



ISSN: 2456-2912

VET 2023; SP-8(4): 141-145

© 2023 VET

www.veterinarypaper.com

Received: 29-05-2023

Accepted: 11-07-2023

Mallikarjun Hattarakihal
Department of LPM, Veterinary
College Bidar, Karnataka
Veterinary Animal and Fisheries
Sciences University, Bidar,
Karnataka, India

Vivek M Patil
Department of LPM, Veterinary
College Bidar, Karnataka
Veterinary Animal and Fisheries
Sciences University, Bidar,
Karnataka, India

Prashant G Waghmare
Department of LPM, Veterinary
College Bidar, Karnataka
Veterinary Animal and Fisheries
Sciences University, Bidar,
Karnataka, India

MD Suranagi
Department of AGB, Veterinary
College Bidar, Karnataka
Veterinary Animal and Fisheries
Sciences University, Bidar,
Karnataka, India

Shrikant Kulkarni
Department of VPB, Veterinary
College Bidar, Karnataka
Veterinary Animal and Fisheries
Sciences University, Bidar,
Karnataka, India

Anant Rao Desai
Department of VAHEE,
Veterinary College Bidar,
Karnataka Veterinary Animal and
Fisheries Sciences University,
Bidar, Karnataka, India

Hiremath Basavaraj
Department of LPM, Veterinary
College Bidar, Karnataka
Veterinary Animal and Fisheries
Sciences University, Bidar,
Karnataka, India

Corresponding Author:

Vivek M Patil

Department of LPM, Veterinary
College Bidar, Karnataka
Veterinary Animal and Fisheries
Sciences University, Bidar,
Karnataka, India

Physical characteristics of different strains of deoni cattle

Mallikarjun Hattarakihal, Vivek M Patil, Prashant G Waghmare, MD Suranagi, Shrikant Kulkarni, Anant Rao Desai and Hiremath Basavaraj

DOI: <https://doi.org/10.22271/veterinary.2023.v8.i4Sc.661>

Abstract

The study to find the physical characteristics of different strains of Deoni cattle, an indigenous cattle breed native to Bidar district of Karnataka and adjacent regions, was conducted during 2018-19 on 297 Deoni cattle in 13 villages and Livestock Research & Information Centre (Deoni), Hallikhed (B) in Bidar district of Karnataka state. The findings of the study revealed that in Deoni cattle, hair length was small (69.03%), eyelid colour was black (98.99%), hump colour was white (54.21%), hump size was medium (53.20%), horn shape was curved (68.35%), poll was 'not prominent' (63.86%), chest was wide (85.52%), milk vein was prominent (65.32%), tail switch colour was black (37.04%), forehead shape was concave (50.85%), dewlap was large (61.62%), and naval flap was small (34.34%). Ear orientation was drooping in all three strains Deoni cattle. The three strains of Deoni cattle i.e. Balankya, Shevera and Wannera strains had significant differences in various physical characteristics – hair color, hair length, eyelid colour, hump colour, tail switch colour, horn shape, forehead shape, and milk vein.

Keywords: Deoni, strain, balankya, wannera, shevera, physical characteristics

Introduction

Animal husbandry and dairying along with agriculture continue to be an integral part of human life since the dawn of civilization. Owing to conducive climate and topography, animal husbandry and dairying sectors have played prominent socio-economic role in India. India has 53 descriptive cattle breeds. Total cattle population of India is 190.9 million which comprises 151.1 million indigenous and 39.7 million exotic or crossbred cattle. The population of Deoni cattle in India was 1,51,236 which comprises 0.23 per cent of the total indigenous breeds. The Deoni is a medium-sized animal which resembles the Gir in physical structure to a large extent. This breed is hardy and well adapted to tropical drought prone areas. Joshi and Phillips (1953) ^[4] reported that genetically, the Deoni breed was evolved through the crossbreeding of the Gir cattle of the Kathiawar region of Gujarat with the Dangi breeds of Marathwada and local desi cattle of Nizam state from Bidar and Osmanabad. Deoni cattle are generally found in the south-eastern part of Maharashtra (Marathwada region) covering Latur, Parbhani, Aurangabad, Nanded, Osmanabad districts, northern part of Karnataka covering Bidar, Kalaburgi districts, and western parts of Telangana covering Sangareddy, Kamareddy and Medak districts (Bukya *et al.*, 2019; Dongre, 2019) ^[1, 2]. Deoni cows are moderate producers with 868.24±49.56 kg (range 638 to 1229 kg) lactation milk yield.

