



Characterisation of Jhari cattle—A new cattle germplasm from Telangana

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ABSTRACT

In the present study, an attempt has been made to characterize and evaluate Jhari cattle of the state. For characterization of Jhari cattle, surveys were conducted in 17 villages of 4 districts. Physical characteristics and morphometric traits were recorded for 193 animals of different age and sex. Production and reproduction performance and socio-economic parameters were recorded from 73 farmers of different villages. Animals were reared on extensive system of management, i.e. grazing only. Few farmers provided supplement feeds to the bullocks only at home during the working days. Animal houses were open with wooden stick and separated from the owner residence (82%). Jhari cattle were gray or white (90%) in body colour. Body was small, compact and in cylindrical shape. Face was convex and longer as compared to other cattle populations of the state which is the differentiating trait of Jhari cattle. Udder was not developed and mostly bowl shaped. Temperament was docile. Birth weight ranged from 12 to 18 kg in female calves and 14–24 kg in male calves. The average daily milk yield was 1.52 kg and ranged from 1.0 to 3.0 kg. Lactation length varies from 100 to 180 days with an average of 152 days. Calving interval ranged from 340 to 610 days. A pair of bullocks may plough 1 acre of land in 6–8 h. It was observed that Jhari cattle are physically distinct from the other cattle populations of the region like Kamma, Vandharvi and Thurupu. Face is the major character for differentiating with other cattle population, i.e. longer and convex type. The other differentiating characters is horns, longer and thin at the base as compared to Ongole or its grades. Keeping in view its significant contribution in livelihood of the farmers and physical traits Jhari cattle population may be registered as a distinct breed.

Keywords: Characterization, Indigenous cattle, Jhari cattle, Morphometric traits, Physical traits, Performance

In Telangana all the indigenous cattle are known as non-descript as there is not a single registered breed of cattle. Presently, the state has 33 districts. The state has an area of 112,077 square kilometres and a human population of 35,193,978 (2011 census). Telangana is a semi-arid area and has a predominantly hot and dry climate. The economy of the state is mainly driven by agriculture. As per the key results of 20th Livestock census, in the state there were 4.21 million cattle comprising 3.62 million indigenous and 0.59 million exotic and crossbreds cattle. From Telangana state, there is not a single cattle registered breed available. Ongole is one of the important cattle breed registered from Andhra Pradesh. All the indigenous cattle in the state are known as non-descript. There are some cattle populations known as Jhari, Vandharvi, Kamma and Thurupu available in the state and need their characterisation on priority. There is an urgent need to characterize and evaluate these cattle populations and if found suitable registered them as distinct breed. Keeping in view the above facts, the present study was conducted to know the present status and characterisation of Jhari cattle in its breeding area and also assess the Jhari

cattle population whether it deserve as a distinct cattle breed and if so get it registered.

MATERIALS AND METHODS

Surveys were conducted for Jhari cattle characterization in 4 districts of Telangana, i.e. Adilabad (3 villages), Asifabad/Kumar Bheem (7 villages), Nizamabad (5 villages) and Jagtlial (2 villages). District map of Telangana state is shown in Fig.1. A total of 193 animals of different age and sex from 17 villages belonging to 73 farmers were recorded for management, physical characteristics, morphometric traits and performance. Habitat and socio-economic parameters were also recorded. Information on various management practices opted by the livestock owners in the state were recorded through interviews of the farmers on a predesigned questionnaire. The morphometric traits included body length, height at withers, chest girth, paunch girth, horn length, ear length, face length, face width, tail length without switch and with switch. The body morphometric data were analysed by least square maximum likelihood program (Harvey 1990) incorporating age and sex as fixed effects. Farmers were interviewed to know the habitat, status, management, utility and performance of the cattle available. Farmers were also enquired about choice of breed, sale and purchase of animals, animal housing,

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Fig.1. District map of Telangana.

feeding, breeding and prevalent diseases in the area. Performance traits like body weight at birth, age at first calving, daily milk yield, lactation length, dry period, service period, calving interval and draught performance were collected by conversing with the farmers from the surveyed villages using a structured questionnaire.

