

Characterization of Gurezi cattle: A native cattle genetic resource of Kashmir Valley, India

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ABSTRACT

This study provided a comprehensive characterization of Gurezi cattle, an indigenous breed found in the high-altitude regions of Jammu and Kashmir, India. The research aimed to document the physical, morphometric, and production characteristics of Gurezi cattle, as well as the management practices and socio-economic status of farmers in the region. A total of 600 animals and 210 farmers were surveyed for this study. The results showed that Gurezi cattle are well adapted to the harsh climate and rugged terrain of the region. The breed is characterized by its distinctive physical features, including a predominantly black body color, horns, and horizontally placed ears. The morphometric analysis revealed significant differences between males and females in various body measurements. The socio-economic survey revealed that the majority of farmers in the region are small-scale livestock holders, with limited access to modern technology and veterinary services. The study highlighted the importance of Gurezi cattle in the livelihoods of farmers in the region and the need for conservation and improvement of this breed. The findings of this study can be used to plan breeding and conservation programs for Gurezi cattle, as well as to develop strategies for improving the livelihoods of farmers in the region.

Keywords: Gurezi cattle, Indigenous breed, Morphometric characteristics, Production parameters, Socio-economic status

Livestock plays a vital role in the agricultural economy of India, contributing significantly to the country's GDP and providing livelihoods to millions of rural households. Among the various livestock species, cattle are an essential component of Indian agriculture, with a diverse range of genetic resources found across different regions. One such cattle genetic resource is Gurezi cattle, a native breed found in the Kashmir Valley of Jammu and Kashmir, India. Gurezi cattle are well adapted to the harsh climate and rugged terrain of the region, making them an integral part of the local farming system. These cattle are known for their hardiness, disease resistance, and ability to thrive in challenging environments. Despite their importance, Gurezi cattle are facing threats due to various factors, including crossbreeding with exotic breeds, lack of proper breeding and conservation programs, and limited access to markets and other resources. In recent years, there has been a growing recognition of the importance of conserving and promoting indigenous breeds. These breeds possess traits that are well-suited to local conditions, making them an essential component of sustainable agriculture. Moreover,

Gurezi cattle are an important part of the cultural heritage of the region, and their conservation can help to preserve traditional practices and knowledge. By documenting the morphological, phenotypic, and production performance along with management practices of Gurezi cattle, this study provides valuable insights into the conservation and improvement of this breed.

MATERIALS AND METHODS

Study area: The study was conducted in the Gurez Valley of Bandipora district in Jammu and Kashmir, India. The valley is situated at an altitude of approximately 2,400 meters above mean sea level and is known for its rugged terrain and harsh climate.

Managemental practices: The animals are usually housed in the ground floor of residential houses made of long logs (Rather *et al.* 2021). Gurezi cattle are grazed in meadows and community forests for 10-12 hours during summer, while in winter, they are stall-fed. Farmers harvest surplus fodder and grass during summer to make hay for lean months. The main diet consists of unchaffed hay, and practices like silage and feed block making are uncommon.

Breeding and health care: Indiscriminate natural herd mating is common, where male and female cattle graze together. Due to heavy snow and inaccessible areas, frozen semen facilities for this breed are not available. Vaccination and healthcare are provided by the state government. Many

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farmers lack knowledge about modern livestock practices.

Location: The breeding tract of Gurezi cattle is situated in a challenging geographical location, extending between longitude 74°40' to 74°90' E and latitude 34°15' to 34°45' N. The elevation within this breeding tract varies from a minimum of about 3200 meters above mean sea level (amsl) to a maximum height of 4100 meters, making it a high-altitude region. The Gurez valley follows the course of the Kishan-Ganga river, flowing almost east-west, and encompasses a rugged topography with difficult accessibility. The valley covers an expansive area of over 57,842 hectares within the Himalayan mountain ranges.

Vegetation and natural fodders: The predominant and highly nutritious grasses in the pasture areas of Gurez Valley include *Trifolium tomentosum*, *Trifolium pratense*, and *Lespedeza sericea*. These grass species contribute to the overall nutritional quality of the pastures, providing valuable forage for grazing livestock in the region.