Singh *et al.* (2002) ^[14] reported three coat colour variations in Deoni cattle *viz.* Wannera was clear white with black colour at the sides of the face, Balankya was clear white with black spots on the lower side of the body and Shevera was white body with irregular black spots. The coat colour variations were observed in both the sexes of Deoni cattle.

Materials and Methods

The present study was carried out under the project "Field Performance Recording (FPR) of Deoni cattle in Bidar District". Under the project 13 villages from 2 talukas (Bhalki and Aurad) of Bidar district were selected.

The data of total 297 adult female Deoni cattle (Wannera 82, Balankya 49 and Shevera 166) were recorded for physical characteristics from month of November 2018 to May 2019. The data was collected by visual examination and body measurements.

Statistical methods

The comparison of physical characteristics of different strains of Deoni cattle was carried out using the Chi-Square Test for nominal variables.

Results and Discussion

Muzzle colour: The muzzle colour in all three strains i.e. Balankya, Shevera and Wannera was found to be black. Similar findings were reported by Kuralkar *et al.* (2014)^[6] in Deoni cattle. In contrast with the present study, Pawar (2008)^[9] reported black muzzle colour in 73.96% and brown in 26.04% in Deoni cattle.

Hair colour: The different strains of Deoni cattle were found to have significant difference in hair colour ($p < 0.0001$). Among Wannera and Balankya strains all animals had 100% white hair colour while in Shevera strain 88.55% had white and black hair colour. The overall hair colour in Deoni cattle was found to be 50.50% white and 49.50% white and black. Thalkar *et al.* (2016)^[16] observed coat colours in non-descript cattle in Raigad district of Maharashtra state to be brown, black, grey and mixed colour in 44.44, 21.67, 23.89 and 10.00% cattle, respectively.

Hair length: The different strains of Deoni cattle were found to have significant difference in hair length ($p < 0.0004$). Among Balankya strain 73.47% animals had small hair length while in Shevera strain 72.29% animals had small hair length. However, in Wannera 59.76% animals had small hair length. The overall hair length in Deoni cattle was found to be 69.03% small, 29.29% medium and 1.68% large. This is in agreement with Dongre *et al.* (2017)^[3] who reported that the hair is soft and short in Deoni cattle.

Eyelid colour: The different strains of Deoni cattle were found to have significant difference in eyelid colour ($p < 0.05$). Among Shevera and Balankya strains, all animals had 100% black eyelid whereas in Wannera strain 96.34% cattle had black and 3.66% had brown eyelid. The overall eyelid colour in Deoni cattle was found to be 98.99% black and 1.01% brown eyelid. In contrast to the present study, Kuralkar *et al.* (2014)^[6] reported black eyelid colour 100% in Deoni cattle. Pundir *et al.* (2007)^[12] observed black colour of eyelid in Kenkatha and Red Sindhi cattle and grey coloured eyelids in Kankrej cattle. Thalkar *et al.* (2016)^[16] observed the eyelid colour were black, grey, white and brown in 87.22, 9.00, 1.70 and 2.11%, respectively in non-descript cattle in Raigad district of Maharashtra State.



Plate 1: Balankya strain



Plate 2: Shevera strain



Plate 3: Wannera strain

Table 1: Physical characteristics of different strains of Deoni cattle

SL. No	Physical characters	Balankya (N=49)		Shevera (N=166)		Wannera (N=82)		Overall (N= 297)		P Value
		N	% (within strain)	N	% (within strain)	N	% (within strain)	N	%	
1.		Muzzle colour								
	Black	49	100	166	100	82	100	297	100	
2.		Hair colour								
	White	49	100	19	11.45	82	100	150	50.50	
	White & Black	0	0	147	88.55	0	0	147	49.50	0.0000
3.		Hair length								
	Small	36	73.47	120	72.29	49	59.76	205	69.03	0.0038

