MITHUN - AN IMPORTANT BOVINE SPECIES OF INDIAN ORIGIN

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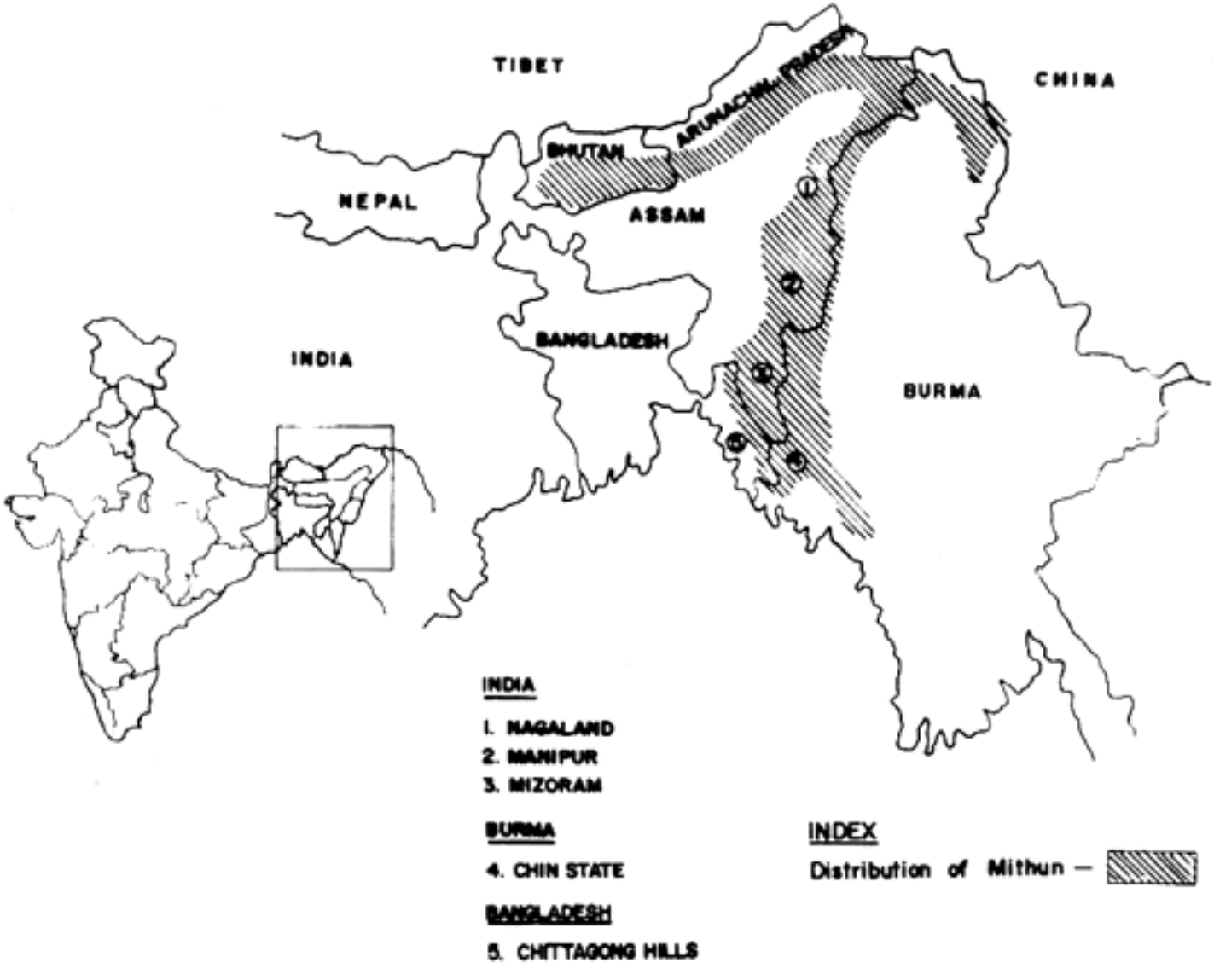
SUMMARY

The Mithun *(Bos frontalis)* is a heavily built semi domesticated bovine species originated in north eastern hill region of India. In some folklore, Mithun have been referred to as the descendent of the Sun. There are interesting and divergent legends about the orig in of mithun among different tribes. Even today, mithun is used as a holy sacrificial animal to appease the Gods by the tribesman. It is a woodland animal found at an elevation of between 2 000 and 9 000 feet. The habitat of mithun extends like a long curved belt of hills from the Akasan hill and Chin Hills of Burma through the Chittagong hill tracts of Bangladesh and the Lushai (Mizo) hills of Manipur and Naga hills of India. The geographic zone is covered with tropical evergreen rain forests. At higher elevations mithun territories are also shared by yak *(Poephagus grunniens),* while at lower altitudes domestic cattle and mithun co-habit. The information contained in the article is primarily based on a field survey carried out on mithun of Porba village of Nagaland. Some data collated and published by other departments is also included.