Climate: Gurez Valley experiences a temperate climate with four distinct seasons: winter, spring, summer, and autumn. The summer months, from June to August, see maximum temperatures reaching around 30°C. Summer rains are uncertain, making agriculture a challenging endeavor. In winter, from November to March, temperatures can drop as low as -20°C, accompanied by heavy snowfall ranging from 5 to 10 feet. The winter season is characterized by severe cold, mild rainfall, and snowstorms. Land routes to Gurez, particularly through Razdhan Pass at an altitude of 11,672 feet, often remain closed for five to six months due to heavy snowfall and snowstorms.

Important features of Gurez Valley: Important features of Gurez Valley are summarized in Table 1.

Data collection: Data were collected on physical characteristics, morphometric traits, production parameters, and management practices. Physical characteristics such as body color, horn shape, and ear orientation were recorded. Morphometric traits like body length and height were measured. Production parameters, including milk yield and lactation length, were documented. Management practices such as breeding and feeding were also studied.

Analysis: The data was analyzed using descriptive statistics and inferential statistics. Mean, standard error, and frequency distribution were calculated. Analysis of variance (ANOVA). Survey questionnaires, measuring tapes, and weighing scales were used for data collection. Statistical software was utilized for data analysis and interpretation.

Sampling method: A multi-stage sampling method was used for the study. The first stage involved selecting the Gurez Valley as the study area. In the second stage, villages were selected based on the concentration of Gurezi cattle. In the third stage, farmers were selected randomly from the selected villages.

RESULTS AND DISCUSSION

The socioeconomic status of Gurezi cattle farmers is reflected in Table 2. The survey of Gurezi cattle farmers

Table 1. Important features of Gurez Valley

S.No.	Particulars		Status
1	Area (sq km)		362.88
2	Population (2001 census)		28.786
3	Population density (persons/ sq Km)		79
4	Literacy (%)		43
5	Rural population (%)		100
6	Schedule Tribe Population (%)		100
7	Major fruits/ Crops		Maize, Wheat, Pulses, millets, and vegetables
8	Major livestock		Sheep, goat, local cow (Gurezi breed), yak, horses & mules
9	Administrative status	Sub district	Gurez
		Tehsil	Gurez and Tulail
		Blocks	Gurez and Tulail
		Villages	27
10	Average land holdings (ha)		0.278
11	Net irrigated area (%)		40
12	Hydric index		Humid
13	Soils		Sandy loam
14	Major river		Kishenganga
15	Altitude range (msl)		2460 -3000
16	Average annual rainfall (mm)		5 – 30
17	Temperature (oC)		-20-30oc

(Statistical Digest-2012, Village Amenities Directory-2012. Waniet *et al.* 2012)

revealed that the majority of families (64.76%) had an annual income of less than ₹50,000. Further, livestock rearing and agriculture were the primary occupations for 70.00% of respondents, highlighting the importance of this sector in the economy of the area. The prevalence of large-sized families (71.43%) and joint family systems (57.61%) can be attributed to the division of labor and collective effort in agriculture and livestock-related activities (Ummar Atta *et al.* 2018, Yasir *et al.* 2020). Middle-aged individuals (31-55 years) were more involved in livestock rearing (72.38%), likely due to their physical vigor and health status (Naveen *et al.* 2019; Kumar *et al.* 2015). However, the educational status of respondents was a concern, with 54.76% being illiterate, which was probably due to challenging socioeconomic conditions (Yasir *et al.* 2020; Ummar Atta, 2018) of farmers. The landholding patterns indicated a prevalence of smaller-scale agricultural operations, with 57.14% being marginal farmers.

