



Evaluation of unidentified Koshir Goat, its strength, weaknesses, opportunities, challenges and utility: An overview

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ABSTRACT

Locally known as Koshir goat represents a distinct non-descript local livestock (goat) population valued by farmers for its unique adaptability and desirable traits. These goats display considerable variation in physical characteristics, along with promising productive and reproductive performance. On an average, they attain the age at first service at 9.10 months, exhibit a lactation length of 8.22 months, and the daily milk yield is approximately 1.5 kg. Despite their potential, the population remains under threat due to limited characterization, insufficient evaluation, and the absence of systematic conservation and breeding programs. To ensure sustainable management, it is essential to implement structured characterization, performance evaluation, and conservation strategies supported by improved breeding and balanced feeding practices. Comprehensive understanding of the breed's traits, current challenges, and development opportunities can guide stakeholders and policymakers in designing effective interventions. Strengthened conservation efforts will not only secure the genetic heritage of the Koshir goat but also enhance rural livelihoods and contribute to sustainable livestock production systems in the region.

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Introduction

In Kashmir, goat rearing is a vital activity, particularly for communities like Gujjars, Bakerwals, and Gaddis, who rely on it for their livelihood (Alam et al., 2021). The climate and pastures of this region support goat farming, with prominent goat genetic resources including the Bakarwal and Changthangi goats (Shanaz et al., 2020), as well as other genetic resources like the Koshir goat (Rather et al., 2022). The Gaddi goat, also known as the White Himalayan goat, is well-suited for the migratory lifestyle of the

Gaddi tribe in the Western temperate Himalayas, primarily found in Himachal Pradesh and also distributed in Jammu, Kashmir, and Uttarakhand (Paul et al., 2004). Goat rearing contributes substantially to the socio-economic empowerment of farmers by generating employment opportunities and producing valuable commodities such as meat, milk, and fibre. Among the goat genetic resources of the region, the Koshir goat is a medium-sized, multipurpose goat native to the Kashmir region of Jammu and Kashmir, which has been a vital

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component of the local livestock sector for centuries and has been present in Kashmir since times immemorial (Lawrence, 2002). This goat is well-known for its adaptability to challenging agro-climatic conditions, impressive milk and meat production, and remarkable disease resistance (Rather et al., 2020a), which holds immense potential for sustainable income for farmers. The Koshir goat's unique characteristics and traits have been shaped by its evolution in the harsh Himalayan environment, making it an invaluable asset for the region's agricultural economy. With a promising historical background and cultural significance, this goat has been an integral part of the traditional farming systems in Jammu and Kashmir. Its milk is considered a delicious drink, and the tea made from it is preferred by farmers. The adaptability of this breed to the local environment, low input requirements, and high productivity make it an attractive option for small-scale farmers (Rather et al., 2022). This review aims to provide an in-depth understanding of the Koshir goat's strengths, weaknesses, opportunities, and threats (SWOT) and to explore its potential for sustainable agricultural income and rural development. By highlighting the breed's unique characteristics and challenges, we hope to attract researchers, policymakers, and development agencies for its conservation and further development, ultimately contributing to the livelihoods of small-scale farmers/breeders and their economy.

Physical characteristics:

The Koshir goat exhibits a wide range of physical characteristics, reflecting its genetic diversity. Coat colors vary, with brown (26.88%), black (24.73%), white (15.05%), and spotted/mixed colors being most common (Rather, 2024). Key features include a predominantly convex nasal bridge (80.65%), flat, pointed, triangular horns that curve upwards and backwards, and broad, droopy ears (78.49%) (Rather et al., 2019; Rather, 2024). The average greasy and clean hair weights are 0.74 ± 0.07 g and 0.59 ± 0.10 g, respectively. The staple length is 5.23 ± 0.16 cm,

fibre diameter is 53.84 ± 0.87 µm, and medullation percentage is 93.28 ± 0.50 %. Some individuals are polled (9.68%), 21.51% have rudimentary ears, and around 35.75% have beards (Rather et al., 2019; 2024). Muzzle color typically matches the coat, while hooves are consistently black or brown. These traits contribute to the breed's unique visual appeal and adaptability to the challenging terrain of the Kashmir region, highlighting the need for conservation and improvement efforts (Rather, 2024). The fibre type is hair, with a mixed colour.