RESUME

Le Mithun est une espèce bovine bien structurée, semi domestiquée et qui a son origine dans les régions de collines nordorientales de l'Inde. Dans certaines etes traditionnelles, le Mithun est considéré comme descendant direct du Soleil. Parmi les différentes tribus il existe des légendes intéressantes et contraposées au sujet de Porigine du Mithun. Encore aujourd'hui, le Mithun est utilisé dans les tribus comme animal de sacrifice en remerciement aux Dieux. C'est un animal de forêt qui vit dans les zones d'une altitude de 2 000 à 9 000 pieds. L'habitat du Mïthun s'étend tout au long d'une longue franche qui va des collines de l'Akasan et de Chin, dans la région de Burma, à travers les collines du Chittagong du Bangladesh et celles de Lushai (Mizo), Manipur, et des Naga en Inde. La zone géographique est couverte de forêt pluviale tropicale toujours verte. A des altitudes plus élevées le Mithun partage son territoire avec le yak *(Poephagus grunniens),* par contre, aux altitudes plus basses il cohabite avec des animaux domestiques. L'information recueillie dans cet article se base principalement sur une enquête de terrain menée dans le village de Porba au Nagaland. En outre, on a inclus des données recueillies et publiées par d'autres sources.



Geographic Habitat of Mithun

1.0 INTRODUCTION

In morphological characteristics, the Mithun appears somewhat similar to that of Gaur, also known as Indian bison (a wild variety), but are distinctly smaller in size. Moreover, the mithun is a far more amenable and docile animal, unlike the gaur which could not be tamed. They prefer to roam about in the forest for browsing on shrubs and seldom forage grasses. Mithun do not wallow in mud like buffaloes. The most conspicuous feature of the mithun is a prominent dorsal ridge. The other distinguishing features are a small and double dewlap and white stockings. Mithun fascinated the archaeologists and zoologists for centuries but had hardly gathered the interests of farm scientists to harness the economic potential of this bovine until recently, when Indian Council of Agricultural Research established a National Research Contre on Mithun at Iharnapani in: Nagaland to undertake systematic studies on the husbandry and breeding of mithun.

2.0 HISTORY AND ORIGIN

Mithun is considered to have originated on the Assam-Burna border, however, it cannot be said with certainty when they were domesticated. Tribal communities living in the north of Brahmaputra River area, particularly in tracts between the borders of Burma and Bhutan, rear mithuns in great numbers. Mithun is still considered as semi wild animals yet many of its characters are typical of domestication. It is not known whether mithun originated from the gaur or these two are different species of wild oxen. It has also been postulated by some workers that mithun has resulted from a cross between a gaur and domestic cattle with banteng blood, or Zebu's in ancient times. Backcrosses with the wild gaur bulls do occur occasionally. They are made purposely by some breeders to improve the race in Bhutan and the adjoining area of Arunachal Pradesh i1l India. In some areas, crossbreds of mithun and Zebu cattle are produced, owing to the economically valuable characteristics of hybrids. The male hybrid is called Jatsa which is always sterile. The female hybrid is known as Jatsamin and is usually fertile.

3.0 POPULATION DYNAMICS

The domesticated mithun were widespread particularly throughout the hilly tract of North Eastem Region in the not too distant past. At present, their habitat has shrunk to Arunachal Pradesh, Manipur, Nagaland and Mizoram. According to the 1987 census report, the mithun population is highest in Arunachal Pradesh, followed by Manipur and Nagaland (Table 1). The mithun population decreased in 1977 in Arunachal Pradesh and Nagaland by I U. By and 40.18 per cent respectively from that in 1972. In Arunachal Pradesh, the declining trend continued untill the 1982 census. Between 1982 to 1987 the mithun population increased in all the states and this increase ranged between 1422 per cent in Nagaland and 187.00 per cent in Mizoram. Although during 1972 to 1987, the country's mithun population showed fluctuations in different states in the NEH region, the overall population in 1987 remained almost static as compared to 1972. However, a marked increase in the mithun population was noticed in Manipur and Mizoram during this period. Small mithun herds have also been reared for display by Zoological parks in India.

The age wise and sex wise distribution in different state indicated that in younger stock (< 3 years), the male: female ratios ranged between 43.06 to 48.0 in different states. In adults (3 years) it varied from 34.55 to 37.56 amongst mithun rearing states (Table 2). It is probable that about 10 per cent of males which are surplus from breeding, are slaughtered by the tribesmen after 3 years of age for meat purpose.

Table 1: *Mithun population and percent increase or decrease in different census*

State	1972	1977	% change over 1972	1982	% change over 1977	1987	% change over 1982	Average growth rate (1972-1987)
Nagaland	16 539	9 892	- 40.14	11 378	+ 15.02	12 896	(+) 14.22	(-) 1.46
Arunachal Pradesh	95 000	84 655	- 10.89	76 000	- 10.22	97 444	(+) 28.21	(+) 0.17
Manipur	8 528	8 528	0.00	12 825	+ 50.38	19 895	(+) 55.12	(+) 8.88
Mizoram	529	493	- 6.80	500	+ 1.41	1 435	(+) 187.00	(+) 11.41

Source: Based on National Livestock Census Reports (1972,1977, 1982,1987).