RESULTS AND DISCUSSION

In the surveyed area mixed cattle population were available. Among the non-descript a cattle population popularly known as Jhari was observed to be uniform. Jhari cattle name has originated from the name of village located in Kerameri block of Kumar Bheem/Asifabad district of Telangana. Jhari village is speeded into three different parts based on community name (tribal). Major crops grown were rice and maize. Two crops of rice in a year were taken. Other crops grown were red gram, jowar, bengal gram, wheat, bajra and ragi. Distribution of land holdings is marginal 62%, small 24%, semi marginal 11%, medium 2.6% and large 0.3%. Soil types are red sandy loam, red loam and alluvial (very less) in the state. Family size ranged from 4 to 6. Farmers reared Jhari cattle for agricultural work, milk production and manure.

Present status, milk production and productivity: Category wise cattle population in the state is given in Table 1. In the state, there were 4.21 million cattle comprising 3.62 million indigenous and 0.59 million exotic/crossbreds in the year 2019 (20th Livestock Census). Telangana represents 2.18% of total cattle population, 2.54% of indigenous cattle and 1.17% of exotic/crossbred cattle population of the country. The proportion of females in the state among the total cattle population was 62.22%, lower than the 75.37% of the country, 57.73% in indigenous cattle as compared to 69.08% of the country and 89.93% among

Table 1. Cattle population (in million) in Telangana state

Category	Telangana	India	% to Indian cattle population
Indigenous cattle	3.62	142.11	2.54
Male	1.52	43.94	3.45
Female	2.09	98.17	2.12
Exotic/Crossbred cattle	0.59	50.42	1.17
	(57.73%)	(69.08%)	
Male	0.064	3.65	1.75
Female	0.53	46.95	1.12
	(89.83%)	(93.11%)	
Total cattle	4.21	192.52	2.18
Male	1.59	47.40	3.35
Female	2.62	145.12	1.80
	(62.22%)	(75.37%)	

the exotic/crossbred cattle, slightly lower than the 93.11% in the country. All the indigenous cattle in the state are known as non-descript and there is not a single cattle breed registered from the state. However some cattle population popularly known as Jhari, Vandharvi, Kamma and Thurupu were available.

As per the Basic Animal Husbandry Statistics (BAHS), 2018, the state is producing 4.965 million tons of milk and contributing 2.81% to the country milk production. The contribution of exotic/crossbreds, indigenous cattle and buffalo in the state in the milk production in the year 2017–18 was 0.641 million tons (12.9%), 0.816 million tons (18.43%) and 3.50 million tons (70.4%) 4.36 lakh tons. While in the country the contribution of exotic and crossbreds cattle, indigenous cattle and buffalo was 27%, 21% and 49%, respectively in the same year. The productivity in terms of milk yield in kg per day of milk animals was 12.66 for exotic cattle, 7.32 for crossbred cattle, 5.43 for indigenous cattle, 2.04 for non-descript cattle and 5.07 for buffalo in the year 2017–18. The corresponding estimates in the country in the same year was 11.48, 7.61, 3.73, 2.41 and 5.47, respectively. The annual milk growth rate in the state was 6.1% as compared to 6.62% in the country.

Management: Farmers are rearing cattle for milk production, agricultural work and manure. Animal houses were open (92%), kaccha (87%) and separate from the owner house (82%). Flooring was kaccha (96%). Animal houses were made of wooden sticks. There was no wall in animal houses. Roof of the animal houses were thatched or covered by paddy or maize straw. Ventilation was proper. Tree shades were available. Sanitation condition was not good. Mostly farmers were rearing cattle on grazing and no supplement feeding was provided. Supplement feeding was provided by very few farmers to cows in milk and bullock during working days only. Milking was only by 24% farmers, i.e. once in a day, i.e. morning. Grazing time is from 9:00 AM to 6:00 PM. Farmers who were milking their cows, cleaned the milk utensils and udder of the cows prior to milking. Suckling of calf was allowed. Breeding



Fig. 2. Cow.



Fig. 3. Bull.



Fig. 4. Housing facility.

was by natural mating with available bull in the herd. Semen of Jhari cattle was not available at the veterinary hospitals. Herd size ranged from 4 to 10 but some farmers had big herds up to 300 cattle. Vaccination for HS, BQ and FMD was observed in most of the cases.

