

# The Pivotal Role of Indigenous Dairy Breeds in Sustainable Dairying in India

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Indigenous milch breeds of cattle and buffalo include Gir, Sahiwal, Red Sindhi, Tharparkar, Murrah, and Surti. These animals have adapted over generations to various climates found throughout the country; they have characteristics like heat tolerance, disease resistance, and efficient use of nutrients, which makes them suited to local production systems. These indigenous breeds of cattle and buffalo add to the genetic diversity of the country's dairy livestock population. Genetic diversity is essential to the resilience and long-term sustainability of dairy farming systems because it offers a genetic resource that can be used to adapt to shifting environmental conditions, emerging diseases, and changing consumer preferences. Although native breeds do not always yield as much milk as exotic breeds, they frequently demonstrate greater efficiency in turning locally available feed sources into milk. This characteristic is especially helpful in areas with limited resources when access to high-quality feed may be limited.

Indigenous dairy farming practices often include a strong heritage of culture and traditional knowledge base. The resilience and cultural sustainability of rural communities are enhanced by the preservation of sustainable farming practices that are tailored to the specific requirements of the area through the conservation and promotion of native cattle and buffalo breeds. Millions of smallholder farmers have access to opportunities for a living, thanks to indigenous breeds, particularly in rural areas where agriculture serves as the main source of revenue. These breeds are ideal for small-scale, family-run farming operations because they preserve regional genetic resources while enabling farmers to profit financially from milk production. Compared to exotic breeds, native milch breeds usually well suited to the local environmental conditions such as less inputs like feed, water, and veterinary care. By encouraging sustainable resource usage and lowering the

ecological imprint of dairy production, this aids in environmental conservation efforts.

Cattle, buffaloes and goats that are raised on an extensive system of management are frequently allowed to graze on marginal areas that are unsuitable for intensive farming. These lands might not be very fertile, have scarcity of water, or be not suitable for growing crops. Extensive livestock production systems maximise land use efficiency and support sustainable land management practices by using these lands for grazing. Indigenous livestock breeds are better at converting locally available feed resources, including grasses, shrubs, and crop residues, into milk, meat, and other livestock products. Extensive system of management production systems mostly rely on naturally occurring forage supplies, which minimises the demand for commercial feed and the amount of cultivated land needed for feed production. They require lesser inputs leading to lower production costs and improved resource use efficiency. Particularly in rural and remote locations with adverse geographical conditions, grazing animals contributes to the preservation of natural habitats, biodiversity promotion, soil erosion prevention, and ecological balance.

The existence of variety in species and breeds in the livestock population helps mitigate risks associated with outbreaks of diseases, and fluctuations in the market of livestock products. If one species or breed is adversely affected by a particular stressor due to environment, others may remain resilient, ensuring continued productivity and stability in the production system. Different species and breeds within extensive systems have varying dietary preferences in grazing and forage utilisation patterns. This diversity becomes crucial and paves the way for more efficient utilisation of available feed resources, as animals with different grazing behaviours can exploit a wider range of vegetation types and nutrient sources. This reduces competition for feed resources and enhances overall resource use efficiency. Different species and breeds

within extensive systems may exhibit varying degrees of adaptation to local environmental conditions, such as climate, terrain, and available forage resources. This diversity allows farmers to select animals that are more suited to their specific production environment, reducing the need for external inputs and management interventions.

India being the home of immense domestic animal diversity and these different species and breeds may exhibit varying degrees of adaptation to local environmental conditions such as climate, terrain, and available forage resources. Genetic diversity allows for the selection of animals with traits that are better suited to specific production environments, increasing the resilience of the production system to environmental fluctuations and stressors. Genetic diversity within the livestock population can enhance resistance to diseases and

parasites. Some breeds may carry genetic traits that confer resistance or tolerance to specific pathogens, reducing the risk of disease outbreaks and the need for intensive veterinary interventions. This contributes to the overall health and welfare of the animals and reduces reliance on pharmaceutical inputs.

Due to their capacity to adapt to local settings, preserve traditional knowledge, encourage economic empowerment, and contribute to genetic diversity, indigenous milch breeds are essential to India's sustainable dairy production. They also improve environmental sustainability. While preserving priceless genetic resources for future generations, incorporating these breeds into dairy farming systems can improve productivity, foster resilience, and sustain the way of life, especially in rural communities.

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