in country are the result of thousands of years of selection, evolution and development from wild species in the process of domestication to the local agro climatic conditions. These breeds are now losing ground due to intense competition to other breeds and risk of economic viability under the present system of management.

Fig 1: Exotic / crossbred and indigenous population during 1992-2012.

There are 33 well-defined breeds of cattle apart from several nondescript types and some lesser-known breeds (Chand, 2011) [4]. An average cow of improved zebu breed produces on an average 1800 kg milk in a lactation, while a non-descript cow yield only 173 kg. This yield is very low as compared to the yield of Bos taurus in advanced countries where they yield many times more than the dairy animals of India. The main components of low productivity of cattle in India is more insemination per conception, low daily milk yield, short lactation period, wider dry period, long calving interval and late age at first calving. The milk production of cattle is largely governed to a large extent by the genetic makeup. The value of milch animal is dependent not only upon quantity of milk she produces, but also the number of days she remains in milk and dry. This performance is affected by certain physiological as well as environmental factors.

Milk production considered to be one of the most important traits in selection. There are many factors that cause narration in milk production, which can be classified into two main factors.
i.e genetic and environmental. The first factor include all differences which are attributed to heredity, genetic constitution and the phenotypic expression of gene while the second comprises all other causes of variations between as well as within individuals and reveal the climatic effect and manage mental practices given to the livestock.

More emphasis should be given to improve both the factors viz. genetic as well as non- genetic. The genetical improvement can be brought by selecting and breeding of superior stock having superior germplasm (genes) and non-genetical improvement can be obtained by providing the better climate as well as feed and health care.

Gangatiri is an indigenous cattle breed of India, known to be originated in the region along the banks of Ganga river in eastern Uttar Pradesh and western parts of Bihar state. This is an important dual purpose breed of North India. The cows are fairly good milk yielders.

Gangatiri is also known as Eastern Hariana or Shahabadi. The breeding tract includes Bhojpur district of Bihar and Varanasi, Mirzapur, Ghazipur and Ballia districts of Uttar Pradesh. The animals of this breed are medium milk producers and possess good draft ability also. The color is complete white (Dhawar) or Grey (Sokan). The horns are medium sized and emerge from side of the poll behind and above eyes in outward and curving upwards and inwards ending with pointed tips. The forehead is prominent, straight and broad with shallow groove in the middle. Eyelids, muzzle, hooves and tail switch are generally black in color. The average milk yield in a lactation is around 1050 Kg, varying from 900 to 1200 Kg with an average fat of 4.9 %, varying from 4.1 to 5.2 %.

Statistical analysis

The raw data were entered and sorted into MS Excel sheet then transferred to the analytical Web Based Agricultural Statistics Software Package (WASP-2.0) for descriptive result.

The fixed effects considered were year of birth and season of birth. All data were entered into Microsoft Excel spreadsheets and after deleting incomplete records, a total of 40+40 (period wise and season wise) records for AFC were used for analyses.

Birth year of 2003-2004, 2005-2006, 2007-2008 and 2009-2010 and season winter, summer and rainy were taken for data analysis.

Results and discussion

The present investigation, the overall age at first calving in Gangatiri breed was 1608.4±83 days. The result obtained showed that the age at first calving is relatively short in the animals of farms located in developed areas and under better herd management. The result supports the fact that improvement in feeding and management to certain extent can lower the age at first calving. The result was lower as compared to Red Sindhi (2154.6 ± 92.3) reported by Khatri (2004) [8] and was somewhat near to Rathi (1482.00 ± 314.07) reported by Kushwaha et al. (2008) [9].

The analysis of variance showed that the effect of period of birth were found significant on age at first calving. According to period of birth, average age at first calving in four period P1 (2003-2004), P2 (2005-2006), P3 (2007-2008) and P4 (2009-2010) were 1513.8±86.79, 1422.5±37.59, 1757.6±83.19 and 1738.4±77.00 days respectively. The results are somewhat similar to those reported by Ulmek (1990) [10] and higher than those reported by Dangar et al. (2014) [11] in Gir cows.

In the study age at first calving was highest in period P3 while it was lowest in period P2 and P1 respectively. The least square mean value of age at first calving were lowest in period P2 (2005-2006) and period P1 (2003-2004) respectively may be due to better feeding and scientific management during this time. When compared P1, P2 and P4, P1 with P2 and P3 with P4 does not differ significantly while P2 with P3 and P1 with P4 differ significantly.


The present investigation, according to season of birth, the overall age at first calving was 1603.16±15 days. The analysis of variance showed that the effect of season of birth were found non-significant on age at first calving. According to season the age at first calving in season S1(winter), S2(summer) and S3(rainy) were 1626.5±88.30, 1609.333 ±79.37 and 1573.667±85.79 respectively. Age at first calving was lowest in season S3 (July-October) and highest in season S1 (November-February). The least square mean value of age at first calving were lowest in season S3 (rainy) which may be ascribed to better feeds available in this season. Comparison of S1 with S2, S2 with S3 and S1 with S3 does not differ significantly. The results are similar to those reported by Ulmek (1990) [17] and Dangar et al. (2014) [11] in Gir cows.

Conclusion

The present investigation, the age of first calving in Gangatiri breed was 1608.4±83 days. According to period of birth, average age of first calving in four period P1 (2003-2004), P2 (2005-2006), P3 (2007-2008) and P4 (2009-2010) were 1513.8±86.79, 1422.5±37.59, 1757.6±83.19 and 1738.4±77.00 days respectively. The least square mean value...
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Since period of birth had significant influence on age at first calving which may be due to better feeding and management facilities during specific period of time hence, emphasis should be given to management and feeding practices.

References