Table 2: *Age and sex wise Mithun population in different states*

State	< 3 years			> 3 years			Total male	Total female
	Male	Female	Total	Male	Female	Total		
Arunachal Pradesh	18 191	24 047	42 238	19 046	36 029	55 075	37 237	60 076
	(43.06)	(56.93)	(34.58)	(65.41)	(38.26)	(61.73)		
Manipur	4 062	4 382	8 444	4 301	7 150	11 451	8 363	11 532
	(48.10)	(51.89)	(37.56)	(62.43)	(42.03)	(57.96)		
Mizoram	315	353	668	265	502	767	580	855
	(47.15)	(52.84)	(34.55)	(65.44)	(40.41)	(59.58)		

Figures in parenthesis are percentage value
Source : National Livestock Census Report (1987)

4.0 FEEDING AND MANAGEMENT

The mithun forage on forest grasses, shnubs and tree leaves available in the jungle. They nibble like goats.Animals move considerable distances in search of suitable food and do not stay for long at the same place of grazing. 'They prefer deep and dense forest to avoid bright sunshine. Herds of mithun are encountered on the road side during the night. Owners let their animals loose in the forest for most of the time and no stall feeding is practised. They are collected for periodical salt feeding at an interval of 15 to 20 days. During the cropping season animals are kept in earmarked areas in the jungle to protect destruction of crops. The mithun of a village are recognized by the specific ear notch while individual owners have their own method of identification of their animals. It was observed that the water requirement of mithun is quite high, which they meet from the streams in the jungle. Some owners have now started getting their animals vaccinated with FMD or RP vaccines.

5.0 PHYSICAL CHARACTERISTICS

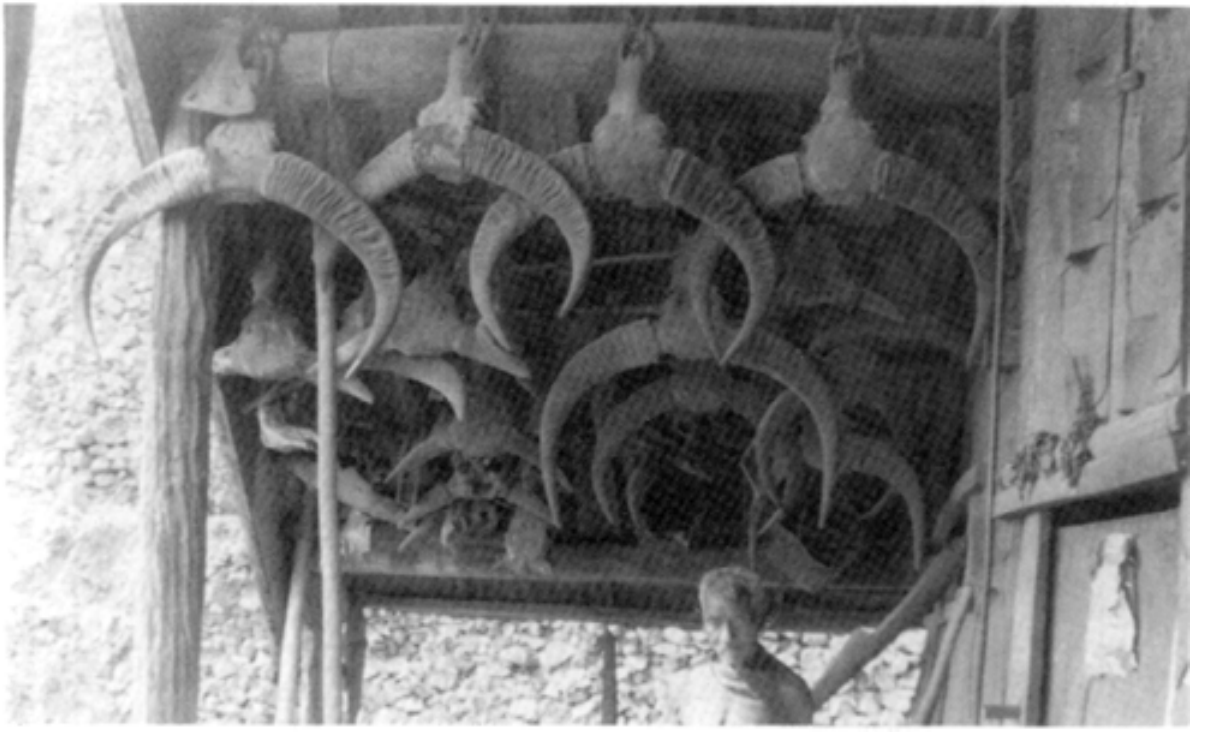
Mithun has a compact and sturdy build with well developed shoulders. The animals have medium to large body size (400-500 kg). It is smaller than the gaur. The heart girth were 187.5U cm and 176.UU cm in male and females respectively. The paunch girth was higher than heart girth (216.90 and 201.50 cm) in both the sexes. The body length were 138.75 and 128.75 cm and height at withers were 134.4U and I 13.75 cm in male and female animals respectively. The other body measurement like hip width, pin width, head length, tail length and hom length were also higher in males than in females (Table 3).

