

Distribution and management practices of Shahabadi sheep in its breeding tract of Bihar*

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As per the livestock census 2003, sheep population in India is 61.47 million of which Bihar possesses 0.346 million sheep (Department of Animal Husbandry Dairying and Fisheries 2010). Though the population of sheep in Bihar appears to be less, the activity of sheep rearing is highly concentrated in 8 districts including Shahabad region of the State. Shahabadi is one among the 42 recognized breeds of sheep in India and the only sheep breed in Bihar. The breed is medium size, long tailed and mostly creamy but light grey colour with sporadic black patches in few animals. The improvement in the productivity of any breed of livestock has direct positive impact on the livelihood of the people in the region. Major part of individual's variation in performance is determined by environment in which the individual rears rather than the genotype alone it possesses. Without proper understanding of the environment in which a breed rears, it would be difficult to formulate any breeding strategy or improvement plan. Though Shahabadi breed of sheep plays a vital role in the economy of rearing community of Shahabad region, the information on distribution of the breed and the details on the environmental conditions of the breeding tract of Shahabadi sheep are lacking for the last 3 decades. Keeping these in mind, the present study was taken up to document the details on distribution of Shahabadi sheep, rearing environment of the breed, and the husbandry practices provided by the farmers to the Shahabadi sheep.

The distribution of Shahabadi sheep was studied by surveying 120 villages in 8 districts, viz. Patna, Bhojpur, Buxar, Kaimur, Rohtas, Aurangabad, Gaya and Jehanabad districts of Bihar. The list of villages possessing sheep rearing activity was collected from the Department of Animal

Husbandry of the respective district. The bordering villages were mostly chosen and visited to study the distribution of Shahabadi breed of sheep in those districts. A detailed questionnaire for studying demography of flocks, housing, feeding, breeding and health care practices adopted by the farmers for the Shahabadi breed of sheep was prepared based on breed descriptors for sheep designed by Food and Agricultural Organization (FAO 1986). A total of 105 flocks in the breeding tract, viz. 60 from Buxar, 30 from Rohtas and 15 from Bhojpur districts were randomly selected to study the flock size and structure, and rearing practices of Shahabadi sheep in the breeding tract. The collected data were pooled and subjected to basic statistical analysis.

Geographic and demographic distribution

As per the survey conducted, Shahabadi breed of sheep was distributed in the area approximately extended from 24°3' N to 25° 6' N at latitude and from 83° 2' E to 85° 2' E at longitude, which comprised Patna, Bhojpur, Buxar, Kaimur, Rohtas, Aurangabad, Gaya and Jehanabad districts of Bihar (Fig. 1). However, the sheep with distinct



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Fig. 1. Map of Bihar showing Shahabadi breeding tract.

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morphological features of Shahabadi characteristics were seen in Patna, Bhojpur, Buxar and in some parts of Rohtas district. In the remaining area of the breeding tract, the body size of the breed was comparatively smaller and there were extensive brown patches on the body. This may be due to admixture of Shahabadi breed with other types of sheep, may be with Chottanagpuri breed of sheep from Jharkhand State. Acharya (1982) reported that Shahabadi breed of sheep was distributed in Shahabad, Patna and Gaya districts of Bihar. The present investigation is also in agreement with the findings of Acharya (1982) as the remaining districts mentioned in the present study were carved out from the older districts in the later stages.

Among the 105 flocks surveyed in the breeding tract, the average flock size was 74 with 2 rams, 42 ewes, and 11 male and 19 female lambs. The range of flock size was varying from 23 to 326. The flock size of more than 40 and less than 100 comprised 78% of the total flocks surveyed. Generally the flocks, with the size of 50 and more, possessed at least one ram for breeding purpose. There were neither goats nor any other species of livestock with the flocks. The average flock size of Shahabadi sheep found in the present study was higher than the flock size reported for Mecheri sheep (Thiruvankadan *et al.* 2007), but lower than Coimbatore breed of sheep (Devendran *et al.* 2010). Generally, non-migratory flocks do not have higher flock size, which may be the reason for medium size flocks for Shahabadi sheep.

