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Study on physical characters and color pattern of Rathi cattle in arid region of Rajasthan

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Abstract

The present survey was conducted on 1500 Rathi cattle to study the physical characters including color pattern of Rathi cattle in its breeding tract i.e. arid region of Rajasthan. Rathi animals were selected from the two tehsils from each district of breeding tract. From each tehsil 250 animals with different age group (0-3 months, 4-6 months, 7-12 months, 13-24 months, 25-36 months, more than 36 months and breeding bull) and sex was chosen randomly for present study. The observations and data on color pattern revealed that the overall population of Rathi cattle in study varied as 45.5% are brown, 29.0% with white patches, 3.3% are black, 18.3% are black with white patches and 3.9% are others. The milk vein in Rathi cows were observed mostly as prominent and zigzag (58.7%) followed by medium (29.2%) and small (11.9%) while the capacious udder size was observed in 40.8% of total cows. About 76.0% of horn were found to be evenly curved and medium sized and 24% of them were short. Medium size hump of Rathi cattle was observed in 49.5% of all Rathi cattle. Black color muzzle is quite prominent (47.6%) followed by brown color (34.5%). The variations observed in these characters may be due to the fact that Rathi is the admixture of four breeds which is reflected in its phenotypic characteristics.

Keywords: Rajasthan, Rathi breed, physical

Introduction

Rajasthan is one of the state in India where the livestock share in GDP of total agriculture is nearly 50%, thus the contribution of the animal husbandry in state economy is quite appreciable. Among domestic livestock species, as observed in country as well as in state, the cattle occupies key place in integrated agriculture farming system. Further, it is also very worthy to note that out of 43 recognized breed of cattle in India (NBAGR, 2018), 9 most important breeds has their home tract in Rajasthan such as Tharparkar, Gir, Nagouri, Rathi, Kankarej, Malvi, Hariana, Sanchori and Mewati (RLDB, 2014).

Out of these outstanding breeds inhabiting Rajasthan, Rathi is one of the dual purpose breed which has its home tract in Bikaner, Sri Ganganagar and Hanumangarh districts of Rajasthan and has made dairy husbandry as to be major activity of the area. Though "Rathi" has been recognized as an important breed on livestock map of the country but has been detailed as to be the admixture of four breeds i.e. Sahiwal, Tharparkar, Red sindhi and Dhanni. Therefore, it is very important to ascertain the present status of breed characteristics in its home tract. Considering this a survey study has been done to determine physical characters including color pattern of Rathi cattle in arid region of Rajasthan.

Materials and Methods

The present study was conducted in the breeding tract of Rathi cattle i.e. Bikaner, Sri Ganganagar and Hanumangarh districts of Rajasthan state. The Rathi breed of cattle is found in purest form in these district of Rajasthan. The breeding tract of Rathi breed lies between 72° Min to 75° Max longitude and between 27° to 30° latitude. A total of 1500 Rathi animals were selected from the two tehsils from each district of breeding tract From each tehsil 250 animals with different age group (0-3 months, 4-6 months, 7-12 months, 13-24 months, 25-36 months, more than 36 months and breeding bull) and sex was chosen randomly for present study. Data were collected by observations and actual interview with the livestock owners. Following observations were taken:

- I. Skin colour: Brown / Brown with white patches / Black/ Black with white patches/Other
- II. Fore head: Moderate in size / Medium / Small
- III. Type of horn: Evenly curved and medium size / Short / Straight

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- IV. Hump: Heavy / Medium / Small
- V. Muzzle colour: Black/Brown/Other
- VI. Dewlap: Pendulous / Medium / Small
- VII. Sheath: Pendulous / Medium / Attached tightly to the body
- VIII. Scrotum: Black / Red/Other
- IX. Naval flap: Pendulous / Medium / Attached tightly to the body
- X. Milk vein: Prominent and zigzag / Medium / Small
- XI. Udder size: Capacious / Medium / Small
- XII. Teat shape: Cylindrical / Pear / Conical
- XIII. Teat colour: Black / Brown/
- XIV. Colour of switch: White / Black / Mixture of white and black/Other

Results and Discussion

Rathi cattle has been originated from the mixture of Sahiwal, Red Sindhi, Tharaparkar and Dhanni breeds apparently with a preponderance of Sahiwal blood. This genetic contribution is reflected in phenotype of Rathi. breed as the variation in color and physical characteristics are observed in present study.