TABLE 3:
Average Body Measurements on Mithun

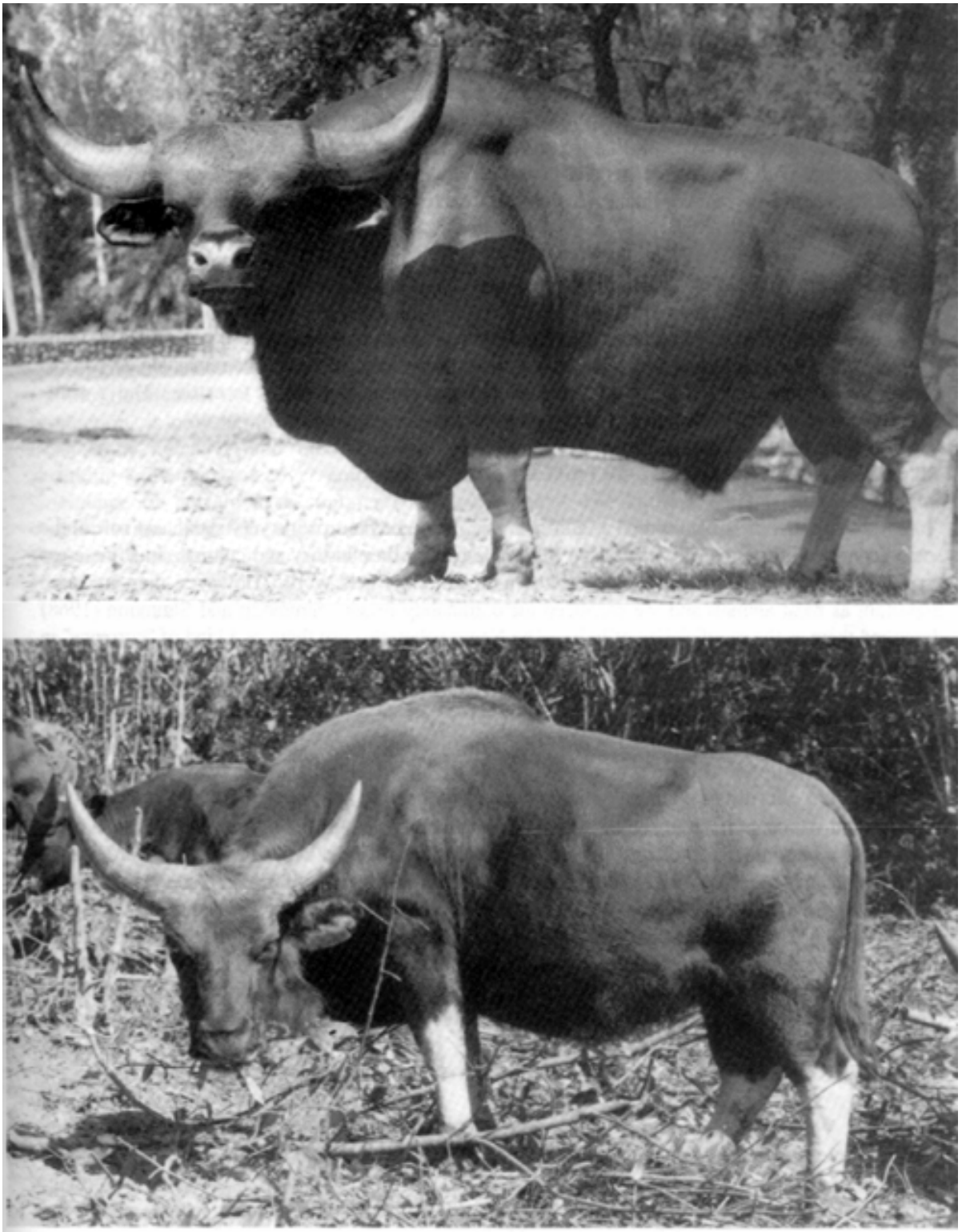
Trait	Measurement (cm)	
	Male	Female
Heart girth	187.50	176.00
Paunch girth	216.90	201.50
Body length	138.75	126.75
Height at withers	134.40	113.75
Hip width	41.90	40.00
Pin width	20.00	17.75
Taillength	78.75	72.50
Head length	44.40	40.00
Head width	29.40	27.25
Horn length	34.40	33.00

The mithun has much wrder and a flatter forehead. The horns are shorter, plumper, conical and without bends and protrude from the sides of the forehead. The horns are distant at the base and rise directly out and up in a gentle curve. The neck is thick and muscular and the double dewlap comences in place of a hump. They have a sharp ridge starting from back of the neck, tapering on the shoulder and extending up to the middle of the back approximately up to 7th thoracic vertebrae. The forelegs are thick and clumpy but the hind legs are relatively longer. The tail is covered with short hair except the tip where it ends with a tuft of hair and hardly extends up to the hock joints but never cross the joint. Adult males are generally black. White stockings on all the four legs is another contrasting feature of mithun similar ta gaur and banteng. Piebald and even white animals are encountered.

