



International Journal of Veterinary Sciences and Animal Husbandry



ISSN: 2456-2912
NAAS Rating (2025): 4.61
VET 2025; 10(12): 659-661
© 2025 VET

www.veterinarypaper.com

Received: 15-10-2025

Accepted: 18-11-2025

Dashprakash M

Veterinary University Training
and Research Centre, Dindigul,
Tamil Nadu, India

Ramakrishnan V

Krishi Vigyan Kendra,
Kundrakudi, Tamil Nadu, India

Effect of TANUVAS GRAND supplementation on milk production of dairy cattle in Sirumalaiyar sub basin of Dindigul District, Tamil Nadu

Dashprakash M and Ramakrishnan V

DOI: <https://www.doi.org/10.22271/veterinary.2025.v10.i12j.3705>

Abstract

The productivity of dairy cattle maintained under smallholder farming systems is often constrained by imbalanced feeding practices, resulting in poor nutrient utilization and reduced milk production. The present field investigation was conducted under the Tamil Nadu Irrigated Agriculture Modernization Project to evaluate the response of dairy cattle to TANUVAS GRAND supplementation in the Sirumalaiyar Sub Basin of Dindigul district. A total of 100 lactating dairy cattle belonging to 40 smallholder farmers were selected from Karuthandipatti village. Animals in early lactation receiving low-quality crop residue-based diets were supplemented with TANUVAS GRAND at the recommended dosage for 90 days. Pre- and post-supplementation milk production data were recorded using farmer-maintained milk cards and validated through fortnightly monitoring. Among the selected animals, 84% were crossbred cattle and 16% were non-descript cattle. Overall, 66% of the supplemented animals responded with increased milk production, while 27.5% showed no response and 6.5% of the non-responders were pregnant animals. The average increase in milk yield was approximately 680 mL per cow per day, with the majority of responsive animals exhibiting an increase of about 1 L/day. Animals maintained on cereal-based feeding regimens showed the greatest response to supplementation. The findings indicate that TANUVAS GRAND supplementation is an effective nutritional intervention for improving milk productivity in dairy cattle maintained under traditional feeding systems.

Keywords: Dairy cattle, TANUVAS GRAND, Milk production, Nutritional supplementation, Smallholder farmers, Sirumalaiyar Sub Basin

1. Introduction

Dairy farming plays a vital role in the rural economy of Tamil Nadu by providing regular income, employment and nutritional security to smallholder farmers. However, milk production under traditional farming systems remains below the genetic potential of dairy cattle due to imbalanced feeding practices. Farmers predominantly rely on crop residues, cereal grains, rice gruel and locally available agricultural by-products with inadequate supplementation of protein, minerals and other critical nutrients, resulting in poor rumen fermentation and reduced productivity^[1,2].

To address these nutritional deficiencies, Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) developed TANUVAS GRAND (Gruel Rooted Additive Nourishment Drops), a nutritional supplement containing critical nutrients required for optimum rumen microbial activity. The supplement enhances microbial proliferation, improves nutrient digestibility and increases microbial protein synthesis, thereby improving milk production without altering the existing feeding practices of farmers. Previous studies conducted in Tirunelveli and Karur districts have reported an increase in milk yield of approximately 0.5–1.25 L/day along with improved economic returns following TANUVAS GRAND supplementation^[1,3].

Field demonstrations have consistently shown that TANUVAS GRAND supplementation improves the productive performance of dairy cattle under field conditions. The supplement has been reported to enhance milk yield by improving nutrient utilization and rumen microbial

Corresponding Author:

Dashprakash M

Veterinary University Training
and Research Centre, Dindigul,
Tamil Nadu, India

activity without altering the farmers' conventional feeding practices. In addition to increased milk production, improvements in feed digestibility, rumen health and economic returns have also been documented, indicating its potential as a practical and cost-effective nutritional intervention for smallholder dairy farmers ^[1, 2, 3].

The Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP) promotes climate-resilient livestock production through improved nutritional interventions. Under this programme, TANUVAS GRAND was introduced to improve milk productivity while enhancing feed utilization. The Sirumalaiyar Sub Basin of Dindigul district is characterized by smallholder dairy farms where animals are maintained mainly on crop residue-based diets with minimal supplementation. Therefore, the present study was undertaken to evaluate the effect of TANUVAS GRAND supplementation on milk production of dairy cattle maintained under the traditional feeding systems of the Sirumalaiyar Sub Basin, Dindigul district.

2. Materials and Methods

2.1. Study area

The study was conducted in Karuthandipatti village of Nilakottai block, located in the Sirumalaiyar Sub Basin of Dindigul district, Tamil Nadu, under the Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP). The area is predominantly characterized by smallholder dairy farming, where cattle are maintained on crop residue-based feeding systems with limited concentrate supplementation.

