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Performance studies of hill cattle: A unique indigenous germplasm of Uttarakhand

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Uttarakhand is a good reservoir of different livestock species such as cattle, buffalo, sheep, goat swine, mule, poultry etc. The number of crossbred cattle was 4.98 lacs and of indigenous cattle as 15.08 lacs in Uttarakhand state in census year 2012. Nainital had 1.53 lacs of indigenous cattle and 43,623 crossbred cattle in census year 2007. Rearing of livestock is an integral part of the economy of the farmers of the district. A study was planned to characterize the indigenous Hill cattle in 20 randomly selected villages of Nainital district in Uttarakhand.

Information on various management aspects were collected by interviewing the farmers as per the questionnaire developed for this purpose. The data on various age groups of cattle were recorded by observation and by taking measurements. A very exhaustive study was carried out for characterizing the small hill cattle for various biometric and some economic traits like age at first oestrous, oestrous cycle duration, age at first calving, number of services per conception and calving interval found in Pithoragarh district. The adult animals studied were divided into seven categories with different number of animals and as per availability of the animals in randomly selected villages as 0–6 months (200), 6 months- 2 years (200), 2 years- 3 ½ years (200), milking cows (198), dry cows (198), working males (200) and breeding males (131).

Selected blocks, villages and number in Nainital district

Blocks	Villages	Animals
Betal Ghat	Malla Niglat, Talla Niglat, Chhada-Kherna,Talla Coat and Malla Coat	818
Bhimtal	Mehra Gaon, Saladi, Pandey Gaon, Amritpur and Rani Bagh	406
Haldwani	Anandpur, Phulchaur, Dhanpuri Talla/ Haripur Jaman Singh, Lalmani Niwar and Brijwalpur/ Kisanpur	1077
Ramgarh	Shyamkhet, Gagar, Khopa, Talla Ramgarh and Umagarh / Jhutia	501

The number of small hill cattle was much higher than the crossbred cattle, buffaloes, goats, sheep etc. The small hill cattle were kept for milk production and agricultural operations purpose. The animals were provided shelter during night time only and in very few cases the animals were kept in animal houses in both the day and night hours. There were Kutcha and closed houses in maximum cases and they were not the part of residence in many cases. There were Pucca/brick floor houses with full walls in maximum cases. The houses were well ventilated and not ventilated in about equal cases and cleaned in most cases. However, there was not proper arrangement for drain of urine to drain out in many cases. The concentrate ration was given to animals at the time of milking, soaked with water and giving alone (not mixing with fodder). The unchaffed means after collecting the leaves, tree branches etc. supplies as such

Table 1. Body measurements (average values in cm)

Trait/item	Category	Value (cm)	Trait/item	Category	Value (cm)
Heart girth	4	150.45±0.19(200)	Length of ear	4	16.18±0.09(200)
Heart girth	5	149.67±0.23(198)	Length of ear	5	15.99±0.09(198)
Body length	4	90.81±0.16(200)	Tail length	4	92.54± 0.13(200)
Body length	5	90.55±0.16(198)	Tail length	5	92.68± 0.13(198)
Height at withers	4	98.17±0.10(200)	Size of horn	4	8.89± 0.13(200)
Height at withers	5	97.72±0.12(198)	Size of horn	5	8.90± 0.12(198)
Paunch girth	4	153.74±10.18(200)	Size of horn	6	15.07± 0.13(200)
Paunch girth	5	155.40±0.24(198)	Size of horn	7	14.97± 0.20(131)

Figures given in brackets are the number of animals.

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Hill cattle-Female



Front view of hill cattle

without cutting by chaff cutter fodder was fed in maximum cases and the animals were fed in groups. The maximum numbers of animals were fed the green fodder by mixing with dry fodder. The quantity of per adult animal concentrate, cake, dry fodder and green fodder given was low. The milking utensils and udders were washed before milking in all the cases. The vaccination measures for FMD, HS, BQ etc. were not taken up in most cases. The farmers consulted the doctors for getting treated their sick animals only in very few cases and maximum families adopted other treatment based on their experience like herbs. All the animal owners followed natural breeding method incase of indigenous hill cattle.