Physical characteristics: Breed descriptors for Jhari cattle were developed and presented in Table 2. Jhari cattle are grey and white coloured animals. Grey is pre-clominant in males and white in females. Body was small to medium, compact and cylindrical in shape (Fig 2 and Fig 3). Face is the major character for differentiating with other cattle population, i.e. longer and convex type. The other differentiating characters are longer horns, thin at the base as compared to Ongole or its grades. Hump was moderate in bullocks and smaller in cows. Muzzle (92%) and eyelids (99%) were black. Horns were black (77%) and curved (93%) with outward and then upward orientation. Ears were smaller in length and horizontal in orientation. Tail was above the hock with black switch (81%). Naval flap was small, touching to body. Legs were strong and long. Udder was not developed and mostly bowl shaped (86%). Teats

were 6–10 cm long and mostly funnel (79%). Temperament of cattle was docile.

Morphometric traits: The 10 different morphometric traits were recorded on 193 animals of different age and sex. Morphometric traits of Jhari cattle are presented in Table 3. Age and sex effects are significant. Estimates of body length, height at wither, heart girth and paunch girth differ significantly in males and females at all ages. The average body length, height at wither, chest girth, paunch girth, horn length, ear length, face length, face width, tail length without switch and tail length with switch in cows (157) were 102.44 ± 0.71 cm, 110.08 ± 0.61 cm, 138.62 ± 0.90 cm, 142.04 ± 1.12 cm, 17.24 ± 0.47 cm, 19.27 ± 0.14 cm, 41.87 ± 0.24 cm, 20.92 ± 0.15 cm, 72.21 ± 0.58 cm and 89.55 ± 0.83 cm, respectively. Estimates of body length, heart girth, paunch girth and ear length were in close agreement with the reports of Kumaun cattle (Pundir *et al.* 2013), Konkan cattle (Singh *et al.* 2019), Tho-tho cattle (Pundir *et al.* 2018) and lower than the Kankrej cattle (Pundir *et al.* 2007). The estimates of height at wither were higher as compared to Kumaun cattle (Pundir *et al.* 2013), Konkan

Table 2. Physical characteristics of Jhari cattle

Characteristic	Male	Female
Coat colour	grey (84%) and white (16%)	white (74%) and grey (26%)
Muzzle colour	black (86%) and black (98%)	black (92%) and brown (8%)
Eyelids colour	black (98%)	black (99%)
Tail Switch colour	Black (77%), Brown (17%) and White (6%)	black (81%), brown (11%) and white (7%)
Hooves colour	grey (83%) and black (17%)	grey (74%) and black (26%)
Horn colour	grey (33%) and black (67%)	grey (23%) and black (77%)
Horn size (length)	20.85 ± 0.91 (7)	17.24 ± 0.47 (158)
Horn shape (Straight/curved)	curved (98%)	curved (93%)
Horn orientation	outward then upward	outward then upward
Ear length	21.85 ± 0.14 (7)	19.27 ± 0.14 (158)
Ear orientation (horizontal/drooping)	horizontal	horizontal
Forehead (Convex/concave/straight)	convex	convex
Hump (large/medium/small)	Medium	Small to medium
Dewlap (large/medium/small)	Medium	Small to medium
Naval flap (large/medium/small)	Small	Small
Penis sheath flap (large/medium/small)	Small	
Udder shape (bowl/round/trough/pendulous)		bowl (86%) and pendulous (14%)
Udder size (large/medium/small)		small
Teat shape (cylindrical/funnel/pear)		funnel (79%) and cylindrical (21%)
Teat tip (pointed/round/flap)		flap
Milk vein (prominent/ not prominent)		Not prominent

