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Preference patterns of fodder tree leaves in feeding systems of Rohilkhandi goats

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Abstract

Tree leaves form an important component of feeding systems for goats reared under extensive and semi-intensive conditions. The present study assessed the preference of different tree leaves fed to Rohilkhandi goats in their native tract of Uttar Pradesh. The study was conducted in the Rohilkhand region, covering Bareilly, Budaun and Shahjahanpur districts. Using a multistage sampling procedure, two blocks from each district and one village cluster from each block were randomly selected. A total of 120 goat-rearing households having a minimum flock size of five goats were selected. Results revealed that Poplar (*Populus deltoides*) and Neem (*Azadirachta indica*) were the most preferred tree leaves (95.0%), followed by Bakain (*Melia azedarach*) (80.8%). Jackfruit (*Artocarpus heterophyllus*) and Gular (*Ficus glomerata*) showed moderate preference, while Mango (*Mangifera indica*), Mulberry (*Morus alba*) and Ber (*Ziziphus mauritiana*) were least preferred. The study highlights the importance of preferred fodder tree species in sustaining Rohilkhandi goat production and emphasizes their integration into agroforestry systems.

Keywords: Rohilkhandi goat, tree fodder, feeding preference, indigenous breed, agroforestry

1. Introduction

Goat production systems in developing countries largely depend on natural vegetation, crop residues, and tree fodder resources, particularly in regions where availability of cultivated green fodder is limited.¹ Indigenous goat breeds, which are mostly reared in remote rural areas, have evolved adaptive feeding behaviour that enables them to efficiently utilize a wide range of browse species and low-quality feed resources.² In India, the Rohilkhandi goat, native to the Rohilkhand region of Uttar Pradesh, is commonly managed under extensive and semi-intensive systems where tree leaves constitute an important component of the daily diet. Farmers prefer feeding tree leaves due to their year-round availability, ease of harvesting, and perceived benefits related to palatability, health, and productivity of goats.³⁻⁵ Tree leaves serve as a valuable source of protein, minerals, and vitamins, and also help in bridging seasonal feed shortages. Farmers traditionally rely on certain tree species based on availability, palatability, and perceived effects on animal health and productivity. Understanding farmers' preferences regarding tree leaves is essential for planning sustainable feeding strategies, promoting fodder tree plantations, and conserving indigenous knowledge related to livestock feeding. Despite the importance of tree fodder in goat nutrition, systematic documentation of preferred tree species for Rohilkhandi goats is limited. Therefore, the present study was undertaken to assess the preference of different tree leaves fed to Rohilkhandi goats in their native tract.

2. Materials and Methods

2.1 Study area

The Rohilkhand region comprises seven districts, out of

which Budaun, Bareilly, and Shahjahanpur were selected due to their highest indigenous goat populations of 1,76,402, 1,30,533, and 1,13,702 respectively. The Rohilkhandi goat, being an indigenous breed well adapted to the local agro-climatic conditions, plays a crucial role in the livelihood and nutritional security of rural households in this region. These districts are characterized by mixed crop-livestock farming systems where goat rearing serves as a vital source of supplementary income, especially for small and marginal farmers. The high concentration of Rohilkhandi goats in these areas provided a suitable locale for assessing their contribution towards ecological balance, economic sustainability, and socio-cultural importance.

2.2 Sampling plan

From each of the selected districts (Budaun, Bareilly, and Shahjahanpur), two blocks were randomly selected. Thereafter, from each block, one village cluster (comprising 2-3 adjacent villages) was identified through random sampling to serve as the unit of study. From each village cluster, 20 goat-rearing households were randomly selected. Thus, a total of 120 respondents (20 households × 6 village clusters) formed the final sample size of the study.

2.3 Data collection

Primary data were collected through personal interviews using a semi-structured interview schedule developed in accordance with the objectives of the study. From each selected household, one adult member actively involved in goat management and feeding decisions was interviewed as the respondent. Information was collected on tree species whose leaves were fed to Rohilkhandi goats based on

regular use and animal acceptance. Since farmers often used more than one tree species, multiple responses were recorded.

2.4 Statistical analysis

The collected data were compiled, tabulated and analyzed using descriptive statistical tools. Frequencies and

percentages were used to assess the extent of preference for different tree leaves across the sampled households. Results were presented in tabular and graphical forms for better interpretation.