	Medium	13	26.53	46	27.71	28	34.14	87	29.29	
	Large	0	0	0	0	5	6.10	5	1.68	
4.	Eyelid colour									0.0188
	Black	49	100	166	100	79	96.34	294	98.99	
	Brown	0	0	0	0	3	3.66	3	1.01	
5.	Hump colour									0.0000
	White	49	100	36	21.69	76	92.68	161	54.21	
	White & Black	0	0	130	78.31	6	7.32	136	45.79	
6.	Hump size									0.1093
	Small	11	22.45	27	16.27	18	21.95	56	18.86	
	Medium	26	53.06	98	59.04	34	41.46	158	53.20	
	Large	12	24.49	41	24.69	30	36.59	83	27.94	
7.	Hoof colour									-
	Black	49	100	166	100	82	100	297	100	
8.	Switch colour									0.0000
	Black	13	26.53	80	48.19	17	20.73	110	37.04	
	White	25	51.02	28	16.87	38	46.34	91	30.64	
	Black & white	8	16.33	39	23.49	21	25.61	68	22.90	
	White & black	3	6.12	19	11.45	6	7.32	28	9.42	
9	Horn shape									0.0109
	Straight	9	18.37	64	38.55	21	25.61	94	31.65	
	Curved	40	81.63	102	61.45	61	74.39	203	68.35	
10.	Ear orientation									-
	Drooping	49	100	166	100	82	100	297	100	
11.	Forehead shape									0.0007
	Convex	20	40.82	44	26.51	44	53.65	108	36.36	
	Concave	22	44.90	96	57.83	33	40.25	151	50.85	
	Straight	7	14.28	26	15.66	5	6.10	38	12.79	
12.	Poll									0.1922
	Prominent	22	44.90	60	36.14	24	29.27	106	35.69	
	Not prominent	27	55.10	106	63.86	58	70.73	191	63.86	
13.	Dewlap									0.2611
	Large	31	63.27	102	61.45	50	60.98	183	61.62	
	Medium	17	34.69	64	38.55	32	39.02	113	38.04	
	Small	1	2.04	0	0	0	0	1	0.34	
14.	Chest									0.8850
	Wide	43	87.76	141	84.94	70	85.37	254	85.52	
	Narrow	6	12.24	25	15.06	12	14.63	43	14.48	
15.	Navel flap									0.3227
	Large	12	24.49	28	16.87	23	28.05	63	21.21	
	Medium	11	22.45	34	20.48	19	23.17	64	21.55	
	Small	18	36.73	62	37.34	22	26.83	102	34.34	
	Absent	8	21.95	42	25.31	18	21.95	68	22.90	
16.	Milk vein									0.0000
	Prominent	41	83.67	89	53.61	64	78.05	194	65.32	
	Not prominent	8	16.33	77	46.39	18	21.95	103	34.68	

Hump colour: The different strains of Deoni cattle were observed to have significant difference in hump colour ($p < 0.0001$). Overall 54.21% cattle had white hump colour while 45.79% had white and black hump colour. Among Wannera strain 92.68% animals had white hump colour while in Balankya strain 100% had white hump colour. However, in Shevera strain 78.31% animals had white and black whereas 21.69% animals had white hump colour.

Hump size: The different strains of Deoni cattle were found to have non-significant difference in hump size. Among Shevera strain 59.04% cattle had medium hump size while in Balankya strain 53.06% animals had medium hump size. However, in Wannera strain 41.46% had medium whereas 36.59% had large hump size. The overall hump size in Deoni cattle was found to be 18.86% small, 53.20% medium and 27.94% large respectively. Similar findings were reported by Kuralkar *et al.* (2014) [6] 13.07% small, 49.85% medium and 37.08% large hump in Deoni cattle. Singh *et al.* (2002) [14] reported small hump in female Deoni cattle.

Hoof colour: In the present study it was observed that hoof colour in Deoni cattle in all three strains i.e. Balankya, Shevera and Wannera was found to be black. Similar findings were reported by Kuralkar *et al.* (2014) [6] in Deoni cattle. Pundir *et al.* (2007) [12] observed hoof were black colour in Red Sindhi cattle.

Tail switch colour: The different strains of Deoni cattle were observed to have significant difference in tail switch colour ($p < 0.0001$). Among Wannera strain 46.34% animals had white tail switch colour while in Balankya strain 51.02% had white tail switch colour. However, in Shevera strain 48.19% animals had black tail switch colour whereas 23.49% animals had black and white tail switch colour. The overall tail switch colour in Deoni cattle was observed to be 37.04% black, 30.64% white, 22.90% black & white and 9.42% white & black respectively. Similar findings were reported by Kuralkar *et al.* (2014) [6] 36.47% black, 31.01% white and 32.52% black & white tail switch colour in Deoni cattle. In contrast, Singh *et al.* (2002) [14] reported black and white tail switch colour in Deoni cattle.