Population size

The estimated population of Shahabadi sheep based on the Livestock Census 2003 (Directorate of Economics and Statistics 2006) was 166418 (Table 1). This was 48% of total 3.46 lakh sheep population of Bihar, and was located in 8 districts in the Shahabadi breeding tract. Though the population appears to be normal, the biggest concern is 72% reduction in the population of Shahabadi sheep in 3 decadal duration as Acharya (1982) reported 0.596 million Shahabadi sheep in the year 1977.

Table 1. Estimated population of Shahabadi sheep from Livestock Census (2003)

District	Sheep population		
	Shahabadi	Other sheep	Total
Patna	17481	Nil	17481
Bhojpur	43553	Nil	43553
Buxar	20012	Nil	20012
Rohtas	17273	11516	28789
Kaimur	17765	11843	29608
Gaya	12580	5392	17972
Aurangabad	33303	14272	47575
Jehanabad	4451	Nil	4451
Total	166418	43023	209441

Housing for Shahabadi sheep

No proper housing was provided for Shahabadi sheep. The animals were generally housed in open pens during night (Fig. 2). No semi-open or closed types of pens were found in the breeding tract. Completely open type of houses were also reported in the studies on Ganjam breed of sheep in Eastern India (Nayak *et al.* 2008). However, Thiruvankadan *et al.* (2007) reported 2.7 and 2.4% of semi-open and closed type of housing, respectively, for Mecheri sheep.

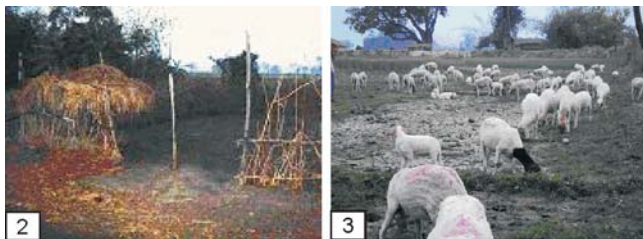
The open pens for Shahabadi sheep were generally made with bamboo sticks. They were mostly situated in the periphery of villages either in the farmer's own land or hired land. In case of hired land, the owner of the land was paid in terms of manure or one time money payment. During night, one adult male member of farmer's family stayed nearby the flocks or even inside the open pen where partition was made for the purpose. The flocks were offered little or no protection against rain during rainy season.

Feeding and grazing

Shahabadi sheep are maintained exclusively on grazing. Generally, 3 to 5 flocks joined together for grazing (Fig 3). The flocks were taken off from their enclosure at 9 O' clock in the morning and brought back around 6 O' clock in the evening after grazing. During the winter, the grazing time of 9 h was reduced to 7 to 8 h depending on the sunlight. The average distance travelled by these flocks are 6.3 km per day for grazing. Apart from grazing, Shahabadi sheep were fed with neither concentrates nor any feed supplements. Mostly the sheep grazed grasses, weeds and stubbles in the breeding tract. During April and May, especially after the harvest of wheat, the flocks were taken for extensive migration in order to avail the residuals remaining in the harvested fields for the sheep.

The kids were retained at the farmers' home in the daytime till 1 month of age. However, in the night, they were allowed with their dams along with other sheep in the flock. Up to 1 month of age, they were maintained with dam's milk and after that they were taken for grazing with the flocks. More or less similar feeding practices were observed by Nayak *et al.* (2008) for Ganjam breed of sheep in Odisha. However, the level of inputs with respect to feeding was better in Mecheri sheep as reported by Thiruvankadan *et al.* (2006), where concentrates and other supplements were sometimes provided to lactating ewes or for the purpose of fattening the ram lambs by selected farmers.

Some flocks (27%), especially in certain regions of Rohtas district, were following seasonal migration owing to severe flood in the area during rainy season. During the period, the flocks were taken by the farmers either to adjacent Buxar district or even some area of Uttar Pradesh. The farmers made temporary settlement in the migrated places for 3–4 months and returned back to the native residence after the end of rainy season.