3. Results and Discussion

Table 1: The preference of tree leaves fed to Rohilkhandi goat

Tree species	Small flock n (%)	Medium flock n (%)	Large flock n (%)	Overall n (%)
Poplar (<i>Populus deltoides</i>)	30 (100)	44 (88)	40 (100)	114 (95.0)
Neem (<i>Azadirachta indica</i>)	30 (100)	44 (88)	40 (100)	114 (95.0)
Jackfruit (<i>Artocarpus heterophyllus</i>)	18 (60)	19 (38)	18 (45)	55 (45.8)
Bakain (<i>Melia azedarach</i>)	24 (80)	40 (80)	33 (82.5)	97 (80.8)
Gular (<i>Ficus glomerata</i>)	11 (36.7)	16 (32)	19 (47.5)	46 (38.3)
Mango (<i>Mangifera indica</i>)	7 (23.3)	13 (26)	10 (25)	30 (25.0)
Mulberry (<i>Morus alba</i>)	7 (23.3)	13 (26)	10 (25)	30 (25.0)
Ber (<i>Ziziphus mauritiana</i>)	6 (20)	4 (8)	7 (17.5)	17 (14.1)

The preference of different tree leaves fed to Rohilkhandi goats by the respondents is presented in Table 1 and illustrated in Figure 1. The results indicate considerable variation in the preference pattern of tree species, reflecting differences in availability, palatability, ease of harvest, and farmers' perceptions regarding animal health and productivity.

Among the tree species studied, Poplar (*Populus deltoides*) and Neem (*Azadirachta indica*) emerged as the most preferred fodder trees, reported by 95.0 per cent of the respondents. The consistently high preference across all flock size categories suggests their central role in the feeding system of Rohilkhandi goats. Poplar leaves are

tender, highly palatable, and easily accessible due to widespread plantation in agricultural fields and along boundaries. Neem, besides being readily available, is traditionally valued for its medicinal properties, particularly for maintaining animal health and controlling parasitic infestations. The high acceptance of these species underscores farmers' reliance on tree fodder that combines nutritional value with functional benefits. Bakain (*Melia azedarach*) was the next most preferred species, with 80.8 per cent of respondents reporting its use. The popularity of Bakain may be attributed to its good biomass yield, adaptability to local agro-climatic conditions, and moderate palatability.

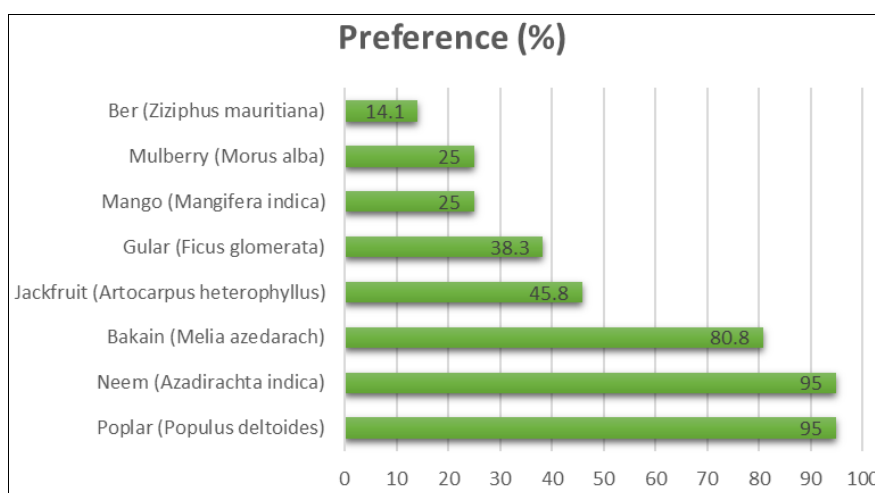


Fig 1: Tree leaves preferred by Rohilkhandi goats

Moderate preference was observed for Jackfruit (*Artocarpus heterophyllus*) and Gular (*Ficus glomerata*), reported by 45.8 and 38.3 per cent of respondents, respectively. The comparatively lower preference for these species may be due to their limited distribution, seasonal availability, or restricted lopping practices. Although these tree leaves are palatable and nutritionally valuable, their use appears to be constrained by availability rather than farmer choice alone. In contrast, Mango (*Mangifera indica*), Mulberry (*Morus alba*), and Ber (*Ziziphus mauritiana*) were least preferred, with overall preference ranging from 14.1 to 25.0 per cent.

4. Conclusion

The present study clearly demonstrates that tree leaves constitute a vital component of the feeding system of Rohilkhandi goats reared under extensive and semi-intensive management conditions in the Rohilkhand region of Uttar Pradesh. Among the various tree species utilized, Poplar (*Populus deltoides*) and Neem (*Azadirachta indica*) emerged as the most preferred fodder resources, followed by Bakain (*Melia azedarach*), indicating their central role in meeting the nutritional requirements of goats throughout the year. The preference pattern observed in the study reflects

farmers' indigenous knowledge, shaped by long-term experience regarding palatability, availability, ease of lopping, and perceived health benefits of different tree species. Moderate to low preference for other tree species suggests that factors such as seasonal availability, biomass yield, thorniness, and competing economic uses influence farmers' feeding decisions. The dominance of a few preferred fodder trees highlights the need for their systematic promotion and integration into agroforestry and silvopastoral systems. Such interventions can enhance feed security, reduce pressure on common grazing resources, and contribute to sustainable goat production. Overall, the findings emphasize that strengthening fodder tree-based feeding strategies can play a significant role in improving productivity, resilience, and conservation of the indigenous Rohilkhandi goat breed, while simultaneously supporting the livelihood security of small and marginal farmers in the region.

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