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MORPHOLOGICAL CHARACTERISTICS OF KATHANI CATTLE IN MUL TAHSIL OF CHANDRAPUR DISTRICT

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ABSTRACT

The present study entitiled morphological characteristics of Kathani cattle in Mul tahsil of Chandrapur district was conducted in the year 2020-2021 by selecting 200 cattles, belonging to different age groups i.e. upto 1 year (A), 1 to 2 year (B), 2 to 3 year (C) and above 3 year (D), from four villages of Mul tahsil. The Kathani cattles were of small size,light built and with compact body. The cattles were mostly seen having white coat colour with chi-square value of 109.52. The colour of muzzle, hoof, tail switch, eyelid was mostly black having chi-square value as 154.88, 169.28, 137.78, 162.00 and the colour of horns were found to be grey with chi-square value of 11.52. Horns were small to medium curved with outward orientation, horizontal ear orientation. The chi-square value of horn shape was 6.48, chi-square value for horn orientation was 25.92. The value of chi-square for ear orientation was 134.48. Hump and dewlap were mostly found to be medium sized and the naval flap in most of the cattles were small in size. The chi-square values of hump, dewlap and naval flap were 71.11, 75.91 and 81.67. The forehead was found to be straight with chi-square value of 289.49. The average body weight of adult female was 213.38±2.92 kg.The biometric measurements of chest girth, body length, height at wither, length of tail, length of neck were 142.32±0.54, 114.4±0.66, 111.44±0.88, 68.12±0.96, 40.122±0.59 cm respectively.By assessment of these characters, this information will be useful for the breeders for recognition of breed in the region.

(Key words: Characteristics, morphometric characters and Kathani cattle)

INTRODUCTION

India has rich and diverse genetic resources, with some of the best cattle breeds of dairy, draught and dual-purpose. Despite the large number of good breeds of cattle, more than 80% of cattle population belongs to the non-descript category. There are about 50 recognized cattle breeds in the country. In addition to 50 recognized breeds of cattle at National level, various other lesser known cattle populations exist in India, which are not yet been properly documented and registered under non-descript in livestock census of government of India (Bhagat *et al*., 2019). Presently lesser known Kathani cattle breed in eastern part of Vidarbha region of Maharashtra state is documented in old gazetteer of Chandrapur district as Telangpatti. Large fraction of cattle population considered as non-descript could have a possibility of existence of a sub population with a possibility of new breed. Visit to paddy growing districts like Chandrapur, Gadchiroli, Gondia, Wardha etc. indicated existing cattle sub population showing similarities in their physical appearance. The animals are of small body size and are suitable for working in muddy paddy fields in the deep forests, females yield poor milk; majority of them are white in colour (Kulkarni *et al*., 2013).

MATERIALS AND METHODS

The present study was conducted purposively in Mul tahsil of Chandrapur district during the year 2020-2021. Four villages were selected namely; Agdi, Janala, Kantapeth and Somnath from which 200 Kathani cattles were selected randomly. The data of 200 Kathani cattle was collected belonging to different age groups in their native tract. The data was categorized in the following age groups, upto 1 year (A), 1 to 2 years (B), 2 to 3 years (C) and above 3 years (D). The information for the present study was collected by direct observation and cattle owners with the help of questionnaires.Characters studied were, Colour (coat colour, muzzle colour, hoof colour, eyelid colour, tail switch colour and horn colour), shape of horns, orientation (horn, ear and forehead), size (hump, dewlap and navalflap), horn length, ear length, tail length, neck length, chest girth, body length, height at wither and live body weight. Body measurements

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were taken by direct measurement of different body parts. The data collected were analysed statistically by using chi-square method (Amble, 1975). Body weight was calculated by using Shaeffer's formula (Sastry and Thomas, 1976).

$$\text{Live weight (lbs)} = \frac{\text{Body length in inches x Girth in inches}^2}{300}$$

RESULTS AND DISCUSSION

a) Body characteristics:

Colour : Out of 200 Kathani cattle, majority (87%) exhibited black coat colour. The remaining (13%) Kathani cattles were having brownish coat colour. The chi-square value was found to be 109.52.Gokhale *et al.* (2009) reported that the coat colour was white in Khillar cattle.

Muzzle colour: Majority (94%) cattles had black colour and 6% had reddish muzzle. The chi-square value for muzzle colour was 154.88. Singh *et al.* (2015) observed that the muzzle colour was black (96.03%) in unexplored Sanchori cattle.

Hoof colour: 96% of Kathani cattles had black colour hoof and remaining 4% were having brown coloured hoof. Chi-square value for hoof colour was 169.28. Kayastha *et al*. (2011) recorded black hoof colour (84.71%) in indigenous cattle of Assam.