Table 3. Morphometric traits (cm) of Jhari cattle of Telangana

Age and sex	No	Body length	Height at wither	Chest girth	Paunch girth	Horn length	Ear length	Face length	Face width	Tail length without switch	Tail length with switch	Birth weight (kg)
Male 0-3 Months	2	53.00	63.00	64.00	57.00	2.00	15.00	20.00	11.00	34.00	39.00	20.07
Female 0-3 Months	1	51.00	60.00	75.00	71.00	5.00	14.00	22.00	11.00	35.00	42.00	26.52
Male 3-6 Mo	3	71.66±6.33	82.00±4.00	92.33±6.66	93.33±7.66	2.66±1.33	16.00±2.00	27.33±4.00	16.33±0.33	54.66±7.33	58.33±6.33	58.47±12.21
Female 3-6 Mo	2	62.00±6.00	77.00±8.00	89.50±11.50	85.00±8.50	2.50±2.50	15.00±2.00	27.00±4.00	15.00±1.00	40.50±6.50	54.00±14.00	47.82±16.31
Male 6-12 Mo	3	78.66±1.20	97.66±4.84	107.33±6.38	1.3.33±7.83	8.00±5.13	17.33±0.33	33.00±1.52	17.00±1.52	59.66±6.98	74.00±9.07	84.69±11.42
Female 6-12 Mo	4	92.50±2.02	103.50±1.41	117.00±5.77	117.50±6.02	8.00±2.04	18.50±0.86	35.50±1.44	17.00±0.57	59.50±0.86	72.50±0.86	118.69±14.31
Male 1-3 Yrs	2	94.00	92.00	115.00	13.00	7.00	17.00	34.00	21.00	52.00	64.00	114.94
Female 1-3 Yrs	11	90.18±1.79	102.18±3.11	124.81±3.69	128.18±4.36	8.00±0.55	19.45±0.77	38.45±1.11	20.00±0.59	66.18±2.83	85.6±3.27	132.39±9.92
Bullocks	7	107.42±0.68	118.28±2.15	162.71±3.78	160.00±4.08	20.85±0.91	21.85±0.14	46.85±0.79	24.71±0.60	78.00±1.19	98.28±6.00	264.14±12.95
Cows	158	102.44±0.71	110.08±0.61	138.62±0.90	142.04±1.12	17.24±0.47	19.27±0.14	41.87±0.24	20.92±0.15	72.21±0.58	89.55±0.83	184.85±3.26

cattle (Singh *et al.* 2019), Tho-tho cattle (Pundir *et al.* 2018) and lower than Kankrej cattle (Pundir *et al.* 2007). Higher estimates of horn length was observed as compared to Kumaun cattle (Pundir *et al.* 2013), Konkan cattle (Singh *et al.* 2019) and Tho-tho cattle (Pundir *et al.* 2018) and lower than the Kankrej cattle (Pundir *et al.* 2007). Face length was similar to the Konkan cattle (Singh *et al.* 2019) and lower than the Kankrej cattle (Pundir *et al.* 2007). Similar estimates of tail length without switch and with switch were observed in Konkan cattle (Singh *et al.* 2019) and Tho-tho cattle (Pundir *et al.* 2018) in the present study. The corresponding averages in bullocks (7) were 107.42±0.68 cm, 118.28±2.15 cm, 162.71±3.78 cm, 160.00±4.08 cm, 20.85±0.91 cm, 21.85±0.14 cm, 46.85±0.79 cm, 24.71±0.60 cm, 78.00±1.19 cm and 98.28±6.00 cm, respectively.

Performance: Birth weight ranged from 12 to 18 kg in female calves and 14 to 24 kg in males. Average adult body weight was 184.58±3.26 (158) in cows and 264.14±12.95 (7) in bullocks estimated from the morphometric traits. The daily milk yield ranged from 0.50 to 3.0 kg with an average of 1.52 kg. Average peak milk yield was 2.4 kg with a range of 1.5 to 3.0 kg. Lactation length varies from 100 to 180 days with an average of 152 days. The age at first ejaculation and first mating, ranged from 28 to 36 months and 30 to 48 months. Age at first oestrus, oestrus cycle duration, age at first mating, age at first calving, service period and calving interval ranged from 24 to 52 months, 18–27 days, 20–38 h, 24–42 months, 32–52 months, 60 to 400 days and 340 to 610 days, respectively. The estimates of age at first calving were within the range as reported by in Malnad Gidda cattle (Singh *et al.* 2004) and in Manipur cattle (Pundir *et al.* 2015). Similar estimates of age at first calving and calving interval but lower dry period and service period were observed in Malnad Gidda cattle by Singh *et al.* (2008). A pair of bullock may plough one acre of land in 6 to 8 h. Bullocks were also used for transportation and load carrying. Average duration of bullocks work was 4 to 6 h/day, around 40 days in a year. The bullock performance was better than the hill cattle of Uttarakhand (Pundir *et al.* 2013) and lower than the Kankrej cattle (Pundir *et al.* 2007).

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