A herd of Mithun in Nagaland



Decoration of Mithun skull with other hunts in Naga houses



Males in zoo (upper photo) and natural habitat (lower photo)

6.0 GENETIC CHARACTERISTLCS

The karyotype of mithun consists of 58 chromosomes in comparison to 60 in domestic cattle (Gupta et al. 1995). The first pair of autosome is of submetacentric type while remaining 27 pairs of autosomes are acrocentric. X chromosomes are submetacentric and similar to cattle. The Y chromosomes are of a small metacentric type like *Bos tauru.*

7.0 SOCIO-ECONOMIC IMPORTANCE

Although mithun is not reputed as a farm animal, these bovines play a very significant role in the socio-economic life of the tribes and have become a part of their history and culture. In some areas especially in Arunachal Pradesh they are often used for some field work. However, they are more important as meat animals and are sacrificed for comunity feasts. Simoon and Simoon (1968) described them as the sacrificial ox of India. The Nagas tribes also use them as a kind of "currency" in exchange for trading goods, objects of value and paying penalties. The ownership of the mithun herd is considered a position of high social status. After their sacrifice, the tribesmen keep the heads of mithun with that of other hunts as decorative material.

8.0 CONCLUSION

Mithun is an important bovine of the hilly mountainous region of India, Burma and Bangladesh. It is mainly a free-ranging forest dweller and some animals have been kept in zoological gardens. In their natural habitat, mithun thrives on tender grass and leaf vegetation of forests. Due to shrinkage of forest land, the mithun population has shrunk in its distribution. Moreover, it has not yet been developed as a farm animal. Under the changing socio-economic scenario, mithun warrants greater attention for being improved and preserved as an important farm animal. The meat production potential and other productive attributes can be harnessed by adopting the improved husbandry and feeding practices.

9.0 REFERENCES

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HARIANA - AN INDIAN CATTLE BREED IN ITS NATIVE ECOLOGY

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SUMMARY

The fast changing socio-economic levels of inhabitants, ecological profile and agricultural scenario in the native breeding.tract of Hariana cattle breed reveal several factors resulting in consistently a declining trend in the population as well as genetic deterioration in performance traits of the breed. The breed, once occupying pre eminent position in Indian farming throughout the entire rural households of North India for both draught power and milk production, isnow being gradually neglected and becoming economically non-remunerative because of intensive and more mechanized agriculture replacing draught animal power, shrinking grazing areas, over emphasis on crossbreeding with exotic cattle inheritance and emergence of buffalo as a commercial dairy animal. The authors emphasize the need to develop suitable strategies for planned genetic improvement and conservation programmes of the breed to resurrect it as an economical viable cattle breed for the posterity.

RESUME

Les transformations rapides des niveaux socio-économiques des populations, du profil écologique et du milieu agricole dans les caractéristiques de la race bovine Hariana révèle différents facteurs qui sont à 1'origine de la tendance à la diminution de la population, ainsi que de la détérioration génétique des performance de la race. Cette race occupait dans le passé une position importante dans le système agricole de la zone nord de l'Inde, aussi bien comme animal de trait que pour sa production de lait; actuellement, la race a perdu une grande partie de son importance et par conséquence n'est plus intéressante du point de vue économique à cause de l'agriculture intensive et plus mécanisée qui a remplacé les animaux de trait, la réduction des zones de pâturage, l'importance excessive du croisement avec des animaux exotiques et la tendance à utiliser le buffle comme animal pour la production de lait et dérivés Les auteurs soulignes la nécessité de développer des stratégies adaptées pour l'amélioration génétique et des programmes de conservation de la race pour lui assurer un futur intéressant du point de vue économique.

1.0 INTRODUCTION

The hariana is a prominent dual purpose cattle breed of North India. It has been exterisively used in grading up the non-descript cattle, particularly to improve their draughtability, in the almost entire Indo-Gangetic plains. The Hariana cattle, primarily reared for draught bullock power, were quite abundant in number in the not too distant past. However, over the years with increasingly intensive and mechanized agriculture, shrinking of per capita farm land holding and grazing areas, lack of planned breeding policies for indigenous cattle breed improvement and over emphasized c,ossbreeding programe, the Hariana cattle ‘ and many other indigenous cattle breeds consistently followed a declining trend in population as well as genetic deterioration in performance. lt is, therefore, logical to infer that at present, the Hariana cattle breed no longer occupies a place of eminence, in spite of possessing remarkable attributes such as a better thriving in harsh and semi arid environments, wide resistance to withstand endemic diseases and ability to subsist on impoverished local feed and fodder resources. Thus, there is utmost need to reverse the declining trends of population of breed as well as to refurbish the economically viable and remunerative ones. In this paper, information on socio-economic levels of the farmers/breeders as well as physical conditions of the native breeding tract, collected through conducting a survey, are collated to determine the present breed status of Hariana cattle in its native ecology.

