

Morphological and morphometric features of Non-descript cattle in Raigad district of Maharashtra

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ABSTRACT

The present investigation was undertaken to study the morphological and morphometric features of non-descript cattle in Raigad district of Maharashtra. The data were recorded on 360 non-descript cattle. The morphological features included colour pattern of body coat, muzzle, tail switch, hoof and horn, body length, height at wither, heart girth and length of head were taken up for morphometric characterization. The main body coat colour of non-descript cattle was brown (39.72%) followed by black (25.83%), white (17.22%), grey (03.89%) and mixed (13.33%). Most of animals had black muzzle (80.55%), black eyelid (76.66%), black pupil (88.58%), black hooves (71.11%) and black switch of tail (74.44%). The means morphometric characteristics viz., body weight, body length, chest girth, height at withers, face length, horn length, circumference at base of horn, ear length and hair length were found 228.30±1.942 kg, 95.69±0.41 cm, 139.55±0.69 cm, 85.10±0.12 cm, 39.96±0.24 cm, 18.35±0.50 cm, 10.84±0.07 cm, 18.16±0.22 cm and 9.06±0.02 mm, respectively. The morphological and morphometric features of the non-descript indicated that these animals are small in size having variation in colour pattern. The data generated for non-descript cattle of Raigad district would be useful to characterize them. It was concluded that the animals in the district are small in size, suitable for develop dual purpose breed, to support the farming as well as milk production.

Key Words: Morphometric measurement, non-descript cattle, physical character.

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INTRODUCTION

With the vast bovine genetic resources, India possesses 40 registered cattle breeds besides large proportion of non-descript cattle. As per 19th Livestock Census of Maharashtra, 2012, Maharashtra possesses 23.70 million cattle out of which 3.32 million are non-descript in Raigad district of Konkan region (Anonymous 2007). India possesses 57% of world's buffalo and 16% of the cattle population. Out of cattle population, non-descript cattle constitutes 86 per cent (Reddy et al. 1995). The milk production of non-descript cow is about 1.50 kg/day. Although milk production of non-descript cattle is low, but importance of these animals lies in their draught power capacity, heat tolerance, disease resistance, adaptability to harsh agro-climatic conditions and ability to survive and perform under scarce feed and fodder. All these favourable traits made these cows as popular (Kayastha et al. 2011). It is therefore, necessary to improve upon the non-descript animal pool through selection. The present investigation was undertaken to study the morphological and morphometric measurements of non-descript cattle as part of strategy for breed improvement programme.

MATERIALS AND METHODS

The present investigation was carried out in Raigad district of south Konkan region. Investigation pertaining to physical characteristics under field conditions were recorded by observation. Morphological traits were recorded in centimeter with the help of measuring tap and

were classified according to location, age group and sex of the animal. Details of the observation containing physical and morphological traits were recorded in the prescribed format of National Bureau of Animal Genetics Resources (NBAGR, Karnal) for evaluation of breed under field conditions was modified as per need of the study in the context of Maharashtra.

Collection of data

The collection of data on morphological characters of non-descript cattle from the district, three stage stratified random sampling method was followed. At first stage, 5 tahsils were selected randomly from the district and from each tahsil, 10 villages were selected randomly in second stage. In the third stage, 4 farmers having cattle from all the villages were selected randomly. Thus, total sample size was 360 cattle in the present study. For the present investigation, a set of questionnaire relevant to the subjects of the study was specially designed to collect the information. The data of the non-descript cattle were collected by personal interview method. After interview with the farmers, all the morpho-metric traits and physical characters were recorded on non-descript cattle.

RESULTS AND DISCUSSION

A sample survey was conducted in Raigad district of Konkan region of Maharashtra to study the morphological and morphometric features of non-descript cattle for improving their production potential.



Figure 1. Non-descript cattle of Raigad (Maharashtra)



Figure 2. Non-descript bull of Raigad (Maharashtra)

Morphological features

The present study reveals that the majority of the cattle were brown (39.72%), followed by black (25.83%), white (17.22%), grey (03.89%), while mixed coat colour (13.33%) was less prominent (Fig.1 and Fig 2). The results obtained in this study were in good agreement with the findings of Khirari et al. (2014) in non-descript cattle of Ratnagiri district and Yewale (2011) in non-descript cattle of Thane district. In study area most of the animal were found grey (67.12%) skin colour, followed by brown (26.25%) and black (6.67%), respectively. These results indicated that grey skin colour was the most common in non-descript cattle under study. The results on the trends of distribution of skin colour were similar to the findings of Khirari et al. (2014) in non-descript cattle but different from those reported by Singh et al. (2007) and Pundir *et al.* (2007) in Gangatiri and Kenkatha cattle. The predominant muzzle colour was found to be black (80.55%) followed by brown colour (12.49%), grey (4.14%) and white (2.77%). These results indicated that black muzzle colour was the most common in non-descript cattle. The present investigation were found agree with to the findings of Gokhale et al. (2009) in Khillar cattle, Pundir et al. (2007) and Singh et al. (2007) noticed white, grey and black muzzle colour in Kenkatha and Gangatiri cattle. Similar findings were observed by Yewale (2011) in non-descript cattle of Thane district. Majority of the animals were found to have black eyelid colour (76.66%), followed by grey (11.94%), brown (6.11%) and white (5.27%) eyelid colour. The results of present investigation were agreement with findings of Khirari et al. (2014) and Yewale (2011). The horn colour was found to be grey (85.84%) and black (14.11%). Black was the most common hooves colour across all the animals (71.11%). Similar studies done elsewhere have also reported that there was a predominant occurrence of black colour hooves among *non-descript* cattle (Khirari et al. 2014 and Yewale (2011). The colour of the switch of tail was black (74.44%), brown (17.77%) and white (7.77%). These