Distribution, management practices and utility:

The Kashmiri (Koshir) goat is found in the hilly regions of several districts in Kashmir region which includes Anantnag, Shopian, Kulgam, Budgam, Baramullah, and Kupwara (Anonymous. 2004; Rather et al., 2020). These goats are typically reared in a mixed crop-livestock farming system, combining grazing and stall feeding. During winter, they are primarily stall-fed and housed indoors for protection from harsh weather, wild animals, and theft (Rather et al., 2019). Their diet consists of various fodders, including paddy straw, oats, and natural grasses, supplemented with concentrate like maize and wheat bran during winter. Farmers prioritize health management through vaccination and parasite control measures. Manure from goat dung is used as fertilizer, contributing to sustainable agriculture. Most farmers maintain small herds, primarily for milk production, and sell surplus animals for meat. However, despite their knowledge of health management, farmers lack awareness of balanced feeding practices and mineral supplementation, highlighting the need for education and training to improve Koshir goat management and productivity (Rather et al., 2019). Koshir goat breeding typically involves random natural mating, often using inferior young males (Rather et al., 2020 a). This practice stems from the fact that high-quality male goats are frequently sold for meat at a young age, leaving only lower-quality males available for breeding (Rather et al., 2024).

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Fig 1. Kids of Koshir goat



Fig 2. Adult doe



Fig 3 Adult Buck

Morphometric traits:

The morpho-metric traits of Koshir goats, as reported by Rather et al. (2024), include ear length (13.56 ± 0.86 cm), ear width (9.47 ± 2.23 cm), body length (55.50 ± 0.99 cm), height at withers (65.41 ± 1.55 cm), chest girth (70.87 ± 1.50 cm), body weight (38.15 ± 1.85 kg), tail length (13.04 ± 0.36 cm), and horn length (12.31 ± 0.71 cm). These traits provide valuable insights to the breed's characteristics and can provide traits for selection criteria for future breeding and improvement programs (Islam et al., 1991; Rather et al., 2024). The Koshir goat's morphometric traits fall within the reported ranges for Himalayan goat genetic resources, indicating conformity to the regional type. Notably, Purgi is the smallest and Bakerwal is the largest among the goat genetic resources (Alam et al., 2019; 2021a; 2021b; 2023). Also, rather et al (2025) reported that the biometric traits this goat possess varying levels of variability, with body weight (BW) exhibiting the highest coefficient of variation (37.30%). However, chest girth (CG, 10.27%) and body length (BL, 14.22%) showed relatively low CV, suggesting consistency in these traits. Ear length (EL, 34.68%) and ear width (EW, 28.65%) were more variable. These findings are comparable to other Indian goat breeds (Khargharia, 2015). The high variability in BW suggests it's a key trait for selection programs.

Growth traits:

The birth weight of Koshir goat averages 2.49 ± 0.98 kg, with slight variation between female kids (2.45 ± 1.07 kg) and male kids (2.52 ± 1.29 kg), reflecting prenatal growth rate, genetic potential, and dam's nutritional and health status (Rathar et al., 2021). Growth traits include: 7.25 ± 1.12 kg at 3 months, 12.50 ± 4.11 kg at 6 months, 17.95 ± 1.20 kg at 12 months, and

33.39 ± 2.06 kg at 24 months on an (Rather et al., 2020 a). The males generally weighing more than the females at each stage and at the age of more than 24 months the male's average is 35.00 ± 10.07 kg, as all males are typically sold for meat purposes. Comparing body weight traits of Koshir goat with those of other goat genetic resources it is observed that it is of medium conformity.

Reproductive and productive performance of Koshir goat:

Koshir goats exhibit distinct reproductive and productive traits, with an average age at first service are 9.10 ± 0.28 months and first kidding at 15.26 ± 0.38 months (Rather et al., 2020 a). The inter-kidding period averages 9.33 ± 0.25 months, with a litter size of 1-2 kids, and 46.6% of births resulting in twins (Rather et al., 2020 a). Their lactation period lasts for 8.22 ± 0.22 months, with a daily milk yield of 1.50 ± 0.10 kg (Rather et al., 2020 a), highlighting the potential for a profitable goat dairy industry. Additionally, goat droppings serve as valuable organic fertilizer for paddy fields and orchards as it is a rich natural fertilizer.

Diseases incidence:

Kashmiri (Koshir) goats face various health concerns, including reproductive issues like dystocia, abortions, mastitis, nutritional deficiencies, parasitic infestations, and infectious diseases such as foot-rot and contagious, Neurological disorders, respiratory and liver disorder, and toxicity affect these goats (Rather et al., 2024).

