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Studies on physical characteristics of Gaolao cattle in Yavatmal tahsil of Yavatmal district

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Abstract

The present investigation entitled “Studies on Physical Characteristics of Gaolao Cattle in Yavatmal Tahsil of Yavatmal District” was conducted during 2025–2026 to document the physical and morphometric characteristics of Gaolao cattle maintained under field conditions. A total of 250 Gaolao cattle, comprising 50 males and 200 females, belonging to four age groups viz., up to 1 year, 1–2 years, 2–3 years and above 3 years, were selected for the study. The study revealed that white coat colour (68.0%), black muzzle (94.0%), black hoof (96.0%), black eyelid (92.8%) and black tail switch (90.0%) were predominant. Curved horns (76.0%), upward horn orientation (80.0%), horizontal ears (91.2%) and convex forehead (84.0%) were the predominant characteristics. Medium-sized hump (72.0%), large dewlap (70.0%), medium naval flap (66.0%) and medium penis sheath flap (64.0%) were commonly observed. Among females above three years, bowl-shaped udders (74.8%), medium-sized udders (55.3%), cylindrical teats (69.9%), round teat tips (74.8%) and non-prominent milk veins (59.2%) were predominant. Mean horn length in adult animals was 13.55 ± 0.60 cm.

Keywords: Gaolao cattle, physical characteristics, body measurements, Yavatmal, indigenous cattle

1. Introduction

India possesses rich livestock genetic resources, including several indigenous cattle breeds adapted to diverse agro-climatic conditions. Indigenous cattle are valued for adaptability, heat tolerance, disease resistance, utilization of locally available feed resources and suitability under low-input production systems. Physical characterization is an important component of breed identification and documentation because external traits provide useful information regarding breed distinctiveness and body development.

Maharashtra is home to several important indigenous cattle breeds including Deoni, Red Kandhari, Dangi, Khillar and Gaolao. Gaolao is an important indigenous cattle breed associated predominantly with the Vidarbha region of Maharashtra. The breed is distributed mainly in Yavatmal, Wardha, Nagpur, Amravati, Akola, Washim and adjoining areas. Gaolao cattle are known for adaptability, endurance and draught ability and have traditionally been utilized for agricultural operations.

Physical and morphometric characterization is useful for understanding breed identity and variability. Traits such as coat colour, muzzle colour, horn characteristics, ear orientation, forehead shape, hump, dewlap and body measurements can provide valuable information for breed characterization.

Although Gaolao cattle are important to the rural farming system of Vidarbha, scientific information regarding their physical and morphometric characteristics in different parts of their breeding tract remains limited. Therefore, the present study was undertaken to document the physical characteristics of Gaolao cattle under field conditions in Yavatmal Tahsil of Yavatmal district.

2. Materials and Methods

2.1 Study area

The investigation was conducted in selected villages of Yavatmal Tahsil of Yavatmal district,

Maharashtra, during 2025–2026.

2.2 Selection of animals

A total of 250 Gaolao cattle were selected, consisting of 50 males and 200 females. Animals were classified into four age groups: up to 1 year, 1–2 years, 2–3 years and above 3 years.

2.3 Age-wise distribution

Up to 1 year: 8 males and 34 females; 1–2 years: 8 males and 32 females; 2–3 years: 9 males and 31 females; above 3 years: 25 males and 103 females.

2.4 Physical characteristics recorded

2.4.1. Colour pattern

Colour of body coat, hoofs, muzzle, eyelids, horn and tail switch colour were observed in qualitative term i.e., pure bright white/dull white/gray/blackish or other colour.

2.4.2 Shape, length and orientation of horn

The presence or absence of horns were observed. Shape of horn were observed in terms of straight or curved, horn orientation was observed i.e., whether outward or upward. Horn length was measured from the base of the horn to the tip of the horn.

2.4.3 Length and orientation of ear

The length of ear was measured from the base of the ear to the tip of the ear. The orientation of the ear includes, horizontal and drooping ears.