results indicated that in non-descript cattle black switch of tail was the most common. The results of the present investigation were agreement with the results reported by Khirari et al. (2014) and Yewale (2011) in non-descript cattle of Ratnagiri and Thane district. The most commonly observed horn shape in non-descript cattle was curved in backward direction (84.25%) and only in 9.46 per cent straight horns. Pundir et al. (2009) observed that the curved horn with backward and upward with pointed tips in Bargur cattle of Tamil Nadu. The poll was non-prominent (90.53%) and only in 9.46 per cent cattle, it was prominent. The orientation of ears was found horizontal. The horizontal orientation of ears indicates the alertness of the animals. Joshi and Philips, (1953) and Pundir et al. (2007) recorded similar type of horizontal orientation of ears in Amritmahal cattle and Kenkatha cattle, respectively. Khirari et al.(2014) and Yewale, (2011) also reported similar results in local non-descript cattle of Ratnagiri and Thane district of Maharashtra.

The average hair sheen, eye type, horn shape and poll characters in non-descript cattle were also recorded in different tahsils of Raigad district. The results indicated that most of the non-descript cattle were having dull hairs (70.77%), whereas only 29.22% cattle had glossy hair. This may be due to poor intake of green fodder, worm infestation, vitamins and mineral deficiency. The eyes condition observed were glossy (73.74%) and dull (26.54%). A dull eye condition was observed due to green fodder is not adequately available in this area. Further, black and brown pupil colour was observed in 88.58 and 11.36% animals, respectively.

The udder shape of non-descript cattle of Raigad district was observed in bowl, round, pendulous and trough in 28.46, 25.65, 25.33 and 20.54% animals, respectively. Khirari, (2010) and Yewale, (2011) recorded the similar type of results in local non-descript cattle of Ratnagiri and Thane district of Maharashtra. The teat characters of the non-descript cattle were observed cylindrical (11.45%), funnel (11.75%) and small shape (76.69%). These

observations indicated that non-descript cows of the district are low yielder. The present results were agreement with Khirari et al. (2014) and Yewale, (2011). Pundir et al. (2007) and Singh et al. (2007) noticed cylindrical teat shape in Kenkatha, and Gangatiri cattle. The results of teat tips shapes of present investigation were found in pointed (43.34%), rounded (30.62%) and flat (26.80%). The result of teat tips shapes were agreement with Khirari et al. (2014) in local cattle of Ratnagiri district.

Morphometric measurements

The average body weight (BW), body length (BL), chest girth (CG), height at withers (HW), face length (FC), horn length (HL), circumference at base of horn (CH), ear length (EL) and hair length were found 228.30 ± 1.942 kg, 95.69 ± 0.41 cm, 139.55 ± 0.69 cm, 85.10 ± 0.12 cm, 39.96 ± 0.24 cm, 18.35 ± 0.50 cm, 10.84 ± 0.07 cm, 18.16 ± 0.22 cm and 9.06 ± 0.02 mm, respectively. These traits indicated that the animals were in small size and shape. This may be due to typical agro climatic conditions and poor availability of feeds and fodder in the district. The morpho-metric measurements were in close agreement with the reports of Khirari et al. (2014) in non-descript cattle, Pundir et al. (2013) in Uttara cattle, Yewale (2011) in non-descript cattle, Karthikeyan et al. (2008) in Krishna valley cattle, Pundir et al. (2009) in Bargur cattle. The estimates of body length, height at wither and chest girth in cattle were lower than the Sahiwal, Kankrej, Hariana, Red Sindhi and Bargur breeds and within the range as in smaller breeds like Vechur and Punganaur (Pundir and Ahlawat, 2007).

The present study revealed that the features of the non-descript cattle of Raigad district of Maharashtra are small in size having variation in colour pattern (black, brown, grey, and mixed-white with black), medium size curved horns with backward orientation, black coloured hooves, horizontal ear orientation, lack of prominent poll, poorly developed udder with small teats and low body weight. However, through rigorous selection, dual purpose breed, having small size with less feed requirement can be developed to support the farming as well as milk production of the region.

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