Horn shape: The different strains of Deoni cattle were observed to have significant differences in horn shape ($p < 0.05$). Among Wannera strain 74.39% animals had curved horns while in Balankya strain 81.63% had curved horns. However, in Shevera strain 61.45% animals had curved horns whereas 38.55% animals had straight horns. The overall horn shape in Deoni cattle was observed to be 31.65% straight and 68.35% curved. Similar findings were reported by Kuralkar *et al.* (2014)^[6] 33.74% straight and 66.26% curved in Deoni cattle. Singh *et al.* (2002)^[14] and Rotte *et al.* (1987)^[13] reported similar horn shapes in Deoni cattle.

Ear orientation: In the present study it was observed that ear orientation in Deoni cattle in all three strains i.e. Balankya, Shevera and Wannera strain was found to be drooping. Similar findings were reported by Pawar (2008)^[9] in Deoni cattle. Rotte *et al.* (1987)^[13] reported ears were drooping like Gir cattle. Kuralkar *et al.* (2014)^[6] reported ears were alert and pendulous unlike Gir breed. Singh *et al.* (2002)^[14] reported ears were long and drooping with slightly curved tips.

Forehead shape: The different strains of Deoni cattle were observed to have significant difference in forehead shape ($p < 0.0007$). Among Wannera strain 53.65% animals had convex while in Balankya strain 44.90% had concave. However, in Shevera strain 57.83% animals had concave whereas 15.66% animals had straight forehead. The overall forehead shape in Deoni cattle was observed to be 36.36% convex, 50.85% concave and 12.79% straight. Singh *et al.* (2002)^[14] observed head is masculine, alert, broad and slightly convex and forehead is prominent, broad, slightly bulged in Deoni cattle.

Poll: The different strains of Deoni cattle were found to have non-significant difference in poll type. Among Wannera strain 70.73% animals had 'not prominent' poll while in Shevera strain 63.86% had 'not prominent' poll. However, in Balankya strain 55.10% had 'not prominent' whereas 44.90% animals had prominent poll. The overall poll type in Deoni cattle was observed to be 35.69% prominent and 63.86% not prominent. In contrast to the present study Kuralkar *et al.* (2014)^[6] reported 65.96% prominent and 34.04% not prominent in Deoni cattle.

Dewlap: The different strains of Deoni cattle were found to have non-significant difference in dewlap. Among Wannera strain 60.98% animals had large dewlap while in Shevera strain 61.45% had large dewlap. However, in Balankya strain 63.27% had large whereas 34.69% animals had medium dewlap. The overall dewlap in Deoni cattle was observed to be 61.62% large, 38.04% medium and 0.34% small. In contrast to the present study Kuralkar *et al.* (2014)^[6] reported 22.80% large, 64.13% medium and 13.07% small dewlap in Deoni cattle. Pawar (2008)^[9] reported 42.19% well develop, 57.81% medium. Rotte *et al.* (1987)^[13] reported pendulous dewlap. Singh *et al.* (2002)^[14] reported dewlap was thick, pendulous and muscular with folds.

Chest: The different strains of Deoni cattle were found to have non-significant difference in chest type. Among Balankya strain 87.76% animals had wide chest. However, in Wannera strain 85.37% animals had wide chest. The overall chest type in Deoni cattle was observed to be 85.52% wide and 14.48% narrow. Similar findings were reported by Pawar

(2008)^[9] 80.73% wide and 19.27% narrow chest in Deoni cattle. Rotte *et al.* (1987)^[13] and Singh *et al.* (2002)^[14] reported chest was deep and wide in Deoni cattle.

Navel flap: The different strains of Deoni cattle were found to have non-significant difference in navel flap. Among Wannera strain 28.05% animals had large navel flap while in Shevera strain 37.34% had small navel flap. However, in Balankya strain 36.73% animals had small whereas 24.49% animals had large navel flap. The overall navel flap in Deoni cattle was found to be 21.21% large, 21.55% medium, 34.34% small and 22.90% absent. In contrast to the present study, Kuralkar *et al.* (2014)^[6] reported 11.85% large, 41.64% medium and 46.51% small in Deoni cattle. Pundir *et al.* (2014)^[10] reported navel flap was small 81% in indigenous cattle of Tripura.