Physical characteristics of Gurezi cattle: The physical characteristics of Gurezi cattle were studied in 600 animals, and are shown in Table 3. The predominant body color of Gurezi cattle was black (76.67%), followed by brown (15.66%), black and brown combined (5.5%), and

Table 2. Socio-economic status of Gurezi cattle farmers

Parameter	Variant	Frequency	Percentage
Age in years	Up to 30	35	16.67
	31-55	152	72.38
	>55	23	10.95
Family size	Low ≤5	12	5.72
	Medium 6-8	48	22.86
	High >9	150	71.42
		Overall=8.16 ±0.11	Range 4-14
Family type	Joint family	121	57.61
	Nuclear Family	89	42.38
Occupation	livestock +crops	147	70.0
	livestock + labour	51	24.28
	livestock+ Government job	12	5.71
Level of education	Illiterate	115	54.76
	Primary	60	28.57
	Middle	19	9.05
	secondary	14	6.67
	Graduation	2	0.95
Type of animal house	Kacha	204	97.14
	Pucca	6	2.85
Land holding (Kanals)	0 (Landless)	5	2.38
	1-4 (Marginal)	120	57.14
	5-9 (Small)	60	28.57
	10-14 (Medium)	22	10.48
	15-20 (Large)	3	1.42
Type of land holding	Un irrigated/ family	6.78 Kanals	
	Irrigated/family	0.49 Kanals	
Annual Income	<50 000	136	64.76
	50 000-10 0000	59	28.09
	>1 lac	15	7.14

Table 3. The morphology of Gurzi cattle

Parameter	Variable	Frequency	Percentage
Body coat color	Black	460	76.67%
	Brown	94	15.66%
	Black & Brown	33	5.5%
	Grey	13	2.17%
Muzzle color	Black	512	85.33%
	Brown	88	14.66%
Horn presence	Horned	574	95.66%
	Polled	26	4.33%
Horn shape	Straight	103	17.16%
	Curved	497	82.83%
Horn symmetry	Symmetrical	549	91.5%
	Asymmetrical	51	8.5%
Ear orientation	Horizontal	600	100%
Hump presence	Present	600	100%
Face profile	Straight	142	23.66%
	Concave	408	68%
	Convex	50	8.33%
Hoof color	Black	468	78%
	Brownish black	132	22%
Udder shape	Round	117	55.71%
	Bowl	93	44.28%
Udder placement	Normal	180	85.71%
	Inclined forward	30	14.28%
Teat shape	Cylindrical	129	61.42%
	Funnel	81	38.57%
Penile sheath	Present	135	100%
Tail switch	Black	402	67%
	White	67	11.66%
	Brown	131	21.83%
Basic temperament	Moderate	537	89.5%
	Docile	36	6%
	Wild	27	4.5%

grey (2.17%). These findings are consistent with studies on other indigenous breeds, such as Badri cattle (Dar *et al.* 2022) and hill cattle of Almora district (Pundir *et al.* 2010). The majority of Gurezi cattle were horned (95.66%), with curved horns (82.83%) being more common than straight horns (17.16%). Both males and females had horns, with symmetrical horns were more common (91.5%) than asymmetrical horns (8.5%). These findings are consistent with studies on Shahabadi cattle (Rekha *et al.* 2012) and Khillar cattle (Adgale *et al.* 2017). The muzzle color of Gurezi cattle was predominantly black (76.66%), followed by brown (23.33%). This is consistent with the studies on Dagri cattle (Patel *et al.* 2021), Krishna Valley

cattle (Karthickeyan *et al.* 2006), and Siri cattle (Bera *et al.* 2016). All Gurezi cattle had horizontally placed ears, consistent with studies on other breeds (Dar *et al.* 2022; Asit Jain *et al.* 2018, Adgale *et al.* 2017). The tail switch of Gurezi cattle reached up to the fetlock joint, and in some cases, it touched the ground. The predominant color of the tail switch was black (67%), followed by brown (21.83%) and white (11.66%). These findings were consistent with studies on Dagri cattle (Patel *et al.* 2021). Approximately 78% of Gurezi cattle had black-colored hooves, followed by brownish black (22%). This is consistent with studies on Dagri cattle (Patel *et al.* 2021) and non-descript cattle of the Konkan region (Khirari *et al.* 2014). The udder

