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Nutritional evaluation of silage prepared from sorghum and bamboo leaves in Osmanabadi goats

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Abstract

The study evaluated the palatability and nutrient digestibility of sorghum and bamboo silage in Osmanabadi goats. Eighteen goats of similar age and body weight were randomly assigned to three dietary treatments: T1(100% sorghum silage), T2 (50% sorghum + 50% bamboo silage), and T3 100% bamboo silage). Feed intake, dry matter intake (DMI), and nutrient digestibility coefficients (DM, CP, CF, EE) were recorded. Goats fed T₂ showed the highest feed intake (430 g/day) and DMI (200 g/day), followed by T₁ and T₃. Nutrient digestibility was also highest in T₂ (DM 80.6%, CP 63.0%, CF 61.8%, EE 60.76%), indicating better utilization of mixed silage. Differences were statistically significant at $P < 0.05$. The results suggest that combining sorghum and bamboo silage improves palatability and nutrient utilization in Osmanabadi goats, offering practical guidance for enhancing feed efficiency under semi-intensive systems.

Keywords: Osmanabadi goats, palatability, sorghum silage, bamboo silage, nutrient digestibility

Introduction

Palatability is a critical factor influencing voluntary feed intake, nutrient utilization, and overall productivity in goats. Osmanabadi goats, a hardy indigenous breed, are widely reared under semi-intensive systems, often relying on fibrous forages. The acceptability of these forages significantly affects feed intake and growth performance (Sharma *et al.*, 2024) ^[6]. Ensiling improves feed palatability, digestibility, and storage life (Hartati *et al.*, 2020) ^[2]. Sorghum silage is high in energy and generally palatable, whereas bamboo leaves provide protein-rich roughage but are less palatable (Khan *et al.*, 2020) ^[3].

Studies have shown that combining silages can enhance voluntary intake and nutrient utilization compared to single silage diets (Sayuti *et al.*, 2024; Hartati *et al.*, 2020) ^[5, 2]. Evaluating feed palatability in Osmanabadi goats is important, as their voluntary intake directly affects dry matter intake (DMI), nutrient digestibility, and productivity (Sharma *et al.*, 2024; Benu *et al.*, 2024) ^[6, 1]. Although sorghum and bamboo silages have been individually tested, research on their combination in Osmanabadi goats is limited. This study aimed to assess palatability and nutrient digestibility of sorghum and bamboo silage, alone and in combination, through feed intake, DMI, and nutrient digestibility coefficients (DM, CP, CF, EE).

Materials and Methods

The experiment was conducted at the Livestock Instructional Farm, College of Agriculture, Nagpur, during 2024–2025 using 18 Osmanabadi goats, randomly assigned to three treatments in a Randomized Block Design.

- **T1:** 100% sorghum silage
- **T2:** 50% sorghum + 50% bamboo leaves silage
- **T3:** 100% bamboo leaves silage

All animals received dry concentrate and clean water. DMI was recorded daily. A 7-day digestibility trial was conducted at the end of the feeding period. Fecal samples were analyzed for dry matter (DM), crude protein (CP), crude fiber (CF), and ether extract (EE) to calculate digestibility coefficients. Data were analyzed using Randomized Block Design. Significance was determined at the 5% level.

Results and Discussion

Table 1: Average Feed Intake of Different Treatments

Treatment	Avg. body weight (kg)	Daily feed intake (g)	Daily feed intake/100 kg BW (kg)
T1	27.03	290	1.07
T2	30.79	430	1.40
T3	32.75	370	1.13
SE(M) ±	-	-	0.09
CD@5%	-	-	0.29

T2 recorded the highest feed intake, indicating superior palatability of the mixed silage.

Table 2: Average Dry Matter Intake (DMI)

Treatment	Avg Body Weight (kg)	DMI/day/goat (g)	Daily DMI/100 kg BW (kg)
T1	27.03	170	0.62
T2	30.79	200	0.64
T3	32.75	180	0.54
SE(M)	-	-	0.05
CD@5%	-	-	0.18

DMI was highest in T2 supporting better palatability of the mixed silage.

Table 3: Nutrient Digestibility Coefficients (%)

Treatment	DM%	CP%	CF%	EE%
T1	77.6	56.8	58.93	57.13
T2	80.6	63.0	61.8	60.76
T3	78.4	60.1	59.3	54.55
SE(M)	0.38	0.29	0.50	0.40
CD@5%	0.84	0.65	4.97	0.56

Nutrient digestibility was highest in T2 reflecting better utilization of the mixed silage.

Discussion

Palatability significantly affected feed intake and nutrient utilization in Osmanabadi goats. The highest intake and DMI in T₂ (mixed silage) indicate improved acceptability compared to sorghum (T₁) or bamboo (T₃) alone. This aligns with previous studies where mixed silages enhanced voluntary intake and nutrient digestibility in goats (Hartati *et al.*, 2020; Khan *et al.*, 2020) [2, 3]. Sorghum silage alone was palatable, whereas bamboo silage was less preferred, likely due to its high fiber content and lower inherent palatability (Sharma *et al.*, 2024) [6]. Digestibility coefficients were highest in T₂ (DM 80.6%, CP 63.0%, CF 61.8%, EE 60.76%), suggesting that mixing sorghum and bamboo silage improves nutrient utilization, possibly by optimizing rumen fermentation and feed selection behavior (Sayuti *et al.*, 2024; Benu *et al.*, 2024) [5, 1]. feed mixtures improve the balance between energy and protein, enhancing intake and digestibility (Hartati *et al.*, 2020; Khan *et al.*, 2020) [2, 3]. The present findings confirm that feed composition, rather than forage type alone, is a key factor in maximizing feed efficiency in Osmanabadi goats.

This has practical implications for smallholder farmers aiming to improve goat productivity under semi-intensive systems

Conclusion

The combination of sorghum and bamboo silage enhances palatability, voluntary feed intake, and nutrient digestibility in Osmanabadi goats. Mixed silage (T₂) was preferred over bamboo alone, highlighting the importance of feed composition in improving feed efficiency and productivity. Incorporating mixed silages in goat diets can contribute to sustainable and efficient small ruminant production systems.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Benu I, Raharjo YC, Hartadi H. Improving feed intake and nutrient digestibility in goats through forage supplementation. *Trop Anim Sci J.* 2024;47(2):55–63.
2. Hartati E, Sudarman A, Khotijah L. Nutrient intake, digestibility, rumen fermentation characteristics and blood metabolites of goats fed sorghum forage mixture silage. *Indian J Anim Nutr.* 2020;36(4):351–357.
3. Khan N, Singh VK, Verma AK. Effect of feeding mixed silage of oat fodder and jamun leaves on nutrient utilization in goats. *Indian J Anim Sci.* 2020;90(3):421–425.
4. Kumar P, Sharma R, Meena BS. Effect of silage type on nutrient utilization in goats. *Indian J Anim Nutr.* 2017;34(2):105–110.
5. Sayuti M, Nurhayati N, Zain M. Evaluation of complete silage feeding on intake and digestibility in goats. *Res Biosci Biotechnol.* 2024;12(1):103–110.
6. Sharma K, Patil NV, Deshmukh SV. Feed selection behavior and nutrient utilization in goats under silvipasture system. *Indian J Anim Sci.* 2024;94(5):321–328.
7. Singh R, Yadav PS, Choudhary JL. Feed intake and nutrient digestibility in goats fed sorghum silage. *Small Rumin Res.* 2018;165:12–18.
8. Zerbini E, Thomas D. Forage palatability and intake regulation in goats. *J Anim Sci.* 2015;93:456–462.

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