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Research Article

INFLUENCE OF NON-GENETIC FACTORS ON MILK PRODUCTION TRAITS OF GANGATIRI CATTLE IN VARANASI DISTRICT OF UTTAR PRADESH

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ABSTRACT

Research was carried out to examine the influence of non-genetic factors on the milk production characteristics of Gangatiri cows. The study was analyzed from 1254 Gangatiri cows across three tehsils (Pindra, Rajatalab, and Sadar) in Varanasi, Uttar Pradesh. The objective was to ascertain the effects of a number of variables on lactation duration, daily milk production, and lactation milk production including the area, calving season, farmer's economic background, parity, and age at first calving. The overall average means for lactation milk production, daily production of milk, and lactation period were discovered to be 794.6413 kg, 3.956 kg, and 203.8327 days, respectively. The comparison of different parameters indicated that non-genetic factors had a significant impact on milk production. These factors include the region where the survey was conducted, the calving season, the financial context of the farmer, parity or lactation, and first calving age. By analyzing the mean of these parameters, we could determine their impact on milk yield potentials. Given the influence of external variables and differences in the qualities under investigation, the study indicates that significant improvements in the population of Gangatiri cattle can be accomplished by improved management.

Keywords: Farmer's economic Background, Gangatiri, Lactation length, Milk production.

INTRODUCTION

The majority of Indian farmers are small-scale, marginal landowners. Their farming indispensably includes a livestock enterprise. Shahabadi or Eastern Haryana are other names for Gangatiri. The breeding tract comprises the districts of Varanasi, Mirzapur, Ghazipur, and Ballia in Uttar Pradesh, as well as Bhojpur in Bihar. This breed of cow produces a medium amount of milk and has good draft ability. The color is all-white (Dhawar) or all-grey (Sokan). The medium-sized horns finish with pointed tips and extend from the side of the poll above and behind the eyes. They also curve upward and inward. The forehead has a shallow groove in the middle and is prominent, broad, and straight. The hooves, muzzle, eyelids, & tail switch are usually black in hue. (Source: Dairy knowledge portal).

ICAR has registered Gangatiriin 2015 (NBAGR). Gangatiri cattle are distinguished by their all-white coloring and striking similarity to cattle in Haryana (Om Prakash *et al*. 2008). Overall, 27 crore households & non-households participated in the 20th Livestock Census (2019) which was conducted in over 6.6 lakh villages & 89 thousand urban wards across all over the country. The results of the 20th livestock census (2019) show that there are 535.78 million cattle in the nation overall, of which 50.42 million are unusual or hybrid and 142.11 million are native or nondescript cattle. According to Singh PK *et al*. (2018), Gangatiri cattle husbandry is recognized as both a practice and a tradition that is passed down through the generations. Although there are 53 registered breeds of cattle and a vast and varied collection of cattle genetic resources, the productivity of cows in the nation is still low for a variety

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of reasons, including poor nutrition, inadequate animal health care, extreme weather, and numerous other management-related issues. Indian livestock and buffaloes are characterized by poor feeding levels, slow growth rate, high age at first calving, short lactations, irregular calving, low daily milk yield, high mortality in suckling calves, long calving intervals, and long dry periods. All these factors result in deplorable annual milk yield from them in comparison to more advanced countries of the world. In light of the aforementioned information, a study was conducted in the Varanasi district to ascertain the impact of non-genetic factors on the characteristics of Gangatiri cattle's milk production.

MATERIALS AND METHODS

The inquiry was completed in the Varanasi district at 3 tehsil levels Pindra, Sadar & Rajatalab. Varanasi, Uttar Pradesh, India, is located at latitude 25.321684, longitude 82. 987289.Varanasi, Uttar Pradesh, India has GPS coordinates of 25° 19' 18.0624' N and 82° 59' 14.2404' E. It is situated in India country and belongs to the Cities location category. (Source: Latitude and longitude coordinates).In the months of May and January, the average highest & lowest warmth levels are 44°C& 8°C, respectively. The rainfall is between 667 and 1044mm (Source: KVK Varanasi Uttar Pradesh). The indigenous cattle population is139146 (Source: KVK Varanasi Uttar Pradesh).

Management of animals

Every cow was milked by hand twice a day, either by him or by Dudhiya/Gwalas, from 5:00 to 9:00 AM and 5:00 to 8:30 PM, respectively. The majority of cattle are permitted to graze from 9:00 AM - 3:00 PM throughout the winter season, and from 3:30 PM to 5:00 PM during the summer months. Following this, they are stall-fed and tethered individually with the necessary amounts of dry& green fodder combined with concentrate mixtures while it's shaded. Occasionally, the farmers will also feed them kitchen waste. The dams and all the calves are retained together. The government-appointed veterinarian vaccinates animals against diseases such as black quarter disease (BQ), FMD (Foot and Mouth Disease),& hemorrhagicsepticemia (HS).doctors or by paravets. The milking cows were washed daily and grooming is done twice or thrice in a week. Upon heat detection, breeding was done naturally by the sire in countryside regions and artificially in metropolitan and semi-urban areas.

