International Journal of Veterinary Sciences and Animal Husbandry

ISSN: 2456-2912
NAAS Rating (2025): 4.61
VET 2025; SP-10(10): 16-17

www.veterinarypaper.com
Received: 22-08-2025
Accepted: 24-09-2025

Vaishnavi G Ladke
PG Student, Section of Animal Husbandry and Dairy Science, College of Agriculture, Nagpur, Maharashtra, India

VG Atkare
Professor, Section of Animal Husbandry and Dairy Science, College of Agriculture, Mul, Maharashtra, India

Kavita R Kadu
Assistant Professor, Section of Animal Husbandry and Dairy Science, College of Agriculture, Nagpur, Maharashtra, India

Mangala A Dahane
PG Student, Section of Animal Husbandry and Dairy Science, College of Agriculture, Nagpur, Maharashtra, India

Corresponding Author:
Vaishnavi G Ladke
PG Student, Section of Animal Husbandry and Dairy Science, College of Agriculture, Nagpur, Maharashtra, India

Dry matter intake, water intake and cost economics of Osmanabadi male goat kids under partial feeding of Moringa (*Moringa oleifera*) tree leaves

Vaishnavi G Ladke, VG Atkare, Kavita R Kadu and Mangala A Dahane

DOI: https://www.doi.org/10.22271/veterinary.2025.v10.i10Sa.2604

Abstract
The present study was conducted to evaluate the effect of partial feeding of Moringa (Moringa oleifera) leaves on dry matter intake, water consumption and feeding cost of Osmanabadi male goat kids. Six goat kids (3-4 months, 10-12 kg body weight) were divided into three groups (T_1, T_2, T_3) under a switch-over design. T_1 received 200 g concentrate, T_2 received 100 g concentrate + 100 g Moringa leaves, and T_3 received 200 g Moringa leaves daily along with ad libitum gram straw. Dry matter intake per 100 kg body weight was 4.12, 4.20 and 4.26 kg for T_1, T_2 and T_3, respectively. Mean daily water intake was significantly higher (p<0.05) in Moringa-supplemented groups compared to the control. The cost of feeding per goat kid over 63 days was Rs. 536.76, Rs. 283.92 and Rs. 120.12 for T_1, T_2 and T_3, respectively. Results indicate that inclusion of Moringa leaves significantly reduced feed cost without adversely affecting dry matter intake and water consumption. Hence, Moringa foliage is an economical and sustainable alternative feed resource for goat rearing.

Keywords: *Moringa oleifera*, Osmanabadi goat, dry matter intake, water intake, feeding economics

Introduction
Goats represent one of the key livestock species contributing significantly to both livelihood support and nutritional security in rural areas. Goat rearing holds considerable potential as a sustainable source of income and employment for rural youth, particularly in challenging and resource-constrained environments. Effective goat management is therefore crucial, highlighting the need for adoption of improved husbandry practices. Feed costs constitute a major proportion of livestock production expenses, often accounting for 60-70% of total inputs. Optimizing dry matter intake (DMI) and reducing feeding costs are crucial for improving profitability in small ruminant production systems. Goats, particularly indigenous breeds like Osmanabadi, are an important source of livelihood for small and marginal farmers. However, the scarcity and rising cost of conventional feed ingredients necessitate the exploration of alternative, cost-effective feed resources. Moringa oleifera, widely recognized for its high nutritional value and availability, has gained attention as a potential substitute for costly concentrate mixtures. The present investigation aimed to study dry matter intake, water intake and economics of Osmanabadi male goat kids under partial feeding of Moringa leaves.

Materials and Methods
The experiment was conducted at the Livestock Instructional Farm, College of Agriculture, and Nagpur. Six Osmanabadi goat kids (3-4 months old; 10-12 kg) were divided into three treatment groups using a switch-over design.

The treatments were:
- **T_1:** 100% concentrate mixture (200 g/head/day)
- **T_2:** 50% concentrate mixture (100 g) + 50% Moringa leaves (100 g)
- **T_3:** 100% Moringa leaves (200 g).

All groups were provided with ad-libitum gram straw and 6 hours of daily grazing. Feed intake was recorded daily, and DMI was expressed as kg per 100 kg body weight. Water intake was expressed as litre per 100 kg body weight. Cost of feeding was calculated based on prevailing market prices of feed ingredients for the 63-day experimental period. Feed composition was analyzed as per AOAC (1990).

Results and Discussion

Daily Dry Matter Intake (DMI)

Table 1 shows the mean values of daily dry matter intake.Dry matter intake (DMI) per 100 kg body weight was 4.12, 4.20, and 4.26 kg in T_1, T_2, and T_3, respectively, with non-significant differences across groups. These findings suggest that Moringa inclusion did not negatively impact palatability or intake, consistent with earlier reports.