Table 4. Least Squares Means along with SE of biometric traits of Gurezi cattle

Dependent Variable	Overall (n=600) Mean $\pm$ SE	Male (n=135) Mean $\pm$ SE	Female (n=465) Mean $\pm$ SE	P. Value
Ear	17.01 $\pm$ 0.10	17.65 $\pm$ 0.17	16.36 $\pm$ 0.09	0.000**
Horn	17.85 $\pm$ 0.28	18.20 $\pm$ 0.49	17.50 $\pm$ 0.27	0.214 ^N
Head	41.25 $\pm$ 0.22	41.16 $\pm$ 0.38	41.35 $\pm$ 0.20	0.649 ^N
Chest Girth	138.32 $\pm$ 0.13	141.69 $\pm$ 0.23	134.94 $\pm$ 0.12	0.000**
Paunch Girth	143.11 $\pm$ 0.52	146.67 $\pm$ 0.91	139.55 $\pm$ 0.49	0.000**
Height at Withers	105.59 $\pm$ 0.22	104.88 $\pm$ 0.39	106.30 $\pm$ 0.21	0.001**
Body Length	107.70 $\pm$ 0.22	110.09 $\pm$ 0.39	105.30 $\pm$ 0.21	0.000**
Tail	84.27 $\pm$ 0.33	83.49 $\pm$ 0.59	85.05 $\pm$ 0.32	0.019*

shapes observed in Gurezi cattle were predominantly round (55.71%), with bowl-shaped udders in the remaining animals (44.28%). The forequarters and rear quarters of the udder were small and medium-sized, respectively. Teats were mainly cylindrical (61.42%), while funnel-shaped teats were observed in the rest (38.57%). These findings were consistent with studies on hill cattle of Uttarakhand (Pundir *et al.* 2014) and Malnad Gidda cattle (Singh *et al.* 2008).

Morphometric characteristics of Gurezi cattle: Least Square Means along with SE of biometric traits of Gurezi cattle are presented in Table 4. The morphometric characteristics of Gurezi cattle were studied, revealing key insights into their body measurements. The study found significant differences between males and females in ear length, chest girth, paunch girth, body length, height at withers, and tail length. The chest girth of Gurezi cattle was 141.69 $\pm$ 0.23 cm in males and 134.94 $\pm$ 0.12 cm in females, with an overall mean of 138.32 $\pm$ 0.13 cm. This measurement was higher compared to Dagri cattle (Dinesh *et al.* 2021) and Malnad Gidda cattle (Singh *et al.* 2008). The paunch girth was 146.67 $\pm$ 0.91 cm in males and 139.55 $\pm$ 0.49 cm in females, with an overall mean of 143.11 $\pm$ 0.52 cm. This measurement was lower compared to the Khillar breed of cattle (Adgale *et al.* 2017), Red Sindhi cattle (Pundir *et al.* 2007), Deoni cattle (Yadav, 2008), and Kankrej cattle (Pundir *et al.* 2011). The body length was 110.09 $\pm$ 0.39 cm in males and 105.30 $\pm$ 0.21 cm in females, with an

overall mean of 107.70 $\pm$ 0.22 cm. This measurement was lower compared to Red Sindhi cattle (Pundir *et al.* 2007). The height at withers was 104.88 $\pm$ 0.39 cm in males and 106.30 $\pm$ 0.21 cm in females, with an overall mean of 105.59 $\pm$ 0.22 cm. The tail length was 83.49 $\pm$ 0.59 cm in males and 85.05 $\pm$ 0.32 cm in females, with an overall mean of 84.27 $\pm$ 0.33 cm. The ear length was 17.65 $\pm$ 0.17 cm in males and 16.36 $\pm$ 0.09 cm in females, with an overall mean of 17.01 $\pm$ 0.10 cm. The horn length was 18.20 $\pm$ 0.49 cm in males and 17.50 $\pm$ 0.27 cm in females, with an overall mean of 17.85 $\pm$ 0.28 cm.