Figs 2–3. 2. Shahabadi pen. 3. Shahabadi sheep grazing in the field.

Breeding practices

Random mating was followed without any restriction. The males for siring the next generation were chosen at 2 to 3 months stage in 87% flocks based on body size and physical activity. In rest of the flocks, males were selected around 6 months. The performance of dams for selection of males was not given due consideration by the farmers. Males were selected during 9 to 12 months of age for Coimbatore sheep as mentioned by Devendran *et al.* (2010). Selection of males during their earlier ages might be due to the fact that farmers were selling Shahabadi males with better economic returns before 6 months of age. The adult males were retained till 5 years of age for breeding and then disposed off. Rotation of adult males from other flocks for avoiding possible inbreeding was not practiced. Similar breeding management by the farmers was also observed by Suresh *et al.* (2008) for Muzaffarnagri breed of sheep.

Lambing occurred throughout the year though moderate peaks in number of lambings were observed during the months of July–August and March–April. This indicated that breeding in Shahabadi sheep happens throughout the year. Similar findings were reported by Dass (2008) for Pugal breed of sheep.

Health care management

Shahabadi sheep were dewormed with broad-spectrum antihelmintics by the farmers once in 6 months. No vaccination was carried out against any of the infectious diseases. Vaccination against the infectious diseases was reported in sheep belonging to the regions of northwestern and southern India (Thiruvankadan *et al.* 2007, Dass 2008, Suresh *et al.* 2008, Devendran 2010). The mortality reported by the sheep farmers in the Shahabadi breeding tract was moderate with 9% in adults and 16% in lambs. Similar trend of lamb mortality was also observed by Nayak *et al.* (2008) for Ganjam sheep and Devendran *et al.* (2010) for Coimbatore sheep. However, the incidence of mortality reported for Mecheri sheep in Tamil Nadu by Thiruvankadan *et al.* (2007) was much lower with 2.30% adult and 7.52% lamb mortality. Considering the management practices adopted by the farmers for Shahabadi sheep, the mortality percentage is not very high which indicated that the breed may be very hardy and resistant to various infectious diseases and well adapted in the breeding tract.

The Department of Animal Husbandry, Government of Bihar is making efforts to control the occurrence of diseases and check the mortality in sheep. The common ailments reported in the present study were gastrointestinal disorders (24%), internal and external parasitism (21%), pneumonia (16%), sheep pox (14%), foot-and-mouth disease (13%), blackquarter (9%) and others (3%). Mortality among lambs was very common during the winter due to cold, as they could not bear the extreme weather without adequate housing and proper management.

Shearing practices

Shahabadi sheep were the low producer of course type wool. The average greasy fleece weight produced by Shahabadi sheep found in the present study was 255 g/animal in 4 months. Wool was sheared by the farmers thrice in a year during March, July and November. However, the quantity of wool produced by Shahabadi sheep found in the present study was comparatively lesser than the wool produced by other sheep breeds of India in northwestern arid and semiarid region of the country as reported by Acharya (1982). For shearing the wool, the farmers were using locally made scissors. The sheared wool was sold to the local vendors available for this purpose.

Other management aspects

Though Shahabadi ewes were poor milk producers, they were milked till 2–3 months after lambing. The quantity of milk produced by Shahabadi ewes ranged between 50 to 100 ml. The milk from all Shahabadi ewes in a flock was pooled and ghee was generally prepared from this milk. It is believed that ghee prepared from the milk of Shahabadi sheep possesses properties to kindle the immune system of human being, and there is great demand for the ghee made from milk of Shahabadi sheep in the breeding tract. Ghee making was generally carried out either after the occurrence of mass lambing or whenever more ewes were in milk.