Table 1: Mean daily dry matter intake by experimental animals on different treatments (kg)

Treatments	Avg. body wt. (kg)	DM intake (kg day^{-1})	DM intake 100 kg^{-1} body wt.
T_1	13.28	0.510	4.12
T_2	13.32	0.512	4.20
T_3	13.36	0.520	4.26
SE(m)±	0.03	-	0.01
CD at 5% level	0.10	-	0.04

Water Intake (WI)

Table 2 shows the mean values of daily water intake by goat kids. Mean daily water intake differed significantly (p<0.05), with higher values in Moringa-fed groups, indicating improved diet digestibility and metabolic activity. Similar observations were made by Babeker and Abdalbagi (2015).

Table 2: Mean water intake in experimental goat kids under different treatments (lit)

Treatments	Water intake / Day	Water intake / 100 kg body wt.	DM to water intake ratio
T_1	0.90	6.74	1:1.640
T_2	0.93	7.05	1:1.686
T_3	1.01	7.36	1:1.730
SE(m)±	0.035	0.27	-
CD at 5% level	0.120	0.82	-

Cost of economics

Economically, the cost of feeding per goat kid during the 63-day trial was highest in T_1 (Rs. 536.76), followed by T_2 (Rs. 283.92) and lowest in T_3 (Rs. 120.12). This demonstrates that replacing concentrates with Moringa leaves substantially reduces feeding costs, in agreement with earlier studies.

- Gram straw : 5 Rs/kg
- Concentrate mixture : 25.70 Rs/kg
- Moringa leaves : 1.5 Rs/kg

Table 3: Cost of feeding under different groups

Feeds	Treatments		
	T_1	T_2	T_3
Moringa leaves (gm)	-	100	200
Gram straw (g)	250	235	225
Concentrate (g)	200	100	-
Total feed per day (kg)	0.450	0.435	0.425
Cost of feed per day (Rs.)	6.39	3.38	1.43
Cost of feed for 63 days (Rs.)	536.76	283.92	120.12

*****Excluding cost of grazing

Conclusion

Partial replacement of concentrate mixture with Moringa oleifera leaves in the diet of Osmanabadi goat kids significantly reduced the cost of feeding without adversely affecting dry matter and water intake. Therefore, Moringa leaves can be recommended as a sustainable and economical feed resource for goat production systems.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Adegun MK, Aye PA. Growth performance and economic analysis of West African Dwarf Rams fed *Moringa oleifera* and cotton seed cake as protein supplements to *Panicum maximum*. Am J Food Sci Nutr. 2013;3(2):58-63.
2. Ali SB, Kawitkar SB, Deshmukh AD, Dhok AP, Jawale MR, Chopde SV, Parihar NB. Performance of goats fed *Moringa oleifera* leaf meal incorporated in concentrate mixture. Indian J Anim Nutr. 2018;35(2):239-41.
3. Babeker EA, Abdalbagi YM. Effects of feeding different levels of *Moringa oleifera* leaves on performance, haematological, biochemical and some physiological parameters of Sudan Nubian goats. J Anim Feed Res. 2015;5(2):50-61.
4. Damor SV, Pawar MM, Ankuya KJ, Gami YM, Srivastava AK, Chauhan HD, Chaudhary KR. Effect of feeding different levels of *Moringa oleifera* leaves on growth performance of Mehsana goat kids. Bio Sci Trends. 2017;10(18):3190-3.
5. Dev R, Nanavati S, Patil AK. Performance of growing Sirohi goats on Azolla based diet. Indian J Vet Sci Biotechnol. 2022;18(1):107-9.
6. Kumar VP, Vadiveian SA, Kumar SD, Kumar VT, Ramchandran M. Effect of *Sesbania grandiflora* (Agati) supplementation on weight gain of crossbred Jersey heifer calves. Int J Econ Plants. 2021;8(3):162-4.
7. Sultana N, Alimon AR, Huque KS, Baba M, Hossain J. Evaluation of *Moringa* foliage (*Moringa oleifera*) as goat feed. Iran J Appl Anim Sci. 2015;5(4):865-71.

How to Cite This Article

Ladke VG, Atkare VG, Kadu KR, Dahane MA. Dry matter intake, water intake and cost economics of Osmanabadi male goat kids under partial feeding of Moringa (*Moringa oleifera*) tree leaves. International Journal of Veterinary Sciences and Animal Husbandry. 2025;SP10(10):16-17.