Risk status:

This goat is at high risk due to its unprotected status, lacking breed registration and conservation efforts. With no improvement

programs in place, the population is vulnerable to potential loss and erosion. Furthermore, the importation of Alpine goats by the Sheep Husbandry Department Kashmir during 2026–2027, coupled with ongoing up gradation programs, risks the irreversible loss of this valuable genetic resource (Anonymous 2026).

Strengths:

In the rugged Himalayan region, a remarkable goat population has been evolved to thrive in the challenging agro-climatic conditions. The Koshir goats are a hardy and resilient animal that has adapted to the harsh climate and rugged landscape, making it an ideal choice for the region (Rather et al., 2020). With its significant milk and meat production potential, the Koshir goat boasts an average daily milk yield of 1.50 ± 0.10 kg and superior growth rates, making it a valuable asset for dairy and meat production and can be recommended as dairy goat animals, a new opening in livestock production system of Kashmir region. Its moderate disease resistance is also a notable strength, reducing the use of antibiotics and other chemicals, and having natural immunity to many diseases as reported by the farmers based on experience of the breeds over centuries and make fit this population of goat in the challenging Himalayan environment.

The Koshir goat's rich genetic diversity and unique characteristics make it a valuable genetic resource as future animal in the region breeding programs. Goat milk offers a unique combination of nutritional with therapeutic benefits, making it a valuable option as an alternate to cow milk in the region. The milk traits of Koshir goats indicate a moderate milk production potential. The average daily milk yield is 1.21 ± 0.10 kg (range 0.5–2.6 kg), with a lactation yield of 207.27 ± 1.89 kg over a period of 147 ± 1.32 days. The milk composition shows a fat percentage of $4.01 \pm 0.05\%$ and SNF (Solids-Not-Fat) of $8.6 \pm 0.98\%$. These traits suggest that Koshir goats could be a valuable source of milk, particularly for local communities. However, further research is needed to improve milk yield and consistency Its fat composition is distinct, with a higher concentration of medium-chain fatty acids (MCFAs) that are easily broken down due to their low molecular weight, water solubility, and digestive enzyme activity (Gallier et al., 2020). This property allows goat milk to provide direct energy without depositing in

adipose tissues, making it a treatment option for conditions like infant malnutrition, intestinal resection, and coronary disease (Prosser, 2021; Mehra et al., 2021).

Goat milk is a nutrient-rich source, containing about 1.2g calcium and 1g phosphate per L (Jenness, 1980). The casein composition of goat milk is unique, with beta-casein being the major component (Mehra et al., 2021). The nutritional benefits of goat milk are well-documented, with its smaller fat globules making it easier to digest for individuals with lactose intolerance or cow milk allergies (Getaneh et al., 2016). Goat milk is rich in essential vitamins and minerals like calcium, potassium, vitamin A, and copper, boasting higher protein content and more vitamin A than cow milk (Nipane et al., 2023). Goat milk may also help to manage specific conditions like gastrointestinal issues, asthma, and eczema, while being a more sustainable option for milk production (Getaneh et al., 2016). Its unique properties make it an excellent substitute for those who suffer from cow milk allergies or intolerances, gall stones etc (Roy 2006). The natural homogenization process in goat milk avoids the potential risks associated with mechanically homogenized cow milk (Park and Haenlein. 2006). The high calcium and phosphate content in goat milk make it a valuable option for infants, as human milk contains significantly less of these essential minerals. The soft curd of goat milk may also be advantageous for adults suffering from gastrointestinal disturbances and ulcers. Goat milk has been recommended as a substitute for patients allergic to cow milk, with 40–100% of patients showing tolerance. The presence of Medium Chain Triglycerides (MCTs) in goat milk has been recognized for their unique health benefits, including treating mal-absorption syndromes and inhibiting cholesterol deposition (Slacanac et al., 2010). High buffering capacity of goat milk appears to be useful for treatment of gastric ulcers (Park 1994). Goat milk is a rich source of biorganic sodium, a vital component that plays a crucial role in maintaining digestive health. Biorganic sodium is essential for the production of stomach enzymes, and its deficiency can lead to digestive disturbances, such as bloating and ulcers. Arthritis is also thought to be linked to a lack of biorganic sodium, highlighting the importance of this mineral in overall health (Getaneh et al.,

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2016).The Koshir goat excels due to its exceptionally early sexual maturity and high reproductive rate, often giving birth to twins and triplets, which is a significant benefit for breeders (Rather et al., 2020 a).

