Characterisation of Mizoram Native Cattle of Indian Origin

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ABSTRACT

A total of 33 farmers from 11 villages of Champhai and Kolasib districts were interviewed and 237 animals of different age and sex were recorded for physical and morphometric characteristics and performance to characterise indigenous cattle of Mizoram state. Based on the maximum number of indigenous cattle revealed from livestock census, two districts were selected for survey viz. Champhai (6663) and Kolasib (4720). Animals were reared mainly on extensive management conditions. The body colour varied in different colours i.e. brown (85%), black (11%) and gray (41%). Animals were small in size with cylindrical type of body. Udder was small and milk veins were not prominent. The daily milk production ranged from 1.5 to 3.5 kg. The average milk yield was 1.54±0.11 kg. The average age at first calving, lactation length, dry period, service period, calving interval, herd life and number of calving during life time were 1160 days (28 to 42 months) 178 days (150-210 days), 132 days (120-150 days), 121 days (90-120 days), 638 days (12-24 months), 15-20 years and 8-10 calving, respectively. A pair of bullock may plough about 0.5 acre of land in 5-6 hours. Different body measurements reveleadthat animals are small in size. It was observed that cows had good potential for milk production in the difficult climate. There is urgent need plan genetic improvement programs to improve the productivity of indigenous cattle of the state.

Keywords: Mizoram cattle, characterization, evaluation, performance

Mizoram state is enclosed by Myanmar and Bangladesh internationally boarder and Manipur, Assam, and Tripura national boarder. The climate is mild and temperature ranges from 11 to 21[0] C in winter and 20 to 30ºC in summer. Monsoon starts from June and lasts till the month of August. The average rainfall is around 2500mm. Major crops grown in the state are paddy, maize, mustard, sugarcane, sesame, fibber less ginger and potatoes. In the state there were 34570 cattle heads in the year 2012, among them 67% (23280) were indigenous (Livestock Census, 2012). The productivity

of indigenouscattle including non descript was 1.54 kg per day of milch animals in the year 2012-13 in the state. There is no registered breed of cattle from indigenous cattle and all are known as Desi (67%). There is no information available on indigenous cattle of Mizoram state in the literature. In the present study an attempt was given 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

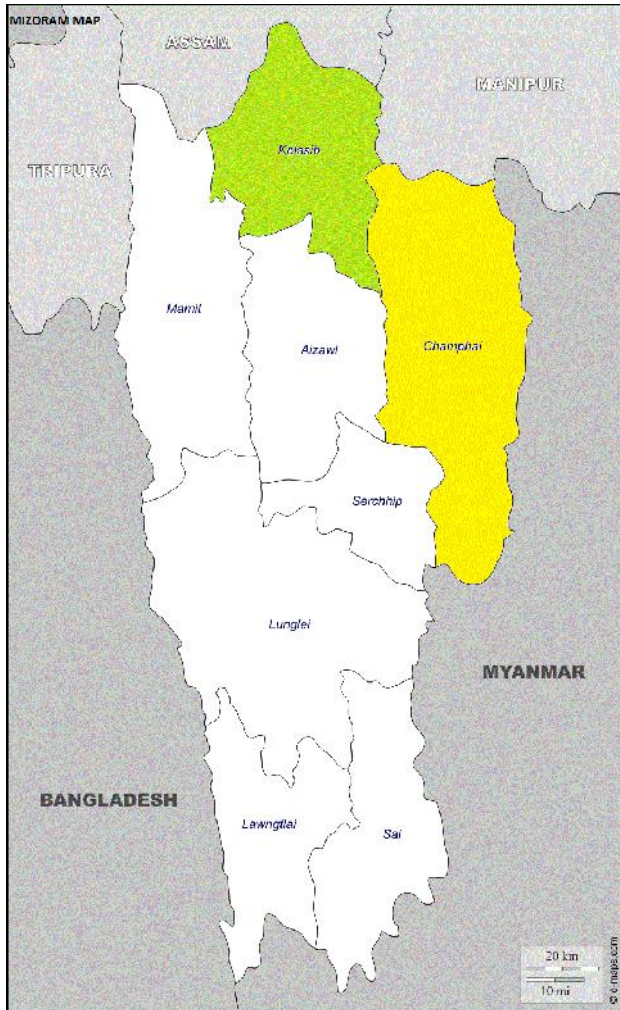may be initiated. The district map of the state is shown in Figure 1.

