

Bakerwal Sheep:

Migratory breed of Jammu and Kashmir

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The nomadic tribe mainly Gujjar and Bakerwal rear this sheep breed and on their names, this breed is called as Bakerwal sheep. The breed has no distinct home tract, and is entirely migratory. In winters, they are found in the Pir Panjal ranges of the Jammu division especially in Rajouri and few in Udhampur, and in summer they migrate to the Kashmir Valley, crossing the high mountain passes. They are one of the best coarse carpet wool breed of Jammu and Kashmir. In order to increase the greasy-wool production and quality for apparel wool, this breed is crossed with exotic breeds like Merino and Rambouillet, due to which the population of breed has declined and this breed is at high risk of extinction.

Keywords: Bakerwal sheep, Bakerwal tribe, Jammu, Kashmir

INDIA possesses wide array of animal genetic resources, viz. multiple breeds/strains of Cattle, Buffalo, Sheep, Goat, Poultry, Camel, Equines, Yak, Mithun etc. Jammu and Kashmir possesses all possible resources required for rearing of sheep in terms of abundant pastures and favourable agro-climatic conditions. This makes sheep one of the most abundant species for rearing in this region which significantly contributes to the J&K's economy. The Gujjars and Bakerwals have adopted the sheep and goat rearing as their primary occupation from times immemorial and prefer to migrate in search of pastures to feed their livestock. J&K is having six main sheep breeds that are registered with the nodal agency of animal genetic resource and Bakerwal sheep is one among them. This breed plays an important role for the livelihood of the nomadic tribe mainly Gujjar and Bakerwals. The breed has no distinct home tract, and the sheep are entirely migratory. Most of this breed has now been crossed with Merino/Rambouillet in order to increase the



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production potential due to which the actual population of this breed has considerably declined.

Distribution and breeding tract

Distribution of native tract in terms of longitude and latitude extends between 32°58'–33°35' N and 70°4'–74°4' E. The geographical area of the breeding tract is about 2,630 sq. kms. During winters the sheep farmers of Bakerwal sheep reside mainly in Rajouri district and few in district Udhampur of Jammu province while in the summer they migrate to Kashmir valley. Bakerwal sheep is maintained by the farmers

without any scientific management and breeding practices on depleted pasture. The sheep is mainly reared by the people for mutton and wool production.

Breeding Management

Breeding method: Only natural flock mating in village flocks comprising of 150–200 or more animals was practiced in Bakerwal sheep. Normally one well grown ram lamb is put to about 30–40 ewes.

Breeding season: Major breeding season in Bakerwal sheep is in August–September months. The ewes are mostly bred during their

autumn alpine camps or while returning to villages on migration camps. Small flock owners do not have their own ram lamb for breeding and they borrow from other farmers. Lambing takes place mostly in the months of January and February before the flocks are taken for migration. The ewes are given full care during this period so that the lambs are healthy enough to accompany the dams in the migrating flocks. Artificial Insemination of ewes and castration of feedlot rams was not practiced by farmers.

Socio-economic status of the Sheep farmers

The family size of farmers rearing Bakerwal sheep ranges from 2–8 members. Only marginal farmers are considered responsible for rearing of Bakerwal sheep. There was no farmer having 100 or more kanals of land rearing Bakerwal sheep in the survey area of Rajouri. The population engaged with sheep rearing is mostly illiterate including 55% male and 45% females. A total of 70.86% of farmers belonged to middle age group between 40–59 years followed by young aged group 20–39 years (19.43%) and old aged group >60 years (4.71%). 2.43% farmers had livestock + labor as main occupation followed by 13.57% respondents who had crops + livestock as main occupation and 84% had livestock as their major occupation.

Physical traits of Bakerwal Sheep

Color: The predominant coat

color is white, spotted fawn or grey. The breeding rams are 90% white, while females with white coat are 95.80%. In females, 1.6% and 2.6% animals are of grey and spotted fawn color, respectively. The frequency of white with grey and spotted fawn spots in males is 3.45% and 6.55% and in females, it is 1% and 2% respectively.

Horns: The rams are horned and the ewes are polled. The horns are brown to creamy and curved.

Ears: The ears are long and drooping.

Wattles: There are no wattles in any sex of this breed.

Head: The Bakerwal sheep possesses broad and long face with convex nasal bridge.

Udder pattern: The females have medium sized udder with small conical teats.

Legs: Legs are short giving a low-set conformation.

Tail: Tail is small and thin.

Morphometric traits

Body weight: The body weight ranges from 40–51 kg in adult males and 29–35 kg in females.

Body length: The body length ranges from 44.02–68 cm in adult males and 43–66 cm in adult females.

Chest girth: The chest girth ranges from 76.80–89 cm in adult males and 76.80–90 cm in adult females.

Height at withers: The height at withers ranges from 53.50–67.25 cm in adult males and 53–67.60 cm in adult females.

Ear Length: The ear length ranges from 5.1–8.9 cm in adult males and 5.2–9.5 cm in adult females.

Tail Length : The tail length ranges from 0.09–11.07 cm in adult males and 7.20–10.01 cm in adult females.

Reproduction traits

Age at first mating: The age at first mating or first service was 15–26 and 19–27 months in male and female of Bakerwal sheep.

Age at first estrus: The age at first estrus in Bakerwal sheep ranges from 19–26 months.

Estrus cycle duration: The duration of estrus cycle was 21–24 days.

Estrus duration: The estrus duration was 22–30 hours.

Age at first lambing: The age at first lambing was 24–36 months.

Lambing interval: Lambing period of Bakerwal sheep was 12–15 months.