Weaknesses:

The Koshir goat, a unique and valuable genetic resource faces significant threats to its survival. The lack of protection, registration, and conservation efforts has put these goats at risk of erosion. Small flock size and random natural mating practices (Rather et al., 2020 a), using inferior young males, further exacerbate the issue. Additionally, the premature sale of high-quality males and limited knowledge among breeders about balanced feeding practices and mineral supplementation contribute to these goat's vulnerability. The absence of a conservation policy for the Koshir goat in the Union Territory (UT) only adds to the concerns, highlighting the urgent need for measures to preserve this valuable genetic asset in the region (Rather et al., 2020 a).

Opportunities:

The Koshir goat's potential for sustainable agriculture and rural development can be leveraged to promote eco-friendly farming practices and contribute to a more resilient and sustainable food system. Its adaptability and productivity make it an imported and ideal livestock resource for small-scale farmers/breeders. The increasing popularity of goat milk and meat presents an opportunity for the Koshir goats to capitalize on its impressive milk and meat production. This growing demand can be met by promoting these goats and improving its productivity. Establishing conservation and breeding programs can also help conserve the breeds of unique characteristics and genetic traits, ensuring its long-term viability.

Threats:

The genetic diversity of this goat is under threat due to insufficient research studies, developmental approaches, conservation efforts, and breed registration. The absence of structured breeding programs for this valuable goat genetic resource increases the risk of inbreeding, potentially compromising their productivity and adaptability (Rather et al., 2024). Ironically, the introduction of artificial

insemination using imported breeds (Wani et al., 2023; Ahanger, et al., 2024) may accelerate the breed's decline, potentially leading to the loss of its unique genetic characteristics and even extinction. This highlights the importance of careful management, a planned breeding policy, and conservation of this genetic resource to ensure its long-term survival, ultimately benefiting the breeder community, socio-cultural status, and sustainable goat production for continued income generation.

Conclusion and Recommendations:

The Koshir goat, a precious genetic treasure of Jammu and Kashmir, encompass a remarkable adaptability and dairy potential, yet faces existential threats from unplanned breeding and lack of conservation efforts. To safeguard this invaluable resource, we advocate for the implementation of structured breeding programs and the formulation of a comprehensive conservation policy. Concerted research endeavors are imperative to augment productivity and harness the Koshir goat's potential for sustainable agriculture, thereby ensuring the continuation of its unique genetic lineage for posterity.

References:

- Ahanger SA, Wani UY, Rather MA, Khan SA, Magray SN (2024). Artificial insemination: A new horizon for scientific goat breeding in kashmir's backyard farming sector. *Bhartiya Krishi Anusandhan Patrika*. 39:340-1.
- Alam S, Kaur G, Ahmad GN (2019). Purgi-An unidentified goat breed of Kargil. *Indian Farming*. 69:45-47.
- Alam S, Kaur J, Rather MA, Shanaz S, Mir S, Shah R, Hamdani A. (2021). Socio-economic and management features of Purgi goat and their contribution in rural livelihood security. *The Pharma Innovation Journal*. 10: 2021:1195.
- Alam S, Rather MA, Nabi N, Kaur G, Shanaz S, Ahmad N, Ahmad T, Ahmad S, Hamadani A (2023). Socio-economic and phenotypic parameters of Purgi goats of Ladakh, India. *The Indian Journal of Animal Sciences*. 93:105-111.
- Alam S, Rather MA, Nabi N, Kaur G, Shanaz S, Ahmad N, Ahmad T, Ahmad MS, Hamadani