Fig. 1: Map of the Mizoram

MATERIALS AND METHODS

Surveys were conducted in two districts viz. Champhai (6 villages, Hmunhmeltha, Zotang, Champhai nearby area, Zote, Tlangsauh and Lalrunvunga) and Kolasib (5 villages, Chitephac, Chhimluang, Brawcamp, Chawnpui and N Chawnfuj) to record information on various management practices opted by the livestock owners in the state. Performance traits were generated by interviewing the farmers using a structured questionnaire. Farmers (33) interviewed to know the habitat, status, management, utility and performance of the cattle available. Farmers were interviewed for choice of breed, utility, sale and purchase of animals, animal housing, feeding, breeding, prevalent diseases in the area and performance of the indigenous cattle. Performance traits like birth weight, age at first calving, dailymilk

yield; lactation length, dry period, service period, calving interval and draft performance were collected by conversing with the farmers from the surveyed villages.

Different eight body measurements and physical characteristics were recorded on 237 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) were estimated by using the formulae heart girth (cm)× heart girth (cm)× body length (cm)/10815. The body measurements data was analyzed by least square maximum likelihood program (Harvey, 1990) including age within sex as fixed effects. The survey included 137 male and 100 females animals. Age wise distribution of animals was up to 3 months 1, 3 to 6 months 5, 6 to 12 months 30, 1-3 years 46 and above 3 years of age 155.

RESULTS AND DISCUSSION

The surveys conducyed to characterise indigenous cattle of Mizoram revealed that age of the farmers ranged from 22 to 71 years. Majority of the farmers were from 30 to 40 years of age (66%). Education level ranged from illiterate to graduation and 88% were literate. Land holding ranged from 0.20 hact to 12 hact. Majority of thefarmers were below 2 hact. The land holdings were larger in Kolasib district then the Champhai district. The annual income ranged from ₹ 0.75 to 3.2 lakhsand half of the farmers were less than 1.0 lakh. The contribution from livestock sector in the annual income was around 30%. There was very few farmers those had indigenous cattle. Most of them had HF and Jersey crosses, mithun and their crosses with cattle, goat, pig and poultry. Mithun and cattle crosses are preferred by the farmers in the state over the indigenous cattle. The herd size ranges 5-25 indigenous cattle per farmer. Herd size was larger in Kolasib district as compare to Champhai.

Population trends

Mizoram state had 34570 cattle heads in the year 2012 (Livestock Census, 2012). Among them 23280 were indigenous cattle. In the state there are 8 districts and Champhai (6663) and Kolasin (4720) had maximum number of indigenous cattle. Aizawl district had maximum number of crossbreds (5467). During the years 2003 to 2007, total cattle population declined by -0.75%, indigenous cattle -2.70% and crossbred increased by 57% (11,000 from 7000). While there was marginal decline in cattle population in the state during 2007 to 2012. During the sameperiod milch cows increased by 4.60% in indigenous and 2.22% in crossbred category. Breedable

cows were also increased by 4.33% in indigenous and 2.07% in crossbred category over the same duration. These trends revealed that in spite of decline in indigenous cattle population there was increase in milch and breedable cows i.e. more than crossbred in both the category.