2.0 NATIVE HABITAT QF THE BREED

The native breeding tract of Hariana cattle lies between 28^{o} 30' and 30° north latitude and 75° 45' and 76^{o} 80' east longitude. The area encompasses largely parts of Rohtak, Bhiwani, Sonepat, Jind and the Hisar districts of Haryana. the Jhajjar, Beri and Jahajgarh blocks of the Rohtak district had been quite famous for rearing a good number of purebred quality Hariana cattle and were leading trading centres particularly for Hariana bullocks. Besides the traditional breeding tract, the Hariana cattle also spread in the adjoining areas of the states of Punjab, Uttar Pradesh and Rajasthan (see map).

3.0 PLAN OF BREED SURVEY IN THE NATIVE HABITAT

Five random clusters each comprising of a minimum of 5 villages in the central breeding tract spreading over an area of about 5 000 sq.km were chosen for conducting the survey. A total of 7 929 rural households, spread over these elusters were surveyed. The information generated through a survey questionnaire pertaining to socio-economic and ecological profile of the tract i.e. size of land holding, family size, level of literacy, feed and fodder resources, contribution of men and women in animal husbandry, animal management practices as well as population distribution of farm animal genetic resources, were analyzed to determine tllt status of Hariana cattle in the tract.

4.0 SOCIO-ECONOMIC PROFILE OF RURAL HOUSEHOLDS

Of the total rural households surveyed, about 30 percent were landless and the remaining 70 percent had farmland holdings ranging upto 36.5 hectares. Amongst the farming households, the proportion of different categories of farmers were as follows:

Categories of Farmers	Land Holdings	Proportions
Marginal	Less than 1.0 ha	25.1 %
Small	1.0-2.0 ha	23.1%
Lower-medium	2.0-4.0 ha	14.1%
Upper-medium	4.0-8.0 ha	5.7%
Large More	han 8.0 ha	1.6%

The average land holding size per household was 1.52 hectares and nearly 55 percent of the cultivated land was irrigated. The major sources for irrigation were canals and electric tube-wells.

The average number of family members per household was 6.92. However, under a joint family system, a family with 40 members was also found. Nearly 27 percent of the total household members were literate. The rural household women were prominently involved in managing their cattle and buffalo herds. They are practically very well conversed with herd management practices particularly in feeding, milking and general cleanliness of the animals and their premises, whereas male members of the family looked after the breeding and health aspects of the animals and their marketing. Sale-purchase of animals was usually made directly among farmers in the village or nearby villages. Besides the cattle fairs/markets organized by State Animal Husbandry Departments, commission agents and local animal traders are also prominently dealing in the marketing of animals.

The majority of cattle owners (64.5%) reared cattle primarily for milk production, followed by the generation of animal draught power for agricultural operations. However, general belief of rearing cows only on religious sentiments belied, since very few (3.6‘%) households responded their rearing cattle on religious grounds alone. For breeding cows, the villages possessed common breeding bulls usually procured from Government cattle breeding organizations and charitable institutions. Practically none of the households maintained its own breeding bull for breeding cows. On the contrary, the Murrah buffalo which also predominantly share the common breeding tract with Hariana cattle, are primarily reared as dairy animals (94.4%) and male buffaloes are used both for draught and breeding purposes.

5.0 HERD MANAGEMENT PRACTICES

Intensive agriculture with increased auto-mechanization has reduced the role of draught animals substantially in the central breeding tract. As a result, permanent grazing and pasture lands have shrunk considerably. Only very little fallow land, area along canal embankments, roadsides and field bands provide area for animal grazing. This amount of grazing does not provide sufficient nutrients. So, the cattle and buffaloes are usually stall fed. Cattle and buffaloes are kept together under a closed housing system. On an average 54 percent of animal houses were pucca and well ventilated. Nearly three-quarters of animal houses have a kucha floor and without any drainage facilities. More than half of farmers (51.2%) kept their animals in sheds separate from their own dwellings and the remainder kept them within the vicinity of their own living premises. The majority of the progressive farmers housed the animals in pucca and well ventilated sheds preferably separate from their own living places. Hariana cows have a high level of motherly instinct, so the new born calves are usually unweaned. The calves suckle their mothers and gradually start feeding on green fodders and concentrates. Comon breeding bulls usually procured by village Panchayats from State Government organized cattle herds, charitable institutions and promising cow breeders from the region are used as breeding cows. In spite of a vast network of A.I. centres existing in the state, natural service is largely adopted for breeding Hariana cattle because of inadequate availability of frozen semen doses of progeny tested or good pedigreed purebred Hariana cattle bulls.