Litter size: The average litter size in Bakerwal sheep was 1.6 with 5–8 total number of lambs born per ewe.

Production traits

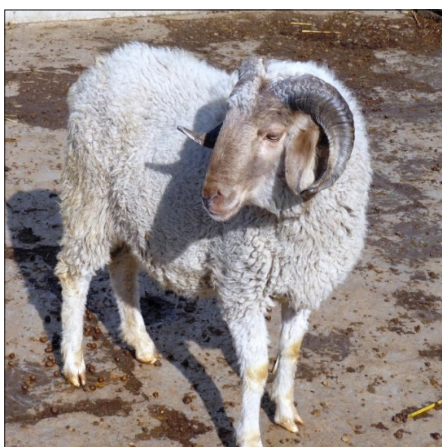
Wool traits: The overall percentage of clean wool yield of Bakerwal sheep was $75.14 \pm 0.23\%$. Males were having higher percentage of $77.47 \pm 0.17\%$ clean wool yield as compared to female $76.68 \pm 0.10\%$.

Fiber diameter: The overall fiber diameter of $35.99 \pm 0.13 \mu$ was found in Bakerwal sheep. Males were having higher fiber diameter of $34.37 \pm 0.18 \mu$ as compared to females $32.28 \pm 0.17 \mu$.

Staple length: The overall staple length of Bakerwal sheep was 4.95 ± 0.07 cm. Males were having higher



Interaction with farmers



Bakerwal sheep (Male)



Bakerwal sheep (Female)

staple length of 4.9 ± 0.14 cm as compared to females 3.95 ± 0.25 cm.

Number of crimps per centimeter: The overall estimate of 9.82 ± 0.18 number of crimps/cm was observed in Bakerwal sheep. The males were higher in estimate of 9.10 ± 0.10 number of crimps/cm as compared to females 8.98 ± 0.15 crimps/cm.

Medullation percentage: The overall medullation percentage of Bakerwal sheep was found to be $3.75 \pm 0.19\%$. Males were having higher medullation percentage of $4.85 \pm 0.11\%$ as compared to females $4.00 \pm 0.75\%$.

Carcass traits: The age at slaughter for males is 12–24 months and for females is 46–68 months. The weight at slaughter for male is 27 kg and for female is 34 kg while the carcass weight is 19 kg for male and 18 kg for female. The dressing percentage for male is 57% and for female is 59%.

Milk traits: The milk production on the 7th day is around 59–190 gm while on the 50th day it rises to around 80–250 gm. On an average, the milk production occurs for about 75–78 months.

Diseases and their management

Easily preventable diseases such as Foot and Mouth Disease (FMD), Foot rot, PPR and ecto-parasites among sheep are prevalent resulting in loss of performances, increased morbidities and mortalities. Vaccination and dosing are seldom carried out by the animal and sheep husbandry departments.

Sheep rearers are unaware of dipping and provision of salt licks. Provision of timely health cover, viz. dosing, vaccination, dipping and supplementation can mitigate most of the health problems observed in the area.

Housing

The Bakerwal sheep breed tract presents a unique feature, i.e. they are completely migratory flock. The Bakerwals migrate to Kashmir division during summers where they reside in tents and animals are flocked in open, surrounded by logs or temporary stone-wall in grazing camps migration. During grazing, they generally stay at collective camps or herding under open housing system for the flocks of one village. Their routes of migration, camp site and enclosures are more or less fixed and the flocks of a particular village can be traced easily. In winters, they migrate to different villages (Pir Panjal) of Rajouri district of Jammu where animals need proper housing. In villages, the sheep are housed in huts made of wood with kutchha flooring. Some farmers have small separate huts for housing 20–25 sheep near their houses, while others house them at the edge of their agricultural fields.

Future prospects

Bakerwal are a coarse carpet wool breed of sheep and have unique characteristics of adaptations to withstand harsh climatic conditions.

Most of this breed has now been crossed with Merino/Rambouillet for improving greasy-wool production and quality for apparel wool due to which the population of breed is declined and this breed is at high risk of extinction. Therefore, the conservation and further improvement of this precious breed is a priority of the sheep husbandry sector, otherwise the genetic constitution of this sheep breed will be on extinction track in future.

SUMMARY

The present study was carried out to collect and consolidate all the information available on Bakerwal sheep. They are medium-sized animals, with a typical Roman nose. The fleece which is coarse and open is generally white, although coloured fleeces are occasionally observed. The rams are horned and the ewes are polled. The horns were brown to creamy and curved. The adult weight of Bakerwal sheep ranges from 40–51 kg in males and 29–35 kg in females. These are seasonal breeders and the ewes are mostly bred during their autumn alpine camps or while returning to villages on migration camps.

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Jai Kisan, Jai Vigyan

- A total of ₹ 788.33 crores have been sanctioned for opening six new agricultural colleges for eastern India under Central Agricultural University, Imphal, and a new Central Agricultural University in Meghalaya.
- For the establishment of two new agricultural research institutes in Asom and Jharkhand, a sum ₹ 100 crores is allocated.
- First academic session of the Rani Lakshmbai Central Agricultural University has been allocated for four new agricultural colleges in Datiya and Jhansi.
- An Memorandum of Understanding was signed for transforming the Rajendra Central Agricultural University, Pusa, Samstipur, Bihar. A proposal of ₹ 400 crores is submitted in EFC.
- Post-Graduate Institute of Horticulture is being established in Amritsar, Punjab.
- Foundation stone of the Indian Institute of Agricultural Biotechnology is laid at Ranchi for promoting agricultural biotechnology.