Management practices

Grazing, cleaning, feeding and milking were mostly by men. Cattle were reared mainly for bullock power (100%) and manure. Very few farmers reared them for milk and meat. Most of the animals were farm born. Tieing was observed in night only. Animal houses were mostly open and kachha in 88% cases. In Champhai district animal houses were parts of owner residence (77%) while in Kolasib it was separate (84%). Drainage of the houses was not proper. Floor of the house was kachha in all the cases. Ventilation and shades of tree was available in all cases. Wall of animal houses were half in all cases. Calves reared mainly through suckling and colostrums feeding were there. Calves were roaming with mother during grazing. Dehorning and de-worming practices were not adopted. All the farmers clean their milking pots and udder before milking. Around 22% farmers using milk for household purposes and rest sale the 78% of milk produced. Breeding was natural. Breeding bulls were available in the herds. Semen of the indigenous cattle was not available in the state veterinary hospital. Milking was only once in a day i.e. in the morning in Champhai while in Kolasib milking was twice in a day but evening milk was only for calf. Vaccinations for H.S., FMD and BQ were observed. Animals were reared mainly on extensive system of management i.e. grazing from morning to evening. In some cases rice straw was provided to animal in the evening. No green fodder was grown. In Kolasib land owners have given land to laboures on rent around 20 quintals rice per year per hact. Labourers are mostly Assamies and Bangalies. Generally one crop per year (rice) was grown. In some cases some vegetables were grown those belong to labourers. Farming is rain fed. The indigenous cattle reared mostly by these labourers and belong to them only not the land owners. Typical cow, bullock, herd, calf and animal house are shown in Figures 2, 3, 4, 5 and 6, respectively.

Physical traits

Animals were small in size with cylindrical type of body. Animals were well built and compact with strong legs. The body colour varies in different colours brown (85%), black (11%) and gray (41%). Pundir et al. (2014) reported

that in Tripura cattle coat colour varied i.e. brown (46.15%), red (21.16%), black (16.76% and grey/white (15.93). Dewlap and hump was small.

Fig. 2: Cow of Mizoram indigenous cattle

Fig. 3: Bullock of Mizoram indigenous cattle

Fig. 4: Herd of Mizoram indigenous cattle

Fig. 5: Calf of indigenous cattle

Fig. 6: Animal Housing system for rearing of local cows

Head was small. Poll was prominent. Face was short and concave. Ears were small to moderate in length and horizontal in orientation. Neck was short in length and thin. Horns were small, black (72%) or gray (28%) in colour. Orientation was mostly outward, upward and then curved towards face. Hoofs were black (87%) and brown (13%). Muzzles were black (79%) and brown. Udder was small, not well developed and milk veins were not prominent. Sizes of fore and rear udder were small (77% and 62%, respectively). Teats were small 5-12 cm long, in most of the cases in cylindrical shape (22%) and funnel (78%) type. Tips of the teats were either round (82%) or funnel (18%). Naval flap was small. Penis sheath flap is short and tucked up with body. Tail was above the hock with black (39%), brown (54%) and gray (7%) switch. Temperament was docile in all the cases. As compare to Tripura cattle no distinct trait was observed to differentiate these two populations, however, there was difference in the proportion of different physical traits in these two cattle populations (Pundir *et al.* 2014).

Morphometric traits

Means, standard error and number of observation of different morphometric traits are given in table 1. All the morphometric traits from age group 3-6 months, 6-12 months and 1-3 years did not reveal significant differences due to sex. Similar observation was reported

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

Age (mo.)	Sex	No	Body Length	Height at withers	Heart Girth	Paunch girth	Ear length	Face length	Tail length without switch	Horn length	Body Weight (Estimated)
0-3 Months	F	1	42.90	59	54	49	11.00	18.00	28.00		11.56
3-6 Months	M	5	77.90 ±6.74	77.00 ±5.80	87.40 ±6.79	93.80 ±6.96	14.40 ±0.50	25.80 ±1.39	46.00 ±3.09		59.23 ±15.60
6-12 Months	M	16	79.42 ±2.77	82.75 ±2.89	96.62 ±3.63	96.75 ±4.33	15.62 ±0.51	28.43 ±1.23	±46.06 1.87		72.05 ±8.14
6-12 Months	F	14	81.10 ±2.10	82.78 ±2.19	98.42 ±4.40	99.64 ±4.16	15.35 ±0.55	28.35 ±1.21	±48.21 ±2.24		75.56 ±8.33
1-3 years	M	32	89.21 ±1.20	92.34 ±1.25	113.68 ±1.95	116.12 ±1.99	160.6 ±0.23	33.68 ±0.43	56.53 ±1.38	7.73 ±0.46	108.3 ±4.61
1-3y Years	F	14	94.01 ±2.99	93.64 ±2.27	118.35 ±2.35	119.07 ±2.82	16.14 ±0.34	33.00 ±0.96	55.85 ±1.74	7.33 ±1.72	123.97 ±8.95
Cow	F	71	103.70**a** ±1.01	103.60**a** ±0.62	132.22**a** ±1.05	131.90**a** ±1.57	18.20 ±0.18	38.73**a** ±0.39	67.26 ±0.76	15.55**a** ±0.55	169.5**a** ±3.74
Bullock	M	84	109.03**b** ±1.39	106.90**b** ±0.84	139.52**b** ±1.59	146.64**b** ±1.80	18.02 ±0.33	36.15**b** ±0.37	68.54 ±1.07	11.01**b** ±0.42	200.29**b** ±6.19