2.4.4 Shape of forehead

The shape of forehead was observed in terms of convex, concave and straight like shapes.

2.4.5 Body characteristics

The shape of the body was observed in terms of hump, dewlap and naval flap as large, medium and small type.

2.4.6 Udder characteristics

- 1. Shape of udder:** Udder shape was observed as bowl, round, trough and pendulous type.
- 2. Size of udder:** Udder size was observed as Large, medium and small.
- 3. Shape of teat:** Shape of teat was observed as cylindrical, funnel and pear type of teat shape.
- 4. Shape of teat tip:** Shape of teat tip was observed as pointed, round and flap.
- 5. Shape of milk vein:** Shape of milk vein were observed as large, medium and small type shape.

2.5 Measurements: Horn length, ear length, were recorded in centimeters.

2.6 Statistical analysis: Qualitative traits were expressed as number and percentage. Quantitative observations were expressed as mean $\pm$ standard error and standard deviation. Chi-square analysis was used for categorical characteristics where applicable.

3. Results and Discussion

3.1 Population according to age and sex

A total of 250 Gaolao cattle were studied, consisting of 50 males and 200 females. Animals above three years constituted the largest age group with 128 animals, followed by up to one year (42), 1–2 years (40) and 2–3 years (40).

Table 1: Age- and sex-wise distribution

Age group	Male	Female	Total
Up to 1 year	8	34	42
1–2 years	8	32	40
2–3 years	9	31	40
Above 3 years	25	103	128
Total	50	200	250

3.2 Colour pattern

White coat colour was predominant (68.0%), followed by grey (32.0%). Anand Kumare (2020) ^[8] observed the Coat colour in Bullocks of Gaolao cattle as white (83.25%). Findings of the present study are in agreement with those reported by P R Gaikwad (2024) ^[6] observed that the coat colour of Kathani cattle were mostly white colour (88%). Badole (2022) ^[3], who stated that white coat colour was predominant in Kathani cattle (89.5%). Black muzzle, black hoof, black eyelid and black tail switch were recorded in 94.0%, 96.0%, 92.8% and 90.0% of animals, respectively. The present findings are in close agreement with the observations of (Gaikwad P R 2024 ^[6]), who reported black muzzle colour in 93.0 per cent of Kathani cattle. (Badole 2022) ^[3] observed that the hoof colour was found to be black (94%). (Gaikwad P R 2024 ^[6]) observed black eyelid colour in 94.0 per cent of Kathani cattle. (Rannaware 2016 ^[11]) documented black tail switch colour in 94.0 per cent of the animals studied. Horn colour was blackish in 54.0% and grey in 46.0%. (Badole 2022) ^[3] observed that the horn colour of Kathani cattle was grey (76%).

Table 2: Colour pattern

Character	Category	No.	%
Coat	White	170	68.0
Coat	Grey	80	32.0
Muzzle	Black	235	94.0
Muzzle	Reddish	15	6.0
Hoof	Black	240	96.0
Hoof	Brown	10	4.0
Eyelid	Black	232	92.8
Eyelid	White	18	7.2
Tail switch	Black	225	90.0
Tail switch	Brown	25	10.0
Horn	Blackish	135	54.0
Horn	Grey	115	46.0

Table 3: Horn, ear and forehead characteristics

Character	Category	No.	%
Horn shape	Curved	38	76.0
Horn shape	Straight	12	24.0
Horn orientation	Outward	10	20.0
Horn orientation	Upward	40	80.0
Ear orientation	Horizontal	228	91.2
Ear orientation	Drooping	22	8.8
Forehead	Straight	28	11.2
Forehead	Concave	12	4.8
Forehead	Convex	210	84.0

Horn, ear and forehead: Curved horns were predominant (76.0%) and upward orientation was observed in 80.0% of animals. The predominance of curved horns observed in the present by P R Gaikwad (2024) ^[6] observed that curved shaped horn (66%) in Kathani cattle. Badole (2022) ^[3] reported that 78% of Kathani cattle exhibited an outward orientation of the horns. Horizontal ears were recorded in 91.2%, while convex forehead was observed in 84.0%.