2.2. Selection of experimental animals

A total of 100 lactating dairy cattle belonging to 40 smallholder farmers were selected for the study. The selection criteria included farmers owning fewer than four dairy cattle, cows maintained predominantly on low-quality crop residue-based feeding systems and animals in the early stage of lactation. Beneficiary selection was carried out according to the guidelines of the TNIAMP project.

2.3. Feeding management and supplementation

Before supplementation, the feeding regimen adopted by each farmer was documented. Based on the major feed ingredients offered, feeding practices were categorized into bran-based, cereal-based, oilcake-based and mixed ingredient-based feeding systems. The selected animals were supplemented with TANUVAS GRAND at the recommended dose of 20 mL per animal per day for a period of 90 days along with the existing feeding regimen. No other modifications were made to the farmers' feeding practices during the study period.

2.4. Data collection

Baseline information on farmer characteristics, breed, source of animal, parity, stage of lactation, feeding regimen and daily milk yield was collected before supplementation. Milk production was recorded daily using milk recording cards supplied to each farmer. The recorded data were verified at fortnightly intervals by the project staff throughout the supplementation period. Changes in milk yield following supplementation were documented and categorized according to the magnitude of response.

2.5. Statistical analysis

The collected data were compiled and summarized using descriptive statistics. The response to TANUVAS GRAND supplementation was expressed as frequencies and

percentages for different categories of milk yield improvement, breed, parity, feeding regimen and source of animals.

3. Results and Discussion

3.1. Beneficiary and animal profile

A total of 40 smallholder dairy farmers owning 100 lactating dairy cattle participated in the study. Among the beneficiaries, 75% were male and 25% were female, indicating that dairy farming continues to be an important livelihood activity involving both men and women in the study area. The experimental population comprised 84% crossbred cattle and 16% non-descript cattle. Approximately 73% of the animals were purchased, whereas 27% were farm-born. All selected animals were in the early stage of lactation, with the majority belonging to the third parity, ensuring uniformity in the physiological status of animals selected for supplementation.

3.2. Feeding practices adopted by farmers

The feeding systems adopted by farmers varied according to the locally available feed resources. The majority of farmers (37%) followed a cereal-based diet supplemented with rice gruel, followed by mixed ingredient-based diets (30%), bran-based diets (21%) and oilcake-based diets (12%). These observations indicate that dairy animals in the study area were maintained predominantly on traditional feeding systems that are often deficient in balanced nutrients required for optimum rumen microbial growth. Similar feeding practices have been reported among dairy farmers in Tamil Nadu, where dependence on cereal grains, crop residues and locally available agricultural by-products frequently results in nutrient imbalances and suboptimal milk production.

Efficient rumen fermentation depends on an adequate and synchronized supply of fermentable energy, nitrogen and essential minerals for microbial growth. Diets containing a suitable balance of forage and concentrate improve microbial protein synthesis and fibre digestion, thereby enhancing animal productivity ^[4, 5].

3.3. Response to TANUVAS GRAND supplementation

Following 90 days of TANUVAS GRAND supplementation, 66% of the experimental animals responded positively with an increase in milk production, whereas 27.5% showed no response. Among the non-responsive animals, 6.5% were pregnant cows, which may have influenced their production response during the supplementation period. The average increase in milk yield was 0.68 L/cow/day, and the majority of responsive animals exhibited an increase of approximately 1.0 L/day, while a few animals recorded increases exceeding 2.5 L/day (Table 1). These findings demonstrate that TANUVAS GRAND effectively enhanced milk production under field conditions without altering the existing feeding practices adopted by the farmers.

The production response observed in the present study may be attributed to improved rumen microbial activity following supplementation with TANUVAS GRAND. The supplement supplies critical nutrients required for optimum microbial proliferation, including nitrogen, sulphur, copper and cobalt, thereby enhancing fibre degradation, microbial protein synthesis and nutrient digestibility. Improved microbial protein synthesis increases the availability of metabolizable protein to the host animal, ultimately resulting in enhanced milk production ^[4, 6, 7]. Similar improvements in milk yield following TANUVAS GRAND supplementation have been reported by Arulnathan *et al.* ^[2023], who observed an increase

of 0.5–1.25 L/day in dairy cattle under field conditions in Tirunelveli district. Likewise, Saravanan *et al.* [2025] and Murugeswari *et al.* [2025] reported significant improvements in milk production and economic returns following TANUVAS GRAND supplementation in dairy cattle maintained under smallholder production systems.