in Uttarakhand cattle (Pundir *et al.* 2013) and Tripura cattle (Pundir *et al.* 2014). The cattle above 3 years were divided into 2 groups i.e. cow and bullocks. The average body length, height at wither, heart girth, paunch girth, ear length, face length, tail length without switch, horn length and estimated body weight in cows (71) were 103.70±1.01 cm, 103.60±0.62 cm, 132.22±1.05 cm, 131.90±1.57 cm, 18.20±0.18 cm, 38.73±0.39 cm, 67.26±0.76 cm, 15.55±0.55 and 169.50±3.74 kg., respectively. The corresponding estimates in bullocks (84) were 109.03±1.39 cm, 106.90±0.84 cm, 139.52±1.59 cm, 146.64±1.80 cm, 18.02±0.33 cm, 36.15±0.37 cm, 68.54±1.07 cm, 11.01±0.42 and 200.29±6.19 kg., respectively. Cows and bullocks differed significantly in all traits except ear length and tail length without switch. The estimates of body length, height at withers, heart girth, paunch girth and body weights were higher in bullocks than the cows.

In cows all the estimates were higher in the present study as compare to Tripura cows except tail length (Pundir *et al.* 2014). In bullocks all the estimates were higher as compare to Tripura cows (Pundir *et al.* 2014) except horn length and tail length without switch. The estimates of body length, height at withers, and heart girth in cows and bullocks were lower than the Sahiwal, Kankrej, Hariana, Red Sindhi and Bargur breeds and within the range as in smaller breeds like Vechur and Punganur (Pundir and Ahlawat, 2007) and hill cattle of Uttarakhand (Pundir *et al.* 2013). Similar estimates of face length and horn length and higher for body length, height at wither, heart girth, paunch girth, ear length and tail length without switch were observed in Maland Gidda cattle (Singh *et al.* 2008).

Performance

The birth weight ranged from 10 to 15 kg. The cow and bullock weighed about 169 kg and 200 kg., respectively. The estimates of birth weight and adult body weight were similar to the other reports (Singh *et al.* 2008 and Ashok 2000) in Malnad Gidda cattle. 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 1160 days (28 to 42 months), 1.54+0.11 kg (1.5 to 3.5kg), 178 days (150-210 days), 132 days (120-150 days), 121 days (90-120 days), 638 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 (Singh *et al.* 2004). Higher estimates of daily milk yield were reported (Singh *et al.* 2004). 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 estimate of daily milk yield was lower than the national average for indigenous cows as 2.36 kg (Anonymous, 2014). The average daily milk yield was lower than the Malnad Gidda cattle (Singh *et al.* 2008). In the study there were only 21 cows in milk from the total 71. Milking was only once in a day and milking time was also irregular that may be the reason for low productivity. Another reason for low milk productivity may be that very few farmers are rearing theses cows for milk production and mostly preferred mithun and cattle crosses because their more productivity in terms of milk as well as draft and more growth for beef. Similar estimates of age at first calving and calving interval but lower dry period and service period were observed in Malnad Gidda cattle (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 hours. The bullock performance was lower than the hill cattle of Uttarakhand (Pundir*et al.* 2013).

CONCLUSION

It may be concluded that indigenous cattle in Mizoram 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 in the difficult climate. There is urgent need plan genetic improvement programs to improve the productivity of indigenous cattle of the state.

Acknowledgements

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