As per NBAGR, animals are usually brown with white patches all over the body. Animals having completely Brown and black coat with white patches are often encountered. Horns are carving outward, upward and inward with short to medium size. The face is broad between eyes and slightly dishd. The dewlap is fine and loose. The tail is long, fine tapering to a good black Or white switch well below the hock on the same line. In the present study in text the Rathi cattle of all age groups showed wide variations in color pattern and other physical characteristics.

Color pattern of Rathi cattle in breeding tract

The percent variation of color pattern in Rathi cattle has been presented in Table 1. The overall population of Rathi cattle (N=1500), males (n=690) showed percent variation in color as 52.5%, 28.0%, 2.5%, 14.6% and 2.5% for brown, brown with white patches, black, black with white patches and others, respectively.

The total population of Rathi cattle in study varied regarding color as to be 45.5% brown, 29.0% brown with white patches, 3.3% black, 18.3% black with white patches and 3.9% are others.

Udder characteristics of Rathi cow

The percent variation of udder characteristics in Rathi cows (n=480) has been presented in Table 2.

The milk vein in Rathi cows were observed mostly as prominent and zigzag (58.9%) followed by medium (29.2%) and small (11.9%).

The capacious udder size was observed in 40.8% of total population and medium udder size was found in 42.5%.

The teat shape were generally cylindrical (89.50%) followed by conical (8.4%). The pear shaped teat was rarely encountered (2.1%).

The color of teat was usually brown upto 90% of all while black color of teat was observed only in 10% of the population.

Physical characters of Rathi cattle

The forehead of Rathi cattle was observed to be moderate in size in 46.8% of the entire population (n=600) while 44.7% were observed as medium in size and rest were small in size (8.5%) as presented in Table 3.

In case of horn, 76.0% were found to be evenly curved and medium sized and 24% of them were short.

Medium size hump was observed in 49.5% of all Rathi cattle, whereas, 29.3% were heavy in size.

Black color muzzle is quite prominent (47.6%) as observed in present study followed by brown color (34.5%).

The dewlap in entire population varied as pendulous (35.3%), medium (47.5%) and small (17.2%) while navel flap differed as pendulous (33.0%), medium (48.2%) and 18.8% of them were tightly attached to the body.

The color of switch was mainly black (50.5%) and brown (35.0%), while 14.5% were uncategorized.

In males (n=120), scrotum were mainly observed in two colors i.e. brown as 59.2% and black as 40.8% respectively.

Table 1: Percent variation of colour pattern in Rathi cattle

Category	N	Brown	Brown with white patches	Black	Black with white patches	Others
Sex						
Male	690	52.5	28.0	2.5	14.6	2.5
Female	810	49.5	30.6	3.1	13.7	3.1
Age						
0-3 months	180	47.2	27.2	4.4	17.8	3.3
4-6 months	180	41.1	26.7	5.0	18.9	8.3
7-12 months	180	42.8	33.9	6.1	14.4	2.8
13-24 months	180	43.9	27.8	2.8	22.2	3.3
25-36 months	180	33.9	30.6	3.9	25.6	6.1
Above 36 months	600	51.0	28.7	1.7	16.2	2.5
Breeding bulls	40	42.5	20.0	12.5	15.0	10.0
Total	1500	45.5	29.0	3.3	18.3	3.9

Table 2: Percent variation of udder characteristics in Rathi cattle (n=480)

Milk Vein	
Prominent and zigzag	58.9
Medium	29.2
Small	11.9
Udder Size	
Capacious	40.8
Medium	42.5
Small	16.7
Teat Shape	
Cylindrical	82.1
Pear	9.8
Conical	8.1
Teat Color	
Brown	82.9
Black	17.1

Table 3: Percent variation of physical characteristics in Rathi cattle (n=600)

Forehead	
Moderate in size	46.8
Medium	44.7
Small	8.5
Type of Horn	
Evenly curved and medium sized	56.2
Short	43.8
HUMP	
Heavy	29.3
Medium	49.3
Small	21.3
Muzzle Colour	
Brown	46.7
Black	34.5
Others	18.8
Dewlap	
Pendulous	35.3
Medium	47.5
Small	17.2
SHEATH	
Pendulous	33.5
Medium	48.5
Tightly attached to the body	18.0
Naval Flap	
Pendulous	33.0
Medium	48.2
Tightly attached to the body	18.8
Color of Switch	
Black	50.5
Brown	35.0
Others	14.5
Scrotum (n=120)	
Brown	59.2
Black	40.8

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