



Indigenous cattle of Manipur— Characterization and performance evaluation

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Received: 17 September 2014; Accepted: 5 November 2014

ABSTRACT

Manipur had 2.63 lakh cattle head including 2.19 lakh indigenous and 0.44 lakh crossbred in the year 2012. The trends in cattle population during the years 2003–07 showed a decline of 18.32% in total cattle population, 20.86% in indigenous cattle and 6.06% in crossbred cattle. There is not a single registered breed of cattle from the state. In the present study an attempt was made to characterize and evaluate indigenous cattle of the state as there is no information available in the literature on these cattle. Surveys were conducted in Imphal East, Imphal West (Valley districts) and Churachandpur (Hilly district) districts. Farmers (83) and animals (363) of different age and sex from 13 villages were included in the present study. The indigenous cattle of Manipur are of medium size, stout and hardy. Animals were reared mainly on extensive system of management i.e. grazing from morning to evening. During December to June when rice crop is there, animals were provided rice bran and rice waste as concentrate. The body colour was different i.e. brown (76%), black (12%), gray (4%) and spotted with black or white patches on brown body (8%). Bullocks had medium hump. Horns were small, black (82%) or gray (18%) in colour. Udder was small, not well developed and milk veins were not prominent. Temperament was docile in all the cases. The average body length, height at wither, heart girth, paunch girth, ear length, face length, tail length without switch and horn length in cows were measured. Cows and bullocks did not differ significantly in all the morphometric traits. The average daily milk yield was 2.65 ± 0.18 kg (2.0 to 4.5 kg). Animals showed uniformity in physical and morphometric traits. Cows showed good potential for milk production and there is a need of systematic genetic improvement programs to develop and improve the milk productivity.

Kew words: Cattle, Characterisation, Manipuri cattle, Morphometric traits, Performance, Physical traits

Manipur, a state in north east region of India which lies at latitude of 23°83'N – 25°68'N and longitude of 93°03'E – 94°78'E, covers an area of 22,347 square kilometres. In the state, human population was 27 lakh with a density of 120/km² in the year 2011. The climate of the State is salubrious with approximate average annual rainfall of 1,467.5 mm varying from 933 mm at Imphal to 2,593 mm at Tamenglong. The temperature ranges from sub-zero to 32°C. Total milk production in the Manipur state was 79,900 tonne in the year 2011–12 (Basic Animal Husbandry Statistics, www.dahd.nic.in) out of which 82% was contributed by cows and rest from the buffaloes. The per capita availability of milk in the state was low as 88 ml as compared to 291 ml in the country. The productivity in terms of milk production per day from crossbred and indigenous cattle was 7.26 kg and 1.76 kg, respectively, in the year 2011–12 (Basic Animal Husbandry Statistics,

www.dahd.nic.in). The corresponding figures in the country were 6.63 kg and 2.27 kg, respectively.

Manipur had 2.63 lakh cattle head including 2.19 lakh indigenous and 0.44 lakh crossbred in the year 2012 (19th Livestock Census, www.dahd.nic.in). There was not a single registered breed of indigenous cattle from the state and all are known as desi cattle. In the present study an attempt was made to characterize and evaluate indigenous cattle of the state so that the genetic improvement programs may be planned to improve the productivity and if required registration of this population as breed may be initiated.

MATERIALS AND METHODS

Surveys were conducted in districts i.e. Imphal East, Imphal West and Churachandpur districts. Farmers (83) from 13 villages were interviewed to record information on various management practices opted by the livestock owners in the state. 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, feeding, breeding and prevalent diseases in the area. Performance traits like birth weight, age at first calving,

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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 structured questionnaire.

Eight different body measurements and physical characteristics were recorded on 363 animals of different age and sex. The body measurements recorded were body length, height at withers, heart girth, paunch girth, face length, ear length, horn length and tail length without switch. Body weight (kg) was estimated by using the formulae $\text{heart girth (cm)} \times \text{heart girth (cm)} \times \text{body length (cm)} / 10815$. The body measurements data were analyzed by least square maximum likelihood program (Harvey 1990) including age within sex as fixed effects. The survey included 104 male and 259 female animals. Age wise distribution of animals bullocks, 41 and cows, 176 was up to 3 months (16), 3 to 6 months (24), 6 to 12 months (16), 1–3 years (90).

RESULTS AND DISCUSSION

In the surveyed area age of the farmers ranged from 22 to 60 years. Majority of the farmers were from 25 to 45 years (72%). Education level ranged from illiterate to graduation and 81% were literate. Land holdings ranged from 0.25 ha to 5 ha but majority of the farmers has below 2 ha (84%). The family size ranged from 3 to 13 with an average of 6 members/ family. The annual income ranged from ₹ 30,000 to 45,000 from agriculture and livestock both. Herd size ranged from 2 to 20.

