

Original Research Article

<https://doi.org/10.20546/ijcmas.2026.1505.009>

Effect of FineX 1522 Supplementation on Milk Yield, Milk Fat, and Solids-Not-Fat in Lactating Dairy Animals under Field Conditions

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ABSTRACT

Keywords

FineX 1522; dairy cattle; milk yield; milk fat; SNF; feed supplementation

Article Info

Received:

12 March 2026

Accepted:

28 April 2026

Available Online:

10 May 2026

The present study was conducted to evaluate the effect of FineX 1522 supplementation on milk yield and milk composition in lactating dairy animals under commercial farm conditions. Forty lactating dairy animals maintained at Atul Dairy Farm, Igatpuri, Maharashtra, India, were selected based on a uniform stage of lactation and production status. The experiment consisted of a baseline period without supplementation, followed by a 20-day supplementation period during which FineX 1522 was administered at 30 g animal⁻¹ day⁻¹ mixed with the regular concentrate ration. Milk samples were collected daily and analyzed for milk yield, milk fat, and solids-not-fat (SNF). Data were expressed as mean \pm standard deviation and analyzed using Welch's t-test. Supplementation with FineX 1522 resulted in a significant increase in milk yield (8.16 ± 0.35 vs. 8.84 ± 0.56 L/day), milk fat (4.21 ± 0.08 vs. $4.44 \pm 0.13\%$), and SNF (8.21 ± 0.08 vs. $8.44 \pm 0.13\%$) compared to the baseline period. All improvements were highly significant ($p < 0.001$). The findings indicate that FineX 1522 effectively enhances rumen efficiency and nutrient utilization, leading to improved milk productivity and milk quality under field conditions.

Introduction

Milk production and milk composition are the most important determinants of profitability in dairy farming. Milk fat and solids-not-fat (SNF) not only influence the nutritional value of milk but also determine processing yield and market price (1-3). Variations in milk components are strongly influenced by dietary composition, rumen fermentation efficiency, microbial protein synthesis, and nutrient absorption (4-6). Feed additives and functional supplements that enhance rumen

fermentation and nutrient utilization have been shown to improve milk yield and milk quality in lactating animals (7-9).

FineX 1522 is a functional nutritional supplement formulated to support gastrointestinal health, optimize rumen fermentation, and enhance nutrient availability (10,11). Although controlled experimental studies have demonstrated the role of rumen-targeted supplementation in improving milk components, validation under field conditions is essential for commercial adoption (12,13).

Therefore, the present field trial was undertaken to evaluate the effect of FineX 1522 supplementation on milk yield, milk fat, and SNF in lactating dairy animals maintained under practical farming conditions (14-17).

The present study was conducted to assess the effect of FineX 1522 on milk yield (kg/day) and to evaluate its influence on milk quality parameters, particularly milk fat percentage and solids-not-fat (SNF) percentage.

Materials and Methods

Experimental sites and animals

The study was conducted at Atul Dairy Farm, Igatpuri, Maharashtra, India. A total of 40 lactating dairy animals were selected from a herd of more than 200 animals. Animals were selected based on a similar stage of lactation and comparable milk production to minimize biological variation.

Experimental design and feeding

The experiment followed a before-and-after field trial design comprising two phases:

1. Baseline phase: Animals were fed the regular farm ration without FineX 1522.
2. Supplementation phase: FineX 1522 was administered at 30 g animal⁻¹ day⁻¹ for 20 days.

The supplement was mixed uniformly with the daily concentrate ration. All other management and feeding practices remained unchanged during the study period.

Data collection

Milk yield (L/day) was recorded daily for each animal. Milk samples were collected and analyzed for:

- Milk fat percentage
- Solids-not-fat (SNF) percentage

Statistical analysis

Data was compiled and expressed as mean ± standard deviation. Differences between baseline and supplementation phases were analyzed using Welch's t-test to account for unequal sample sizes and biological variability (18). Differences were considered statistically

significant at $p < 0.05$.