3.4. Influence of breed, parity and source of animals

Both crossbred and non-descript cattle responded positively to TANUVAS GRAND supplementation; however, the response was comparatively greater among crossbred animals. Similarly, purchased animals exhibited better milk yield response than farm-born animals, while animals in the third and higher parities showed greater improvement than first-calving cows. These observations suggest that animals with higher genetic potential and greater physiological maturity are likely to utilize improved nutritional interventions more efficiently. Similar trends have been reported in field evaluations of dairy nutritional supplementation programmes, where production response varied according to breed, parity and stage of lactation.

Table 1: Effect of TANUVAS GRAND supplementation on milk production

Parameter	Observation
Experimental animals (No.)	100
Supplementation period	90 days
Animals responded with increased milk yield (%)	66.0
Non-responsive animals (%)	27.5
Pregnant non-responsive animals (%)	6.5
Mean increase in milk yield	0.68 L/day/cow
Most common response	1.0 L/day increase
Maximum response observed	>2.5 L/day

3.5. Effect of feeding regimen on milk production response

The response to TANUVAS GRAND supplementation differed among feeding systems. The highest proportion of animals exhibiting an increase of 1.0 L/day or more belonged to the cereal-based feeding regimen, followed by mixed ingredient-based diets. This finding suggests that TANUVAS GRAND was more effective when sufficient dietary energy was available to support rumen microbial growth. Synchronization of fermentable carbohydrates with degradable nitrogen improves microbial efficiency and nutrient utilization, thereby enhancing milk production [5, 8]. The present findings support the concept that TANUVAS GRAND functions primarily by correcting deficiencies of critical nutrients required for rumen microbial activity rather than replacing conventional feed ingredients. Consequently, supplementation improved nutrient utilization and milk production under existing smallholder feeding systems without requiring changes in farmers' feeding practices, making it a practical and economically viable nutritional intervention for dairy farmers. This observation is in agreement with previous reports on TANUVAS GRAND supplementation under field conditions.

4. Conclusion

The present study demonstrated that supplementation of TANUVAS GRAND for 90 days effectively improved milk production in lactating dairy cattle reared under smallholder farming systems in the Sirumalaiyar sub-basin of Dindigul district. A positive production response was observed in 66% of the supplemented animals, with an average increase in milk yield of 0.68 L/cow/day, indicating improved nutrient

utilization and productive performance under existing feeding practices. The findings suggest that TANUVAS GRAND serves as an effective nutritional supplement by enhancing rumen function and correcting critical nutrient deficiencies, thereby improving milk production without requiring changes in conventional feeding systems. Therefore, TANUVAS GRAND can be recommended as a practical, economically viable and farmer-friendly nutritional intervention for improving dairy productivity and supporting sustainable livelihood enhancement among smallholder dairy farmers under field conditions.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Arulnathan N, Chellapandian M, Senthilkumar S, Ramesh J, Murugeswari R, *et al.* Effect of critical nutrient supplementation (TANUVAS GRAND) on production performance in dairy cattle in Tirunelveli district of Tamil Nadu, India. *Pharma Innov J.* 2023;12(5):819-821.
2. Murugeswari R, Balakrishnan V, Valli C, Mynavathi VS, Kanaka S. Economic viability on supplementation of TANUVAS GRAND to dairy cattle for enhancing productivity in Tamil Nadu Irrigated Agriculture Modernization Project area in Tamil Nadu. *Int J Vet Sci Anim Husbandry.* 2025;10(Special Issue 12):1-5.
3. Saravanan M, Diraviam J, Murugeswari R. TANUVAS GRAND for enhancing milk yield of dairy cattle in Karur district of Tamil Nadu. *Int J Livest Res.* 2025;15^[4]:85-88.
4. Russell JB, Rychlik JL. Factors that alter rumen microbial ecology. *Science.* 2001;292:1119-1122.
5. Karsli AM, Russell JR. Effects of some dietary factors on ruminal microbial protein synthesis. *Turk J Vet Anim Sci.* 2001;25(5):681-686.
6. Dewhurst RJ, Davies DR, Merry RJ. Microbial protein supply from the rumen. *Anim Feed Sci Technol.* 2000;85(1-2):1-21.
7. Gozho GN, Plaizier JC, Krause DO, Kennedy AD, Wittenberg KM. Subacute ruminal acidosis induces ruminal lipopolysaccharide endotoxin release and triggers an inflammatory response. *J Dairy Sci.* 2005;88:1399-1403.
8. Kleen JL, Hooijer GA, Rehage J, Noordhuizen JPTM. Subacute ruminal acidosis in Dutch dairy herds. *Vet Rec.* 2003;153:748-753.

How to Cite This Article

Dashprakash M, Ramakrishnan V. Effect of TANUVAS GRAND supplementation on milk production of dairy cattle in Sirumalaiyar sub basin of Dindigul District, Tamil Nadu. *International Journal of Veterinary Sciences and Animal Husbandry.* 2025;10(12):659-661.

Creative Commons (CC) License

This is an open-access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.