- A (2021). Growth Performance of Purgi Goats under Field Conditions in Kargil District (Ladakh). *Asian Journal of Dairy and Food Research*. 43(3):590-593.
- Anonymous. 2004. Directorate of Sheep Husbandry Kashmir division, Government of Jammu and Kashmir. <http://jksheephusbandrykashmir.net/sheep.html>.
- Gallier S, Tolenaars L, Prosser C (2020). Whole goat milk as a source of fat and milk fat globule membrane in infant formula. *Nutrients*. 13:3486.
- Getaneh G, Mebrat A, Wubie A, Kendie H (2016). Review on goat milk composition and its nutritive value. *Journal of Nutrition and Health Sciences*. 3:1-0.
- Jenness R (1980) Composition and characteristics of goat milk: review 1968–1979. *Journal of Dairy Science*. 63:1605-30.
- Khargharia G, Kadirvel G, Kumar S, Doley S, Bharti PK, Das M (2015). Principal component analysis of morphological traits of Assam Hill goat in Eastern Himalayan India. *JAPS. Journal of Animal and Plant Sciences*. 25:1251-1258
- Malau-Aduli BS, Eduvie IO, Lakpini CAM, Malau-Aduli AEO (2001). Effects of supplementation on the milk yield of Red Sokoto does. *Proceedings of the 26th Annual Conference of Nigerian Society for Animal Production*, 353-6.
- Mehra R, Sangwan K Garhwal R (2021). Composition and Therapeutic Applications of Goat Milk and Colostrum. *Journal Dairy Science Technology* 10: 1-7.
- Morgan D, Gunneberg C, Gunnell D, Healing TD and Lamerton S (2012) Medicinal properties of goat milk *Journal of Dairy Goat* 90: 1.
- Nipane SF, Roupesh G, Kawitkar SB, Dhok AP, Jawale MR, Chopde SV and Lende SR (2023) Nutritional Strategy in Goat *Indian Journal of Livestock and Veterinary Research*, 3(1).
- Park YW (1994). Hypo-allergenic and therapeutic significance of goat milk *Small Rumi Res* 14: 151-9.
- Park YW and Haenlein GFW (2006). Therapeutic and hypoallergenic values of goat milk and implication of food allergy In YW Park and GFW Haenlein (eds):
- Paul S, Garg S, Grover E (2004). Gaddi goat hair fibre. *Asian Textile Journal*. 6: 96-101
- Prosser CG (2021). Compositional and functional characteristics of goat milk and relevance as a base for infant formula *Journal of Food Science*. 86: 257 265.
- Rathar MA, Alam S, Shanaz S, Khan NN, Majid R Ahmad T, Hamdani A (2021). Zoo-technical characteristics of Kashmir goat. *Indian Farming*. 71:19-22.
- Rather MA, Alam S, Shanaz S, Sarma O (2024). Kashmir goat, an unexplored goat genetic resource of Jammu and Kashmir. *The science world*. 4: 3920-3943.
- Rather MA, Sarma O, Shahnaz S, Barwal RS, Hamadani A (2025). Multivariate principal component analysis of morphometric traits in Kashmir goat. *SKUAST Journal of Research*. 27: 596-602.
- Rather MA, Bashir I, Shahnaz S, Alam S, Shah R, Hamdani A, Ahanger A, Mir S A (2022). Prediction of Body Weight from Linear Body Measurements in Kashmiri (Kashir) Goat. *Bhartiya Krishi Anusandhan Patrika*. 37:281-284.
- Rather MA, Hamdani A, Ayaz A, Shanaz S, Mir SA and Nabi N (2020 a) Morphological, phenotypic, performance traits of nondescript goats in Budgam district of Kashmir *Ruminant Science*. 8: 137-140.
- Rather MA, Kuthu BA, Shanaz S, Shah M M, Ahanger SA and Baba M A (2020 b). A brief Overview of Goat Rearing in Jammu and Kashmir. *Indian Farmer*. 7: 368-372.
- Rather, MA, Bukhari S, Shanaz S, Alam S, Mir SA, Hamdani, A (2022). Bakerwal goat: The robust goat breed of Jammu and Kashmir. *The Science World a Monthly E Magazine*. 2: 300–307.
- Roy SK; Vadodaria VP (2006). Goat Milk and Its Importance. *Indian Dairyman*. 58: 65-9.
- Sarma O, Rather MA and Shanaz S (2024). Morphological, Phenotypic and Performance Traits of Bakarwal Goats in Poonch District of Jammu and Kashmir. *Biological Forum – An International Journal*. 16: 198-202.

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Shanaz S, Firdous S, Alam A, Nusrat (2020). Changthangi: The pride of Jammu and Kashmir .Indian Farming. 70: 38-40.

Slacanac V, Bozanic R, Hardi J, Rezessy J, Lucan M, Krstanovic V (2010). Nutritional and therapeutic value of Fermented caprine milk. International Journal of Dairy Technology. 63: 171-189.

Wani UY, Ahanger AA, Khan SA, Rather MA, Magray SM, Baba JA. Shah MM (2023). Artificial insemination in backyard goat farming: A new prospect for scientific Goat breeding in changing scenario of Kashmir. The Pharma Innovation Journal. 12: 1010-1012.