Growth traits of Gurezi cattle: The growth traits of Gurezi cattle, revealed key insights into their body weight at various stages. The body weight of Gurezi cattle at birth, weaning, 6 months, 12 months, 18 months, 24 months, and at mating was found to be significantly different between males and females (Table 5). The respective weights (in kg) for males and females at different stages were as follows: Birth (15.67 $\pm$ 0.13 and 14.63 $\pm$ 0.07), Weaning (25.08 $\pm$ 0.15 and 23.43 $\pm$ 0.08), 6 months (31.57 $\pm$ 0.16 and 31.37 $\pm$ 0.09), 12 months (36.71 $\pm$ 0.61 and 37.62 $\pm$ 0.33), 18 months (55.24 $\pm$ 0.23 and 54.95 $\pm$ 0.12), 24 months (68.14 $\pm$ 0.21 and 66.54 $\pm$ 0.11), and Weight at Mating (90.85 $\pm$ 0.43 and 89.40 $\pm$ 0.23). The overall means for the population were 15.15 $\pm$ 0.07, 24.26 $\pm$ 0.08, 31.47 $\pm$ 0.09, 37.16 $\pm$ 0.35, 55.10 $\pm$ 0.13, 67.34 $\pm$ 0.12, and 90.12 $\pm$ 0.24, respectively. The study found significant differences in weights between males and females at certain stages, with males

Table 5. Least Square Means along with SE of growth traits of Gurezi cattle (n=600)

Dependent Variable	Overall (n=600) Mean $\pm$ SE	Male (n=135) Mean $\pm$ SE	Female (n=465) Mean $\pm$ SE	P. Value
Birth Wt	15.15 $\pm$ 0.07	15.67 $\pm$ 0.13	14.63 $\pm$ 0.07	0.000**
Weaning Wt	24.26 $\pm$ 0.08	25.08 $\pm$ 0.15	23.43 $\pm$ 0.08	0.000**
Six Month Wt	31.47 $\pm$ 0.09	31.57 $\pm$ 0.16	31.37 $\pm$ 0.09	0.280 ^N
Twelve Month Wt	37.16 $\pm$ 0.35	36.71 $\pm$ 0.61	37.62 $\pm$ 0.33	0.191 ^N
Eighteen Month Wt	55.10 $\pm$ 0.13	55.24 $\pm$ 0.23	54.95 $\pm$ 0.12	0.250 ^N
TwentyFour Month	67.34 $\pm$ 0.12	68.14 $\pm$ 0.21	66.54 $\pm$ 0.11	0.000**
Weight at matting	90.12 $\pm$ 0.24	90.85 $\pm$ 0.43	89.40 $\pm$ 0.23	0.003**