Eyelid colour: About (95%) of cattles were having black eyelid colour and (5%) cattles were found with white eyelid colour. The chi-square value for eyelid colour was 162.00. Khirari *et al.* (2014) observed black eyelid colour (87.22%) in non-descript cattle of Ratnagiri district of India.

Tail switch colour: 91.5% cattles were found with black tail switch colour and 8.5% cattles were found with brown tail switch colour. The value of chi-square for tail switch colour was 137.78. Kayastha *et al.*(2011) observed that the prominent colour of tail switch was black (74.53%) in indigenous cattle of Assam.

Horn colour: Horns were seen in cattles of above 3 years of age group. Majority of Kathani cattles (74%) were found with black colour horns and (26%) cattles were found with grey colour horns. Chi-square value for horn colour was 11.52. Pundir *et al.*(2012) reported the colour of horn was black and grey colour in Hill cattle of Pithoragarh district.

Horn shape: Most of the cattle (66%) had curve shape horns, while (34%) cattles had straight horns. The chi-square value for horn shape was 6.48. Jain *et al*. (2018) also observed the curve horn shape in Kosali breed of cattle.

Horn orientation: The two types of horn orientations were observed in Kathani cattle. The majority of cattles were found to be with outward orientation of horn (86%) and the remaining were with the upward orientation of horns (14%). The chi-square value for horn orientation was 25.92. Sharma *et al*. (2012) observed the orientation of horn was outwards, upwards, inwards in Shahabadi cattle.

Ear orientation: Among 200 cattles (91%) exhibited horizontal ear orientation, while (9%) cattles were found with drooping ears. Chi-square value for ear orientation was 134.48. Pundir *et al.* (2012) observed the ear were small to moderate in length and horizontal orientation.

Forehead orientation: Shape of forehead was observed as straight, concave and convex in Kathani cattle. The per cent values calculated for straight forehead was (90%), concave (7%) and convex (3%) respectively and the chi-square value for forehead orientation of Kathani cattle was 289.49. Singh *et al.* (2007) observed the forehead as straight in Gangatiri cattle.

Hump: Large number of Kathani cattles were found with medium sized hump (72%) followed by small sized hump (22%) and (6%) cattles were found with large sized hump. The chi-square value for hump size was found to be 71.11. Singh *et al*. (2015) observed the hump of cow was medium in size in majority of cases (79.47%) in unexplored Sanchori cattle.

Dewlap: (74%) cattles were found with medium dewlap followed by small sized dewlap (18%) and (8%) cattles were having large dewlap. The value of chi-square for size of dewlap was 75.91. Kulkarni *et al*. (2013) observed the dewlap was small to medium in size in Kathani cattle.

Navalflap: Majority of cattles (74%) were having small naval flap, (24%) cattles with medium naval flap followed by (2%) cattles with large naval flap. Chi-sqaure value for size of naval flap was 81.67. Pundir *et al*. (2012) observed the naval flap small (89%) in Hill cattle of Pithoragarh district.

b) Morphometric characters

Horn length: It is observed in Table 1 that the length of horn in adult cattle above 3 years of age was in the range of 3-26 cm. Kulkarni *et al.* (2013) observed horn length of 12.42±0.30 cm in Kathani cattle of Vidarbha region in Maharashtra state.

Ear length: As shown in Table 1 the average length of ears in age group of upto 1 year, 1 to 2 years, 2 to 3 years and above 3 years were 15.8±0.27, 16.12±0.25, 18.12±0.34 and 19.36±0.29 cm, respectively. The length of ears increased with the increase in age.Singh *et al*. (2012) observed length of ears as 19.00±0.64 cm in Pulikulam cattle of Tamil Nadu.

Tail length: At the age of upto 1 year, the average length of tail was 45.02±1.63 cm, while with increase in age the length of tail slightly increase upto adult stage. Increase in tail length is shown in Table 1. In age group above 3 years (adult female), the length of tail was found to be 68.12±0.96 cm.Pundir *et al*. (2009) observed the length of tail up to 1 year age as 44.50±2.17 cm and adult female as 62.42±1.33 cm in Bargur cattle.