The coat colour was seen off-white (45.97%), red (33.71%) and black (20.32%). The maximum numbers of animals were with white skin, black or black and white muzzle, black or black and white eyelids, black switch of tail, black hooves and black muffle. Muzzle colour was black, black and white, and dark grey. The colour of skin was seen as white, brown, red and blackish. Switch of tail was black or white. Black and white has been used to indicate white colour but which has blackish look.

For both the categories (Category 4 and 5), the colour of horn was black in maximum and gray in some; and curved in maximum cases. The ears were horizontal in all the cases. The poll was prominent and hump was small to medium in maximum cases. The maximum animals were found having medium size dewlap, small navel flap, short hairs and dull hairs. The hairs were straight in all animals. The maximum animals were very docile with moderate temperament in both the categories.

The udders were trough type in more than 2/3rd animals, and round or pendulous in few animals. The fore udders and rear udders were small to medium in maximum animals. Teats were cylindrical in maximum cases and funnel shaped in some cases in both the categories. The milk vein was not prominent in maximum cows. The maximum animals of category 6 and 7 were quite moderate in basic temperament. Penis sheath flap was absent or small to medium in size in maximum cases. The animals were having high drought tolerance, medium capacity of work and were used for ploughing. The average duration of work was observed as five hours.

The values for body measurement and other economic traits for category 4 and 5 are presented in Table 1.The estimates for heart girth, body length, height at withers, paunch girth, length of ears and size of horns were almost same in category 4 and 5 animals. Kumar *et al.* (2004) also reported similar body measurement/morpho-metric traits in a study carried out in Tari Khet block of Almora district in Uttarakhand. The report of Mishra *et al.* (2004) was not in agreement with the present results as they observed lower estimates for reproduction traits in native hill cattle found in Nainital district. The height and size in Vechur breed was found comparatively smaller than the hill cattle found in Pithoragarh region against as reported by Pundir and Ahlawat (2007). The estimates of body measurements like body length, height at withers, heart girth, paunch girth etc. were observed lower than the reports in Sahiwal, Hariana, Red Sindhi, Kankrej and Bargur breeds. The values of all the morpho-metric traits were found to be higher than the reports of Singh *et al.* (2008) in Malnad Gidda cattle. Pandey *et al*. (2011) also focused on the importance of characterizing the hill cattle found in Kumaon region and observed the diversity at genetic level in small hill cattle population as compared to other cattle (Kumaoni cattle). Shahi *et al*. (2014) confirmed the results of the study in context to colour, size and animal numbers in a study in Garhwal district.

The present study suggested that the group of small hill cattle found in Nainital district was having different special physical features than any recognized breed of cattle found in India. The population definitely belonged to different breed.

SUMMARY

A study was done for characterizing the native hill cattle of Nainital district in Uttarakhand. It is quiet important to know the animal husbandry practices, main features and morpho-metric traits in a sufficiently large population of distinguished cattle. Randomly selected 20 villages were considered for the present study. The animals were found with off-white, red and black coat colours. The maximum animals were with white skin, black or black and white muzzle and black or black and white eyelids. The switch of tail was mostly black and white in some cases. The colour of hooves and muffle was mostly black. In milking cows, estimates (cms) for heart girth, body length, height at withers, paunch girth, length of ear, tail length and size of horns were observed as 150.45±0.19, 90.81±0.16, 98.17 ±0.10, 153.74±10.18, 16.18±0.09, 92.54±0.13 cm and 8.89±0.13, respectively. The average figures for age at first oestrous (months), oestrous cycle duration (days), age at first mating (months), age at first calving (months), number of service/conception, calving interval (days) and age of mating in males (months) were as 41.21±0.29, 24.26±0.27, 43.56±0.29, 53.56±0.29, 1.75±0.09, 431.85±1.28 and 37.31±0.19, respectively. The study would be helpful in characterizing the indigenous cattle and for suggesting the suitable breeding strategy for its improvement.

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