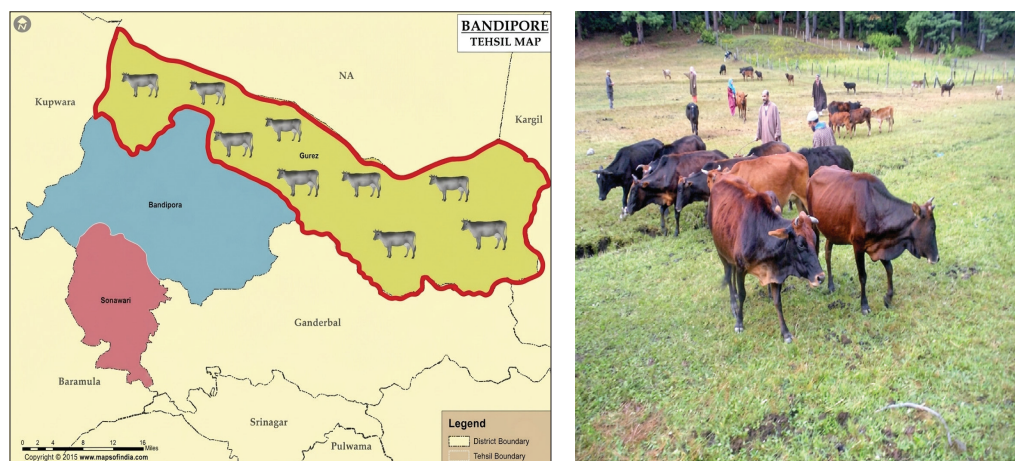


Fig.1.Gurezi cattle distribution and Sampling Locations

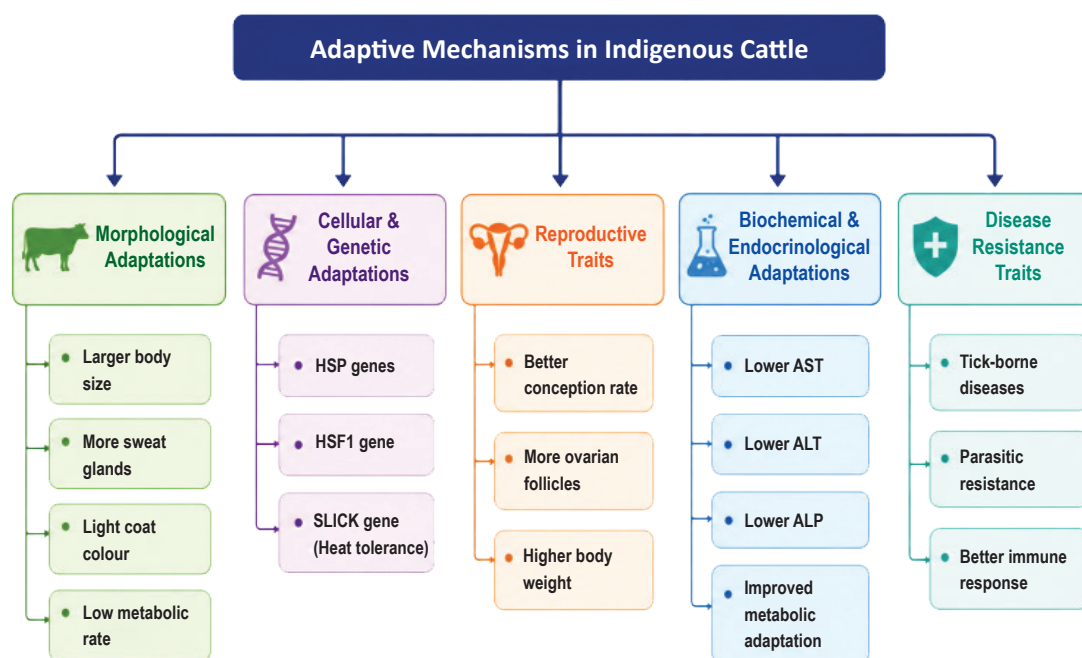


Fig.2. Adaptive Mechanisms in indigenous cattle

being heavier. The body weights of Gurezi cattle were comparable to other hilly cattle breeds but lower compared to some draught cattle breeds. Phenotypic correlations among biometric traits in Gurezi cattle were generally low. However, medium correlations were observed between ear length and chest girth, chest girth and paunch girth, chest girth and body length, chest girth and weaning weight, and chest girth and 24-month body weight. These findings were consistent with studies on Alambadi cattle (Parameswari *et al.* 2021).

The study on Gurezi cattle provided valuable insights into the characteristics, management practices, and production parameters of this indigenous breed. The findings highlighted the unique adaptations of Gurezi cattle to the harsh climate and rugged terrain of the Gurez Valley. The results of the study can be used to inform breeding and

conservation programs, improve management practices, and enhance the livelihoods of farmers in the region. Overall, the study contributes to the understanding and preservation of this important local livestock genetic resource. The futuristic approach would require elaborative and exhaustive studies, transfer of technology for scientific management of livestock through short term trainings, vocational courses and, awareness camps for livestock rearers of J & K and breed recognition and registration by NBAGR.

REFERENCES

- Anonymous 2019. Livestock Census, 20 th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture.
- Choudhary G, Pannu U and Gahlot G C. 2020. Efficiency of sire

