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## Sustainable utilization of non-descript goat populations of Southern Odisha

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### Abstract

Smallholder farmers in rural areas depend heavily on goats for their food security and economic well-being, and women are crucial to goat rearing, which fosters family economic prosperity. Non-descript goat populations have great value because of their adaptability to climatic change and ease of management. However, a barrier to the sustainable use and breed development of these goats in southern Odisha continues to be the lack of emphasis on accurate breed characterization. This can be overcome by establishing a correct link between the market and production, implementing practical regional and national agricultural policies, implementing community breeding programs, by cooperating on regional research projects, and receiving constant government assistance. This article's goal is to present insights into different strategies for the preservation, growth, and sustainable use of native goats in the Southern Odisha region.

**Keywords:** Southern Odisha, non-descript goat, sustainable utilization

### 1. Introduction

Since there are few inputs, inadequate infrastructure, unclear marketing channels, and several breeding goals, goat production in this system is relatively low. In India, total goat population is 148.88 million contributing 27.80% among whole livestock. (20<sup>th</sup> livestock census). There are around 64 lakh goats in Odisha with Ganjam as the only registered breed with around 4 lakh heads (20<sup>th</sup> livestock census). The rest are lesser-known goat population like Ghumusari, Malkangiri and Narayanpatna or other nondescript populations. The goat farmers in this part of India are less resourceful, mostly tribes and socially backward communities. The proportion of identified indigenous breeds along with lesser known ones to the total population in goats has been reported as around 25% in India with a negligible proportion as crossbreds. The condition in Odisha is still poor. Many non-descript goat populations with unique qualities of high fecundity and quality meat, which is the result of thousand years of selection, evolution, and development in the process of domestication suiting to local agro-climatic conditions have been contributing to the livelihood of the stakeholders for generations. The farmers' continued practice of random crossbreeding and breed replacement, which has a detrimental effect on the genetic resources of the current population of non-descript goats, was the most worrying reason.



Malkangiri goat population



Ghumusari goat population



Non-descript goats and their habitual grazing behaviour

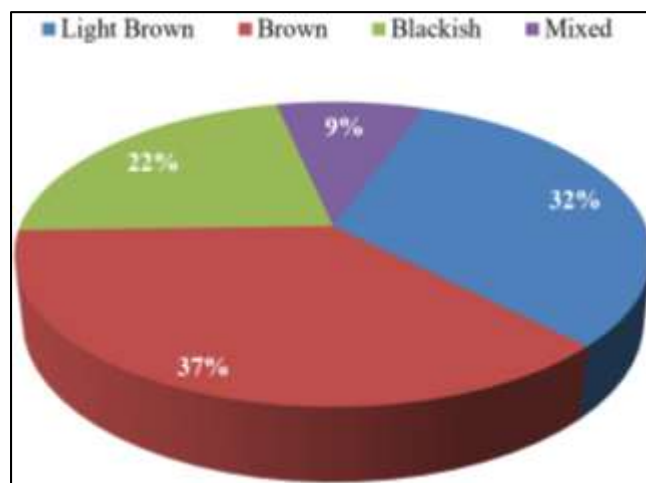


Narayanpatna goat population

**Fig 1:** Non-descript goat population of Southern Odisha region.

**2. Characterization of Non-descript Goats**

Phenotypic characterization is the initial step in documenting the qualitative and quantitative characteristics of the nondescript goats. While showing comparable phenotypic traits, goats in the area are locally named after various ethnic names and physical settings. They can range in size from tiny to medium and are typically multi-colored, horned, and short-haired. Environmental factors accounted for the majority of differences found in phenotypic characterization studies.



**Fig 2:** Coat colour of these goat populations

**3. Sustainable Utilization**

Effective conservation, breed improvement, management, and marketing depend on the sustainable use of non-descript goats. This calls for in-depth knowledge of breed identification, peculiar eccentricities, and habitats. Characterization studies can be used to obtain this information. Studies on production systems, phenotypic characterization, and genetic characterization have all been done in Odisha (Dash *et al.* 2015) [9]. In many countries across the region, efforts have been undertaken to preserve non-descript goats as purebred flocks. Governments, non-governmental organizations (NGOs), markets, and development organizations still advocate for the population of non-descript goats. It is crucial that researchers, decision-makers, and extension personnel adjust how they view traditional goat caretakers and their breeds. These are mainly meat purpose goat, that's why they are economically feasible. Growth traits of goats directly effect economic potentiality of poor farmers. Body weight determines the price of the goat. In India, goat meat constituted 13.53 percent of the total annual meat production, in 2017-18 (Anonymous, 2019) [2].

**3.1 Marketing of goat products**

These goats' special qualities make them valuable in agrotourism, as local and foreign visitors come to communities where they are housed for viewing, photography, and exploration. Market profiles should be accurate, and production goals should reflect that. As it will assist in commercializing the small ruminant industry and in transforming farmers' mindsets to be market-oriented, this should be continuous and sustainable.

**3.2 Gender Aspects and Marginalized Groups in Goat Production**

Women are essential to the goat industry's value chains since they provide the majority of the labor, which is more important for raising goats than other animals. The economic/financial, social, and institutional restrictions that women experience are larger than those that males do, which can have an impact on their participation in goat value chains and the advantages that can be achieved from them.

**3.3 Future Research and Development**

Future research could focus on the following areas to improve the management, use, and conservation of non-descript goats:

(1) Assessment of the goat population's risk status to determine whether or not a conservation program is required. In order to learn more about the goat population's genetic distinctiveness and adaptive features, demographic data gathering should be implemented throughout the region. These can be discovered by conducting breed surveys, using experience from prior censuses or surveys, or by examining data that has been stored by various nations. (2) Increased data collecting in extensive farming systems to enable genotyping, analysis, and documentation of these systems. For a variety of phenotypes, including adaptability and disease resistance traits, association studies can be carried out to identify selected signals/sweeps and genetic diversity analyses. (3) Meta-analyses of genetic information gathered from various goat populations in the South Odisha region.

#### 4. Conclusion

Non-descript goat populations are significant genetic resources maintained in resource-constrained agricultural systems with the potential to raise productivity to improve food security and the welfare of the country. These goat genetic resources are now even more crucial than cattle because of the shifting climatic conditions.

These genetic resources should be used sustainably and conserved while being tied to the market. Each nation should have both regulatory policies to safeguard and control the sustainable use of non-descript goats and developmental policies to give guidelines and rules to ease the marketing of non-descript goat products.

By locating SNPs linked to various qualities, such as disease resistance and adaptation in various agro-climatic zones, the application of genomic tools in low-input farming systems has the potential to be investigated. These SNPs can then be utilized to create "custom" chips for low-input farming systems.

Participation from farmers, knowledgeable policies, and ring-fenced funding for national indigenous genetic resources will encourage and guarantee the long-term viability of the region's non-descript goat population.

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