Neck length: Neck length of all the age groups are given in Table 1. The average neck length of age group upto 1 year was 26.34±0.72 cm. The length of neck increased with the increase in age. Average neck length of cattle of

Table 1. Colour pattern of different morphological characteristics along with x^2 values in Kathani cattle

Sr. No.	Characters	No. of observations	Percentage %	Chi-square (x^2)	D.F.	Significance
A	Coat colour					
	White	174	87	109.52	1	*
	Brownish	26	13			
B	Muzzle colour					
	Black	188	94	154.88	1	*
	Reddish	12	6			
C	Hoof colour					
	Black	192	96	169.28	1	*
	Brown	8	4			
D	Eyelid colour					
	Black	190	95	162.00	1	*
	White	10	5			
E	Tail switch colour					
	Black	183	91.5	137.78	1	*
	Brown	17	8.5			
F	Horn colour					
	Grey	37	74	11.52	1	*
	Blackish	13	26			

*Significant at 5% level

Table 2. Shape and orientation of horn, ear and forehead characteristics along with x^2 values of Kathani cattle

Sr. No.	Characters	No. of observations	Percentage %	Chi-square (x^2)	D.F.	Significance
A	Horn shape					
	Curve	33	66	6.48	1	*
	Straight	17	34			
B	Horn orientation					
	Outward	43	86	25.92	1	*
	Upward	7	14			
C	Ear orientation					
	Horizontal	182	91	134.48	1	*
	Drooping	18	9			
D	Forehead shape					
	Straight	180	90	289.49	2	*
	Concave	14	7			
	Convex	6	3			

*Significant at 5% level

Table 3. Body characteristics of hump, dewlap and naval flap along with x^2 values of Kathani cattle

Sr. No.	Characters	No. of observations	Percentage %	Chi-square (x^2)	D.F.	Significance
A	Hump					
	Large	6	6	71.11	2	*
	Medium	72	72			
	Small	22	22			
B	Dewlap					
	Large	8	8	75.91	2	*
	Medium	74	74			
	Small	18	18			
C	Naval flap					
	Large	2	2	81.67	2	*
	Medium	24	24			
	Small	74	74			

*Significant at 5% level

Table 4. Animal age-group wise body measurements

Particulars(cm)	Upto 1 year(A)	1-2 years(B)	2-3 years(C)	Above 3 years(D)
Horn length	-	-	-	12.06±0.87
Ear length	15.8±0.26	16.12±0.25	18.32±0.34	19.36±0.29
Tail length	45.02±1.63	55.26±1.18	67.54±1.24	68.12±0.96
Neck length	26.34±0.72	31.9±0.56	37.56±0.55	40.122±0.59
Chest girth	84.14±0.65	99.4±1.02	112.92±0.85	142.32±0.54
Body length	64.62±0.66	77.5±0.95	89.4±1.47	114.4±0.66
Height at wither	83.84±1.16	86.36±1.17	99.78±0.69	111.44±0.88
Body weight (kg)	41.72±0.70	70.8±2.25	106.58±2.55	213.38±2.92

Horn length for group A, B, C are not considered due to developing stage

age group 1 to 2 years were 31.9±0.56 cm, 2 to 3 years were 37.56±0.55 cm and in age group above 3 years (adult female) were 40.122±0.59 cm. Kayastha *et al.*(2011) noticed neck length in indigenous cattle of Assam was 32.705 ± 0.166 cm.

c) Biometric measurement

Chest girth: In the age groups of upto 1 year, the average chest girth was found to be 84.14±0.65 cm followed by 1 to 2 years of age as 99.4±1.02 cm, 2 to 3 years of age as 112.92±0.85 cm and in age group above 3 years was found to be 142.32±0.54 cm, respectively. The chest girth had progressively increased with the age. Kulkarni *et al.* (2013) observed chest girth as 140.32±0.87 cm in Kathani cattle of Vidarbha region in Maharashtra state.

Body length: In the age group upto 1 year the body length was observed to be 64.62±0.66 cm, followed by 1 to 2 years as 77.5±0.95 cm, in 2 to 3 years of age as 89.4±1.47 cm. The body length progressively increased in age group above 3 years (adult female) and was observed as 114.4±0.66 cm.Koirala *et al.* (2011) observed body length of 119.85 ±0.75 cm of native cattle at Sylhet district.

Height at wither: The average height at wither in the age group of upto 1 year was 83.84±1.16 cm. As the age advances the height at wither of cattle also increased. The height at wither was increased upto 111.44±0.88 cm in the cattles of above 3 years of age (Adult female). Pundir *et al.* (2009) observed the height at wither up to 1 year animal as 80.50±2.05 cm and adult cow as 108.36±0.80 cm in Bargur cattle.

d) Live body weight:

Body weight: The average body weight in the age group of upto 1 year, 1 to 2 years, 2 to 3 years and above 3 years was 41.72±0.70, 70.8±2.25, 106.58±2.55 and 213.38±2.92 kg, respectively. Patil *et al.* (2005) observed body weight of 3 years above adult cow as 228.03±0.92 kg in Gaolao.

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