6.0 FEED AND FODDER RESOURCES

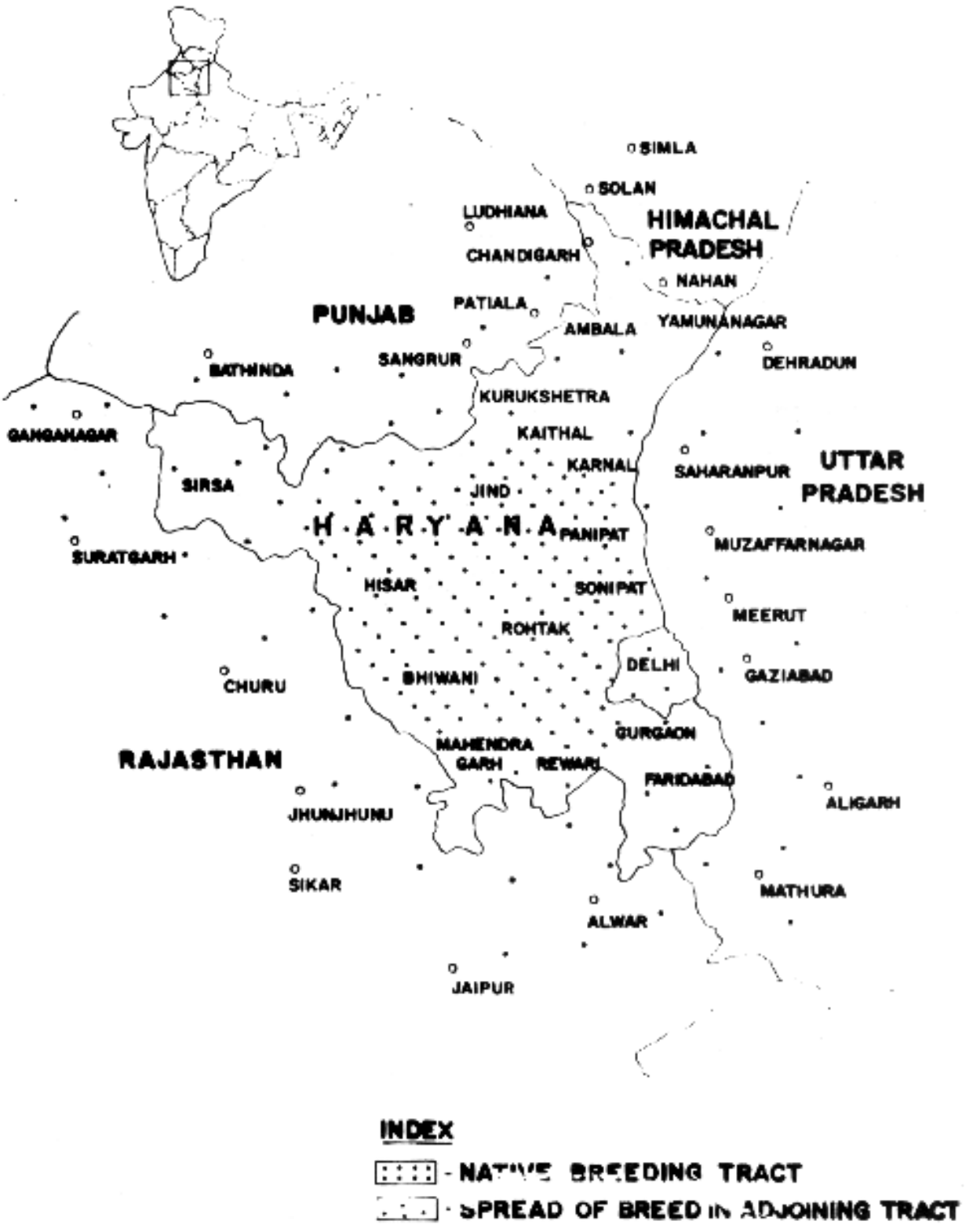
Nearly 5-10% area of cultivated land is used for growing fodder crops in the breeding tract. Berseem *(Trifolium alexandrium),* oats *(Avena sativa)* and mustard *(Brassica compestris)* as green fodder crops are grown in the winter season wherever irrigation facilities exist. Bajara *(Penniselum typhoides),* Jowar *(Sorghum* vulgare) and Guar *(Cyamopsis tetragandodra)* are the sumer season crops grown both for grain as well as fodder production. Local grasses and weeds

collected from the cultivated fields as fodder are also supplemented in animal feeding particularly by weaker sections of the rural society i.e. landless and marginal farmers. In general there is scarcity of green fodder round the year. Nearly 3/4 of responding farmers (73.9%) cultivate fodder crops for feeding their animals. The landless, marginal and small farmers usually feed animals by purchasing fodder from the medium and large farmers. Wheat straw (stored after Rabi harvest) and dry stalks of Bajara and Jowar are the main dry fodders for animal feeding. The majority of animal keepers (91%) feed chaffed green and dry fodders and for better palatability, the chaffed green fodder are mixed with dry fodder. Cattle owners often supplement concentrate feed ingredients i.e. wheat *(Triticum vulgare),* bajara, jowar, guar, methi *(Trigonella foenum graecum),* cotton seeds, oil seed cakes as well as comercially formulated balanced feeds, particularly to high yielding cows and elite working bullocks. The majority of the respondents (76.4^{a}/o) feed food grains after cooking followed by grains soaked in water (22.1%) and very few (1.5%) feed raw. The concentrate feeds are usually fed by mixing with wheat straw or chaffed dry fodders. Nearly one quarter of responding cattle owners feed concentrates at the time of milking. The cattle keepers generally do not give proper attention to feeding balanced rations to indigenous cattle and are quite ignorant as the optimum formulation of feed ingredients as well as mineral mixture etc.