- evaluation for milk production by incorporating auxiliary traits in Tharparkar cattle. *Journal of Entomology and Zoology Studies* 8(4): 1181–1183.
- Adgale MS, Katkade BS, Khade SB, Chopade MM and Komatwar S J. 2017. Physical and morphometric characteristics of khillar breed of cattle. *International Journal of Current Microbiology and Applied Sciences* 6(9): 513–518.
- Asit J, Deepti K B, Mohan S, Kishore M, Tripti J, Tantia M S, Raja K N and Arjava S. 2018. Physical characteristics of the Kosali breed of cattle in its native tract. *Indian Journal of Animal Sciences* 88 (12): 1362–1365.
- Dar A H, Kumar S, Kumari P, Mukesh M, Singh D, Sharma R K, Ghosh A K, Singh B, Panwar, V A and Sodhi M. 2018. Distribution of allelic and genotyping frequency of the A1/A2 allele of beta casein in Badri cattle. *Journal of Livestock Biodiversity* 8(2): 115–119.
- Dar A H, Kumar S, Sodhi M, Rahman J U, Yadav S and Baba N A. 2022. Physical and morphometric characterisation of Badri cattle. *Journal of Animal Research* 12(2): 223–228.
- Das S, Siddiqui M F, Ingle V S and Mishra G. 2018. Physical and morphometric characterization of young Red Kandhari cattle in their breeding tract. *Indian Journal of Animal Research* 52(9): 1248–1252.
- Hansen P J. 2004. Physiological and cellular adaptations of zebu cattle to thermal stress. *Animal Reproduction Science* 82–83: 349–360.
- Karthickeyan S M K, Saravanan R and Thangaraju P. 2006. Characterization of the Krishna Valley breed of cattle (*Bos indicus*) in South India using microsatellite markers. *Livestock Research for Rural Development* 18(11): 1–2.
- Khairi P B, Bharambe V Y and Burte R G. 2014. Physical and morphological characterisation of non-descript cattle in Ratnagiri District of Konkan Region of India. *International Journal of Livestock Research* 4: 16–18.
- Kumar M, Gupta J, Radhakrishnan A and Singh M. 2015. Socio-economic status and role of livestock to improve the livelihood of tribes of Jharkhand. *Journal of Agricultural Research* 6: 1421–1425.
- Naveen K R, Veeranna K C, Gopala G T, Harisha M, Thirumalesh T, Shettar V B and Udupaal G K. 2019. Socio-economic profile of farmers rearing Gir cattle in Karnataka. *International Journal of Current Microbiology and Applied Science* 8(10): 877–882.
- Parameswari S, Karthickeyan S M K, Arunachalam K and Gopinathan A. 2021. Phenotypic characterisation of Alambadi cattle - An unexplored indigenous population of South India. *Indian Journal of Animal Sciences* 91(11): 925–930.
- Patel D C, Chaudhari J R, Joshi R S and Rank D N. 2021. Phenotypic characterization of Dagri cattle of Gujarat. *Indian Journal of Animal Sciences* 91(7): 547–553.
- Pragya J, Rupasi T and Triveni D. 2018. Performance evaluation of Badri cattle. *Indian Journal of Animal Sciences* 88(9): 1090–1093.
- Pundir R K, Singh P K, Dangi P S, Kumar A, Singh N and Singh P K. 2015. Characterization and evaluation of hill cattle of the Garhwal region of Uttarakhand, India. *Indian Journal of Animal Science* 48(4): 322–328.
- Pundir R K, Singh P K, Singh K P and Dangi P S. 2011. Factor analysis of biometric traits of Kankrej cows to explain body conformation. *Asian Australasian Journal of Animal Sciences* 24(4): 449–456.
- Pundir R K, Singh P K, Singh C V and Prakas B. 2010. Physical parameters and management of hill cattle of Almora district of Uttarakhand. *Indian Journal of Animal Sciences* 80(11): 1145–1147.
- Rekha S, Pandey A K, Singh P K, Maitra A, Mukesh M and Singh S R. 2012. Characterization of Shahabadi cattle of Bihar-phenotypic and molecular approaches. *Indian Journal of Animal Sciences* 82(3): 318–322.
- Rather M A, Ahanger S A, Hamadani A, Shah M M, Baba M A and Khaleel M. 2021. Performance evaluation of Gurez sheep in farmers' flocks-A threatened sheep breed of Kashmir. *The Indian Journal of Animal Sciences* 91(8): 654–659.
- Ummar A, Islam M A and Mehlaith S. 2018. Socio-economic Profile of Shina Community Subsisting on NTFPs in Gurez Valley of Kashmir. *International Journal of Advance Research in Science and Engineering* 7 (4): 1701–1709.
- Yasir A B, Ganai A M, Rather M A, Athar H and Hamadani S A. 2020. Livestock feed resources availability, feeding practices, and nutrient balances in high Himalaya (Gurez) valley of Kashmir. *Tropical Animal Health and Production* 52: 2469–2480.