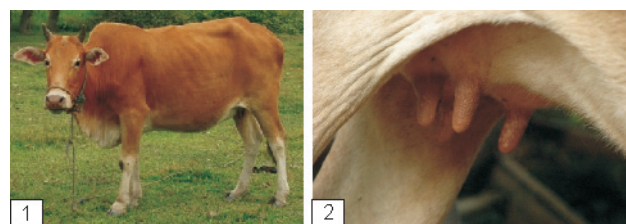
Population trends: The local cattle of Manipur belongs to the nondescriptive type. Manipur had 3.42 lakh cattle head including 2.72 lakh indigenous and 0.65 lakh crossbred in the year 2007. The trends in cattle population during the years 2003–07 showed a decline of 18.32% in total cattle population, 20.86% in indigenous cattle and 6.06% in crossbred cattle. Senapati district had maximum number of indigenous cattle (56,561), followed by Imphal East (42,868) in the year 2007. Number of milch animals in crossbred increased from 23,000 to 24,000 during the years 2003 to 2007. While number of milch animals in indigenous cows decreased from 78,000 to 74,000 during the same period. There was drastic decline in the number of bulls available in both the crossbred (13 to 3) and indigenous cattle (137 to 60) categories during 2003 to 2007, which needs to be addressed on priority.

Management practices: Grazing, cleaning, feeding and milking were mostly done by men and women both. Cattle were reared mainly for bullock power and manure (100%), around 18% farmers kept them for milk. Most of the animals were farm born. Tying was only in the night. Animal houses were mostly open and part of owner residence (84%). Houses were made up of tin or wood. Drainage of the houses was not proper. Floor of the house was *kachha* and walls of animal houses were half in all the cases. Ventilation and shades of trees were available in most of the cases. Calves reared mainly through suckling and colostrum feeding was there. Calves were roaming with mother during grazing. Dehorning and de-worming practices were not adopted.

Castration was done at the age of 6 months. All the farmers clean their milking pots and udder before milking. Milking was done once in a day i.e. morning. Most of the farmers who reared cattle for milk, utilize all the milk at home. Very few sold milk. Breeding was natural and breeding bulls were available in the herds. Vaccinations for HS, FMD and BQ were observed. Animals were reared mainly on extensive system of management i.e. grazing from morning to evening (7.00 AM to 4.30 PM). During December to June when rice crop is there, animals were provided rice bran and rice waste as concentrate.

Physical traits: Indigenous cattle of Manipur are non descriptive type, they are of small size, well built, stout, hardy and of cylindrical shape. Bullocks are reputed in Asom and other neighbouring states for their skill and draught power. The body colour varies—brown (76 %), black (12%), gray (4%) and spotted with black or white patches on brown body (8%). Pundir *et al.* (2014 a, b) reported that brown coat colour predominates in Mizoram cattle (85%) and 46% in Tripura cattle. Bullocks had medium hump. Dewlap and hump was small in cows. The animals have small head; prominent poll; short and concave face; small to moderately long ears with horizontal orientation; short and thin neck; small, black (82%) or gray (18%) horns with outward, upward and then curved orientation towards face; black (88%) and brown (12%) hoofs; black (84%) and brown (16%) muzzles; small, not well developed udder with no prominent milk veins (fore and rear udder were small in 72% and 68% cows, respectively); small teats (5–12 cm long), mostly of funnel (81%) and cylindrical shape (19%) and the tips of teats either round (88%) or funnel (12%); small naval flap; short and tucked up with body penis sheath flap; and tail above the hock with black (62%), brown (26%) and gray (12%) switch. Temperament was docile in all the cases. As compared to Tripura and Mizoram cattle, there was no distinct physical trait based on which these cattle populations could be differentiated. However, proportion of colours, shape and size of different physical traits varied in these cattle populations (Pundir *et al.* 2014 a, b). The typical cow and udder of the Manipuri cattle are shown in Figs 1 and 2, respectively.

Morphometric traits: Means, standard error and number of observations of different morphometric traits are given in Table 1. All the morphometric traits in different age groups did not differ significantly. However, significant differences in cows and bullocks were observed in Uttarakhand cattle (Pundir *et al.* 2013) and Tripura cattle



Figs. 1–2. 1. Cow. 2. Udder of the cow.