Source and Nature of Data

ln order to investigate how milk production and age at first calving are affected by location, calving season, owner economic background, and parity. Data representing 1254 Gangatiri cows from three tehsils of Varanasi (Sadar, Rajatalab, and Pindra) were gathered and organized in the year 2022-23. Similar work was done by Dhal S.K. *et al.* (2015). The 3 tehsils of district Varanasi Sadar, Rajatalab, and Pindra that were surveyed were decoded as T1, T2, and T3, correspondingly. There were three distinct seasons over the entire year. The codes for winter from months: November - February, & summer from March - June, & monsoon: July - October were S1, S2, & S3. A1 denoted less than 3.2 years, A2 was 3.2 - 3.5 years, & A3 more than 3.5 years as three categories of age at first calving (AFC). The divisions made for the disparities were L1:1st lactation, L2: 2nd to 4th lactation, & L3: 5^{th} or more lactations. Based on the area of land they owned, owners' economic backgrounds were taken into account. They were designated as E1, E2, and E3 for less than one acre, one to two acres, and more than two acres.

Statistical analysis

In this study, the ex post facto methodology was used. The data was produced using 1254 cows. In October 2022, a planned program was used to survey the chosen Tehsils. The study involved farmers who collected comprehensive data on the impact of non-genetic factors on the manufacture of milk characteristics of Gangatiri dairy cows. Through the use of a planned interview schedule, data was gathered through in-person interviews. The data was analyzed using statistical techniques that were simple averages.

RESULTS AND DISCUSSION

The milk that a dairy animal produces over a given time period and in various lactations or parities is used to assess its performance. The amount of milk produced during lactation varies frequently within the same animal. The main sources of diversity, which are largely related to the physiology of lactation, are the genes that are supplied and how they interact with non-genetic variables. Table 1 compares the means of various milk output potential factors as influenced by the survey area, the calving season, the farmer's economic background, parity or lactation, as well as the initial calving age. Lactation length: One of the most reliable measures of a dairy animal's performance is its ideal lactation period. The total lactation duration of Gangatiri cows was found to be 203.8327 days; Singh *et al.* (2016) confirmed comparable findings, indicating that the average typical lactation duration of Gangatiri animals was 187.80 ±14 days. Daily milk yield: The total amount of milk a cow produces in a day is known as her daily milk yield or DMY. The Gangatiri cows yielded an average of 3.956 kg of milk each day. Approximate result is found by Pramod *et al.* (2007)· Lactation milk yield (LMY) or Lactation yield: The overall performance of dairy cows is positively correlated with their lactation milk yield. A casual glance at Table 1 showed that the Gangatiri cow produces 794.6413 kg of milk during lactation. Approximate result is found by U.K. Jaiswal *et al.* (2015).The locale, calving season, farmer's economic background, age at first calving, parity, and lactation all have an impact on the previously researched elements. Similar findings have been reported following: S.N. *et al.*(2023)have stated: the Effect of Location& Season of Calving on milk Production Traits in Binjharpuri, a dual-

purpose indigenous breed of Odisha. Sukanta Basak *et al.* (2018) has reported: the Effect of Parity, Period, and Season of Calving on Production and Reproduction Traits of Deoni Cattle. D. S. Chauhan *et al.* (2004) have reported: 'the size of land holding and occupation of the dairy farmers had positive and significant relation with milk production'.

Table1. Comparison of means for numerous milk production traits.

Source	Code	N	LL(days)	DMY(KG)	LMY(KG)
Overall	Z	1254	203.8327	3.956	794.6413
	T1	385	203.78	4.22	859.9516
Area	T2	478	196.82	3.81	749.8842
	T3	391	198.06	3.78	748.6668
	SI	488	200.26	3.98	797.0348
Season	S2	567	198.12	4.26	893.9912
	S3	199	196.16	4.13	810.1408
Economic	E1	629	199.10	3.87	770.517
Background	E2	445	201.31	4.11	827.3841
	E3	180	205.23	3.93	806.436
	L1	410	204.16	4.09	835.0144
Lactation	L2	640	201.51	4.12	830.2212
	L3	204	197.21	3.47	684.3187
Age at first	A1	681	201.26	3.83	770.8258
Calving	A2	396	203.32	3.72	756.3504
	A3	177	206.19	4.02	828.8838

N= Number of observations

CONCLUSION

The milk production features of Gangatiri cattle vary according to the place, season, farmer's economic background, milk output parity, and age at first calving, according to a study done on the breed. These variables, which include lactation time, daily milk yield, and lactation milk yield, have an impact on the performance of milk production. This study concludes that milk production is influenced by non-genetic variables. However, to fully utilize the genetic potential of Gangatiri cows, better management practices, especially in feeding, are necessary. It has also been noted that farmers fail to harvest the full potential of their animals due to high feed costs, a lack of affordable substitute feeds, a poorly functioning market, and other factors that hinder them from operating above the "threshold" level.

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