Badole (2022) ^[3] reported that straight forehead shape was predominant in Kathani cattle (93%), followed by concave (4%) and convex (3%) forehead shapes.

3.4 Body characteristics: Medium-sized hump (72.0%), Badole (2022) ^[3] reported that medium-sized humps were most common in Kathani cattle (74%), followed by small-sized (22%) and large-sized humps (4%). large dewlap (70.0%), P R Gaikwad (2024) ^[6] who observed the (74%) medium type dewlap and (18%) small type dewlap. medium naval flap (66.0%) Rannaware (2016) ^[11] also reported a predominance of small navel flaps, which were observed in 78% of Kathani cattle. medium penis sheath flap (64.0%) were predominant. Pundir (2014) ^[10] reported that indigenous cattle of Manipur predominantly had a small-sized and tucked-up penile sheath flap. P R Gaikwad (2024) ^[6] observed medium sized penis sheath flap in Kathani cattle.

Table 4: Body characteristics

Character	Predominant category	No.	%
Hump	Medium	180	72.0
Dewlap	Large	175	70.0
Naval flap	Medium	165	66.0
Penis sheath flap	Medium	32	64.0

3.5 Udder characteristics: In females above three years, bowl-shaped udder (74.8%), P R Gaikwad (2024) ^[6] has observed bowl shaped udder (76%), trough shape udder (18%) and pendulous shape udder (6%) respectively. medium udder size (55.3%), Dar (2022) ^[5] reported that the forequarters of the udder were small in size, whereas the hindquarters were medium-sized. Cylindrical teat shape (69.9%), Badole (2022) ^[3] reported that the cylindrical-shaped udder was predominant (74%), followed by funnel-shaped (14%) and pear-shaped udders (12%). round teat tip (74.8%) P R Gaikwad (2024) ^[6] were recorded as round teat tips 78% and pointed 16% in Kathani cattle. The present findings are in agreement with Kumare (2020) ^[8], who reported round-shaped teat tips in 49.5% of dry cows and 42.9% of milch cows in Gaolao cattle. and non-prominent milk vein (59.2%) were predominant. Badole (2022) ^[3] reported that small milk veins were observed in 64% of Kathani cattle, followed by medium-sized milk veins in 32% and large milk veins in 4%.

Table 5: Udder characteristics of females above 3 years

Character	Category	No.	%
Udder shape	Bowl	77	74.8
Udder shape	Trough	18	17.5
Udder shape	Pendulous	8	7.7
Udder size	Large	9	8.7
Udder size	Medium	57	55.3
Udder size	Small	37	35.9
Teat shape	Cylindrical	72	69.9
Teat shape	Funnel	18	17.5
Teat shape	Pear	13	12.6
Teat tip	Pointed	17	16.5
Teat tip	Round	77	74.8
Teat tip	Flap	9	8.7
Milk vein	Prominent	42	40.8
Milk vein	Non-prominent	61	59.2

3.6 Horn length: Adult animals above three years had horn length ranging from 6 to 21 cm, with mean 13.55 ± 0.60 cm and SD 4.269 cm. The present findings are comparable with the horn length reported by P R Gaikwad (2024) ^[6] reported a

value of 16.32 ± 0.56 cm in Kathani cattle. Badole (2022) ^[3] in Kathani cattle, which was 14.68 ± 0.92 cm.

Table 6: Horn length

Age group	N	Minimum cm	Maximum cm	Mean $\pm$ SE cm	SD
Above 3 years	50	6	21	13.55 ± 0.60	4.269

3.7 Ear length: Ear length increased progressively with age, from 13.22 ± 0.37 cm in calves to 20.04 ± 0.20 cm in adults. The age-related increase in ear length reflects continued physical development. P R Gaikwad (2024) ^[6] reported similar result in terms of ear length of cattle as 19.73 ± 0.28 cm in Kathani cattle. Badole (2022) ^[3] reported an ear length of 20.68 ± 0.37 cm in Kathani cattle, which was comparable to the present findings.