Income generation for Shahabadi farmers

The major source of income for farmers who rears Shahabadi sheep was through the sale of male lambs. The cost of Shahabadi male lambs at the marketing age of 5 to 6 months of age was around ₹ 2000. Farmers were also earning handsome money through sale of ewes and rams after their active reproductive life around ₹ 3000 and ₹ 5000 each respectively. Income through wool and ghee from Shahabadi sheep was also not negligible as the farmers were getting around ₹ 10/kg of wool and ₹ 1500/kg of ghee sold.

The study revealed that the breed survives in difficult environmental conditions under very low input system and the farmers hardly follow scientific practices in breeding, feeding, health care and shelter management. Day by day diminishing grazing land forces the farmers to look for other occupations rather than sheep rearing. It is the right time for

administrators and scientists to sit together to make appropriate plans to infuse scientific methods for improving the performance of Shahabadi sheep vis-à-vis improving the living standards of poor farmers. One of the solutions to make the betterment of the situation is the formation of Shahabadi Sheep Breeders Cooperative Society to extend technical assistance in breeding, feeding and health care management of Shahabadi breed of sheep. For breeding purpose, selected rams should be exchanged between the flocks. A suitable breeding strategy is needed for all round improvement and propagation of this breed.

SUMMARY

Shahabadi breed of sheep had vast distribution area, which comprised 8 districts including Shahabad region of Bihar. The estimated population size of Shahabadi sheep based on Livestock Census 2003 was 166 418. Among the 105 flocks surveyed in the breeding tract, the average flock size was 74 with 2 rams, 42 ewes, and 11 male and 19 female lambs. Farmers used open pens for housing Shahabadi sheep and the breed was exclusively maintained with grazing without providing any concentrates or feed supplements. Random mating was followed for breeding and most of the males for siring next generation were selected by farmers during 3 months of age. Lambing occurred throughout the year with moderate peaks from July-August and March-April. The mortality percentage in Shahabadi sheep found in the present study for adults and lambs were 9 and 16 respectively. Shearing was practiced thrice in a year and average greasy fleece weight produced by Shahabadi sheep was 255 g/animal in 4 months. The strategies for infusing scientific techniques in rearing Shahabadi sheep were discussed.

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REFERENCES

- Acharya R M. 1982. *Sheep and Goat Breeds of India*. FAO Animal Production and Health Paper 30, Food and Agriculture Organization of the United Nations, Rome.
- Dass G. 2008. Characterization and evaluation of Pugal sheep in the home tract. *Indian Journal of Animal Sciences* **78**: 501-04.
- Department of Animal Husbandry Dairying & Fisheries. 2010. *Basic Animal Husbandry Statistics*. Ministry of Agriculture, Govt. of India, Krishi Bhawan, New Delhi.
- Directorate of Economics and Statistics. 2006. *Bihar Statistical Handbook*. Department of Planning and Development, Directorate of Economics and Statistics, Govt. of Bihar.
- Devendran P, Kandasamy N, Panneerselvam S and Thiruvankadan A K. 2010. Rearing environment and husbandry practices of Coimbatore sheep. *Indian Journal of Animal Sciences* **80**: 470-72.
- FAO. 1986. Animal Genetic Resources Data Banks. 2. Descriptor lists for cattle, buffalo, pigs, sheep and goats. FAO Animal Production and Health Paper 59/2, Food and Agriculture Organization of the United Nations, Rome. Pp. 56-94.
- Nayak S, Sahu G and Mohapatra A K. 2008. Study on management practices, phenotypic and reproductive characteristics of Ganjam sheep under range conditions of Orissa. *SAARC Journal of Agriculture* **6**: 1-16
- Suresh A, Gupta D C and Mann J S. 2008. Farmers' management practices and economics of sheep farming in eastern semi-arid region of Rajasthan. *Indian Journal of Small Ruminants* **14**: 236-42.
- Thiruvankadan A K, Purushothaman M R, Karunanithi K and Gurmej Singh. 2007. Husbandry practices for Mecheri sheep in its breeding tract of Tamil Nadu. *Indian Journal of Animal Sciences* **77**: 489-93.