Milk vein: The different strains of Deoni cattle were found to have significant difference in milk vein ($p < 0.0001$). Among Balankya strain 83.67% animals had prominent milk vein whereas in Wannera strain 78.05% animals had prominent milk vein. However, in Shevera strain 53.61% animals had prominent whereas 46.39% had 'not prominent' milk vein. The overall milk vein in Deoni cattle was observed to be 65.32% prominent and 34.68% not prominent. NBAGR (2008) reported milk veins were in medium size in Deoni cattle. Pundir *et al.* (2007)^[12] observed Milk veins were large and well developed in Red Sindhi cattle. Pundir *et al.* (2015) reported no prominent milk veins in Indigenous cattle of Manipur.

Conclusion

The three strains of Deoni cattle i.e. Balankya, Shevera and Wannera strains have significant differences in various physical characteristics, and these can have implications in their draught and milch performance.

References

1. Bukya N, Neeradi R, Amaravadi S, Buddh E. Performance of Deoni Cattle in Telanagana, India. International Journal of Livestock Research. 2019;9(4):189-194. DOI: 10.5455/ijlr.20181227040713
2. Dongre V. Transforming Animal Breeding in India-Breed Conservation to Breed Prioritization. International Journal of Livestock Research. 2019;9(5):19-31. DOI: 10.5455/ijlr.20181206103804
3. Dongre VB, Gandhi RS, Salunke VM, Kokate LS, Durge SM, Khandait VN, et al. Present status and future prospects of Deoni cattle. Indian Journal of Animal Sciences. 2017;87:800-803.
4. Joshi NR, Phillips RW. Zebu Cattle of India and Pakistan. FAO. Agril Studies No 19; c1953. p. 204-207.
5. Karthickeyan SMK, Saravanan R, Thangaraju P. Krishna Valley cattle in India: Status, characteristics and utility. Animal Genetic Resources. 2006;39:25-37.
6. Kuralkar SV, Bankar PS, Chopade MM, Kuralkar P, Dhaware SA. Phenotypic characteristics, production and reproduction performance of Deoni cattle in its native tract. Indian Journal of Animal Sciences. 2014;84(1):75-77.
7. National Bureau of Animal Genetic Resources; c2023. www.nbagr.res.in/registeredbreed
8. National Bureau of Animal Genetic Resources. Breed descriptor of Deoni cattle. Indian Journal of Animal Sciences. 2008;78(6):668-669.

9. Pawar DH. Physical and morphometric characteristics of Deoni breed of cattle at organized farm. M.V.Sc. thesis, MAFSU, Nagpur, India; c2008.
10. Pundir RK, Malik S, Singh PK, Sharma D, Sadana DK. Indigenous cattle of Tripura-characterisation and performance evaluation. *Indian Journal of Animal Sciences*. 2014;84(9):974-977.
11. Pundir RK, Singh PK, Dangi PS, Kumar A, Singh NB, Singh PK, et al. Indigenous cattle of Manipur — Characterization and performance evaluation. *Indian Journal of Animal Sciences*. 2015;85(4):382-385.
12. Pundir RK, Singh PK, Prakash B, Ahalawat SPS. Characterization and evaluation of Kenkatha breed in its native tract. *Indian Journal of Animal Sciences*. 2007;77(2):177-180.
13. Rotte SG, Bonde HS, Ghafoor MA. History origin and breed characters of Deoni breed proceedings of Symposium on development of Deoni and Red Kandhari cattle breeds. MAU, Parbhani; c1987. p. 18-24.
14. Singh G, Gaur GK, Nivsarkar AE, Patil GR, Mitkari KR. Deoni cattle breed of India. A study on population dynamics and morphometric characteristics. *Animal Genetic Resources Information*. 2002;32:35-43.
15. Tewelde G, Sintayehu Y, Sandip B. Some morphometrical, production and reproduction traits of Begait cattle reared in Tigray region of Ethiopia. *Wayamba Journal of Animal Science*. 2017;9:1571-1585.
16. Thalkar M, Todkar S, Babar S. Morphological Characterization of the Non-Descript Cattle in Raigad District of the Maharashtra State. *Advances in Life Sciences*. 2016;5(18):762-765.