Table 1. Age and sex wise different biometric traits (cm) in Indigenous cattle of Manipur

Age (months)	Sex	No	Body length	Height at wither	Heart girth	Paunch girth	Ear length	Face length	Tail length without switch	Horn length
0–3	M	8	58.25±1.92	67.50±1.52	72.25±2.83	71.25±3.35	14.00±0.77	22.75±1.44	40.87±2.25	
	F	8	55.00±1.88	68.25±1.61	74.12±2.44	72.62±2.42	13.00±0.59	21.50±0.73	36.50±1.23	
3–6	M	15	62.00±1.35	76.55±1.16	84.33±2.14	84.11±2.15	13.88±0.38	25.22±0.61	42.44±1.19	
	F	9	60.53±1.70	76.20±2.01	81.93±1.43	83.00±1.71	14.26±0.26	24.93±0.91	42.46±0.98	
6–12	M	10	78.16±1.47	89.00±2.78	103.66±4.69	104.00±4.94	16.83±0.40	32.16±1.66	56.00±0.57	
	F	6	72.30±2.51	88.00±1.84	103.60±2.38	107.80±2.08	17.00±0.36	30.30±0.73	54.80±2.30	
12–36	M	30	84.73±1.55	96.55±1.16	117.46±1.78	124.73±1.72	17.88±0.40	33.98±0.49	65.98±1.15	10.62±0.98(30)
	F	60	82.23±1.62	91.36±1.60	113.13±1.43	118.30±2.12	17.76±0.37	33.76±0.38	63.53±0.72	6.63±0.83(27)
Bullock>36	M	176	100.32±0.59	106.22±0.51	137.69±0.78	142.12±0.98	19.59±0.17	38.06±0.23	74.31±0.50	11.85±0.38(157)
Cows>36	F	41	98.92±1.53	104.56±1.64	132.80±2.61	137.78±2.48	20.32±0.37	38.00±0.70	74.60±1.28	11.71±1.01(38)

cattle (Pundir *et al.* 2014). Tolenkhomba *et al.* (2012) reported similar estimates of heart girth, paunch girth, face length, slightly higher for body length, height at withers and lower for ear length and tail length without switch in cows of Manipur state. In bullocks, higher estimates for body length, height at withers, heart girth and paunch girth and horn length and similar estimates for ear length, face length and tail length without switch were obtained by Tolenkhomba *et al.* (2013) in Manipur cattle. In cows all the estimates were in close agreement with the reports of in Bargur cattle (Pundir *et al.* 2009), Pithoragarh cattle (Pundir *et al.* 2014), Uttarakhand cattle (Pundir *et al.* 2013), Tripura cattle (Pundir *et al.* 2014) and Malnad Gidda cattle (Singh *et al.* 2008). Higher estimates of all the traits were observed in Pullikulam cattle (Singh *et al.* 2012), Kankrej cattle (Pundir *et al.* 2011), Kenkatha cattle (Pundir *et al.* 2007) as compared to the present study.

Performance: The birth weight ranged from 8 to 15 kg. The estimated average body weights in cow and bullock were 176 kg and 175 kg, respectively. The average age at first calving, daily milk yield, lactation length, dry period, service period, calving interval, herd life and number of calving during life time were 1,130 days (30 to 45 months), 2.65±0.18 kg (2.0 to 4.5 kg), 192 days (120–270 days), 132 days (90–150 days), 118 days (90–140 days), 588 days (12–24 months), 15–20 years and 8–10 calving, respectively. The estimates of age at first calving, daily milk yield and calving interval were within the range as reported by Singh *et al.* (2004). Higher estimates of daily milk yield were reported by Kumar *et al.* (2000), Singh *et al.* (2004) and Meena *et al.* (2007). The average daily milk yield obtained in the study was higher than the Tripura cows (Pundir *et al.* 2014) and Uttarakhand cows (Pundir *et al.* 2013). The average daily milk yield was lower than the Malnad Gidda cattle (Singh *et al.* 2008). 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) as compared to the present study. A pair of bullock may plough about 0.50 acre of land in 5–6 h. The bullock performance was lower than the hill cattle of Uttarakhand (Pundir *et al.* 2013).

It may be concluded that indigenous cattle in Manipur

showed uniformity in physical and morphometric characteristics and contributes significantly in the economy of the state. It was observed that cows had good potential for milk production and need to be developed through a genetic improvement programs to improve the productivity.

ACKNOWLEDGEMENT

The authors are thankful to the Director, National Bureau of Animal Genetic Resources, Karnal for providing necessary facilities to the project and Director and staff, Department of Veterinary and Animal Husbandry Services, Manipur for their extraordinary help during the study.

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