Table 7: Ear length

Sr. No.	Age group (year)	No. of animals	Ear length (cm)		Average $\pm$ S.E.	S.D.
			Max	Min		
1	Up to 1 year	42	17	9	13.22 ± 0.37	2.444
2	1 to 2 year	40	20	12	15.87 ± 0.38	2.418
3	2 to 3 year	40	22	14	17.72 ± 0.40	2.574
4	Above 3 year	128	24	16	20.04 ± 0.20	2.367

4. Conclusion

The present study conducted on 250 Gaolao cattle in Yavatmal Tahsil revealed distinct physical and morphometric characteristics of the breed under field conditions. White coat colour, black muzzle, black hooves, black eyelids and black tail switch were predominant. Curved and upward-oriented horns, horizontal ears and convex forehead were the major external characteristics observed.

Among body characteristics, medium-sized hump, large dewlap, medium naval flap and medium penis sheath flap were predominant. In adult females, bowl-shaped udders, medium-sized udders, cylindrical teats, round teat tips and non-prominent milk veins were commonly observed.

Horn length and Ear length increased with advancement of age. The findings provide useful baseline information for breed characterization, identification, selection, conservation and future genetic improvement of Gaolao cattle.

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Conflict of Interest

Not available

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Not available

References

- Adgale AA, Katkade BS, Khade SB, Chopade MM, Komatwar SJ. Physical and morphometric characteristics of Khillar breed of cattle. International Journal of Current Microbiology and Applied Sciences. 2017;6(9):513-518.
- Amble VN. Statistical methods in animal sciences. New Delhi: Indian Society of Agricultural Statistics; 1975.
- Badole UG, Wankhede BR, Kadam NP, Motghare AB, Khatke SL. Studies on morphological characteristics and body measurement of Kathani cattle in Gondia tahsil of

- Gondia district. The Pharma Innovation Journal. 2023;12(3):5196-5202.
4. Chandran PC, Dey A, Barari SK, Kamal R, Bhatt BP, Prasad RE. Characteristics and performance of Bachaur cattle in the Gangetic plains of North Bihar. Indian Journal of Animal Sciences. 2014;84(8):872-875.
 5. Dar AH, Kumar S, Sodhi M, Rahman JU, Yadav S, Baba NA. Physical and morphometric characterization of Badri cattle. Journal of Animal Research. 2022;12(2):223-228.
 6. Gaikwad PR. Studies on morphological characteristics of Kathani cattle in Bhandara tahsil of Bhandara district. International Journal of Veterinary Sciences and Animal Husbandry. 2024;SP-9(5):29-35.
 7. Jain A, Barwa DK, Singh M, Mukherjee K, Jain T, Tania MS, *et al.* Physical characteristics of Kosali breed of cattle in its native tract. Indian Journal of Animal Sciences. 2018;88(12):1362-1365.
 8. Kumare AK. Studies on morphological characteristics of Gaolao cattle in Kondhali tahsil of Nagpur district. Akola: Dr. Panjabrao Deshmukh Krishi Vidyapeeth; 2020.
 9. Gonge MG, Motghare AB, Wankhade BR, Borkar VD, Thote AR. Studies on morphological characteristics and production performance of Red Kandhari cattle in Pathri tahsil of Parbhani district. International Journal of Veterinary Sciences and Animal Husbandry. 2024;SP-9(2):311-313.
 10. Pundir RK, Singh PK. Status, characteristics and performance of Red Kandhari cattle breed in its native tract. Indian Journal of Animal Sciences. 2008;78(1):56-61.
 11. Rannaware PB. Studies on phenotypic characteristics/body measurements of Kathani cattle. Akola: Dr. Panjabrao Deshmukh Krishi Vidyapeeth; 2016.
 12. Food and Agriculture Organization of the United Nations. Phenotypic characterization of animal genetic resources. Rome: Food and Agriculture Organization of the United Nations; 2012.

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