7.0 LIVESTOCK POPULATION STRUCTURE

The total number of farm animals per 100 households in the survey area were estimated as 313. The buffaloes were the major component constituting 74.4% of the total farm animal population followed by cattle (15.4%), goats (3.2%), sheep (2.6%), camels (1.8%), equines (1.3%) and pigs (13%). Livestock distribution among different categories of farmer (Table 1) reveals that the number of cattle (34.2) and buffaloes (136.4) per 100 households possessed by landless respondents was minimum and the corresponding number of cattle (71.7) and buffaloes (426.0) was maximum with large farmers. Goats, sheep, horses and pigs were traditionally reared by landless farmers. Their number per hundred households were maximum amongst land less households followed by marginal farmers. Medium and large farmers usually do not rear these farm animal species. Camels were also possessed by different categories of the farming comunity for conducting agricultural operations particularly in the Bhiwani district and its adjoining areas.

Main breeding tract of Hariana cattle



A herd of Hariana Cattle

Hariana Bullocks ploughing the agriculture land

Traditionally cooked food grains for feeding

Stacks of wheat straw and dry stalks of bajara and jawar for animal feeding

TABLE 1:
Livestock distribution amongst different categories of farmers

Categories of farmers	No. of respondents	Cattle	Buffalo	Goat	Sheep	Camel	Equines	Pigs
Landless	2385	815	3252	757	644	26	218	278
		(34.2)	(136.4)	(31.7)	(27.0)	(l.l)	(9.1)	(11.7)
Marginal	1993	908	4416	32	-	70	112	20
		(45.6)	(221.6)	(1.6)		(3.5)	(5.6)	(1.0)
Small	1830	962	4857	4	-	175	2	11
		(52.6)	(265.4)	(0.2)		(9.6)	(O.1)	(0.6)
Lower-medium	1141	765	3589	9	1	135	1	-
		(67.0)	(314.5)	(0.8)	(0.09)	(11.8)	(0.09)	
Upper-medium	453	282	1789	2	-	27	1	-
		(62.2)	(394.5)	(0.4)		(6.0)	(0.2)	
Large	127	91	541	-	-	5	-	-
		(71.7)	(426.0)			(3.4)		
TOTAL	7929	3823	18444	804	645	438	334	309
	(313)	(48.2)	(232.6)	(10.1)	(8.1)	(5.5)	(4.2)	(3.9)

Figures in parenthesis are number of animals per 100 household.

A young calf suckling the mother cow

Buffaloes and cattle constitute nearly 83% and 17% of the total bovine population. The total cattle population comprised of the Hariana cattle breed (90.1 %) followed by crossbred cattle (5.1 %) and non-descript or other breeds (4.8%). Amongst the total buffaloes the proportion of Murrah, Nili Ravi and non-descript type were 84.6%, 1.8% and 13.6%, respectively. The distribution of Hariana cattle and Murrah buffalo followed an almost similar pattern to that of the total cattle and buffalo population in different categories of households. Different category of Hariana cattle were enumerated with the following proportions of the total Hariana cattle population (Table 2).

TABLE 2:
Proportions of total Hariana cattle population

Classes of Hariana population	Percentage
Lactating cows	26.9%
Female calves (0-1 yr)	14.8%
Male calves (0-1 yr)	12.8%
Heifers (1-3 yrs)	11.3%
Young bulls (1-3 yrs)	4.9%
Dry cows	13.1%
Bullocks	12.0%
Bulls	1.3%
Adult females not yet calved	2.8%

The lactating cows constitute more than a quarter of the total Hariana cattle population, followed by young female calves (14.8%) and dry cows (13.1%). The proportion of female calves up to 1 year of age was higher than that of male calves. However, the number of heifers (1-3 years) was more than double that of young males (1-3 years). A very small number of breeding bulls (1.3%) was kept by the farmers for breeding purpose.

8.0 CONCLUSIONS

The recently conducted breed survey on Hariana cattle in the native habitat revealed that the cattle breed once considered as a premier dual purpose breed, both for milk production and draughtability and almost reared free of cost through grazing on pasture lands, is now gradually slipping down from its prominent position because of intensive and mechanized agriculture, shrinking pasture land area, over-emphasis on crossbreeding and emergence of the buffalo as a dairy animal. Thus, with increasing costs of feeding, housing and managing the Hariana cattle under stall-fed conditions, declining utility of bullock draughtability and poor marketing of animals, were found to be responsible for overall neglect in rearing Hariana cattle by their traditional breeders. Thus, the need to develop strategies for planning programes on genetic improvement and conservation of the breed as well as to resurrect the Hariana cattle breed as an economically remunerative animal assumes considerable significance.