Experimental Design

The trial followed a before-and-after field evaluation design:

| Phase | Duration | Feeding Regime |
|-----------|-----------|---|
| Control | Day 1–10 | Regular feed (No FineX 1522) |
| Treatment | Day 11–30 | Regular feed + FineX 1522 @ 30 g/animal/day |

FineX 1522 was mixed uniformly into the daily ration.

Parameters Recorded

- Daily milk yield (kg/day)
- Milk fat (%)
- solids-not-fat (SNF, %)

Results and Discussion

Clear and consistent improvements were observed in milk yield, milk fat percentage, and solids-not-fat (SNF) following the introduction of FineX 1522 at 30 g per animal per day. The response became evident within the initial days of supplementation and remained stable throughout the treatment period (Days 11–30), indicating a sustained nutritional effect rather than a short-term fluctuation.

Effect on Daily Milk Yield

During the control phase (No FineX 1522, Days 1–10), average milk yield was 8.16 kg/day, with daily values ranging from 7.6 to 8.6 kg/day. Production showed moderate day-to-day variation but no upward trend.

Following FineX 1522 supplementation:

- Average milk yield increased to 8.84 kg/day
- Peak values frequently exceeded 9.0–9.6 kg/day
- Net gain of 0.68 kg/day, representing an ~8.3% improvement

This increase suggests enhanced feed utilization efficiency and improved availability of energy and nutrients for milk synthesis. Importantly, the increase was consistent across multiple days, demonstrating biological stability rather than sporadic spikes.

Table.1 Day-wise Evaluation of Milk Yield and Milk Composition Parameters

| | Day | Milk Production/Day | Milk Fat % | SNF % |
|------------------------|-----|---------------------|-------------|-------------|
| No FineX 1522 | 1 | 7.9 | 4.3 | 8.3 |
| | 2 | 8.4 | 4.2 | 8.2 |
| | 3 | 8.1 | 4.3 | 8.3 |
| | 4 | 8.1 | 4.1 | 8.1 |
| | 5 | 7.7 | 4.2 | 8.2 |
| | 6 | 8.2 | 4.3 | 8.3 |
| | 7 | 8.5 | 4.2 | 8.2 |
| | 8 | 8.6 | 4.2 | 8.2 |
| | 9 | 8.5 | 4.1 | 8.1 |
| | 10 | 7.6 | 4.2 | 8.2 |
| FineX 1522@ 30g | 11 | 8.6 | 4.2 | 8.2 |
| | 12 | 8.7 | 4.1 | 8.1 |
| | 13 | 9.8 | 4.3 | 8.3 |
| | 14 | 7.9 | 4.4 | 8.4 |
| | 15 | 9.3 | 4.5 | 8.5 |
| | 16 | 8.5 | 4.4 | 8.4 |
| | 17 | 9.8 | 4.5 | 8.5 |
| | 18 | 8.4 | 4.5 | 8.5 |
| | 19 | 8.5 | 4.4 | 8.4 |
| | 20 | 9.1 | 4.6 | 8.6 |
| | 21 | 9.4 | 4.5 | 8.5 |
| | 22 | 9.6 | 4.5 | 8.5 |
| | 23 | 8.4 | 4.3 | 8.3 |
| | 24 | 8.5 | 4.5 | 8.5 |
| | 25 | 9.1 | 4.4 | 8.4 |
| | 26 | 8.8 | 4.6 | 8.6 |
| | 27 | 8.3 | 4.5 | 8.5 |
| | 28 | 7.9 | 4.5 | 8.5 |
| | 29 | 9.3 | 4.4 | 8.4 |
| | 30 | 8.8 | 4.6 | 8.6 |
| | | 8.16 | 4.21 | 8.21 |
| | | 8.83 | 4.43 | 8.43 |

Chart.1 Milk Production Comparison

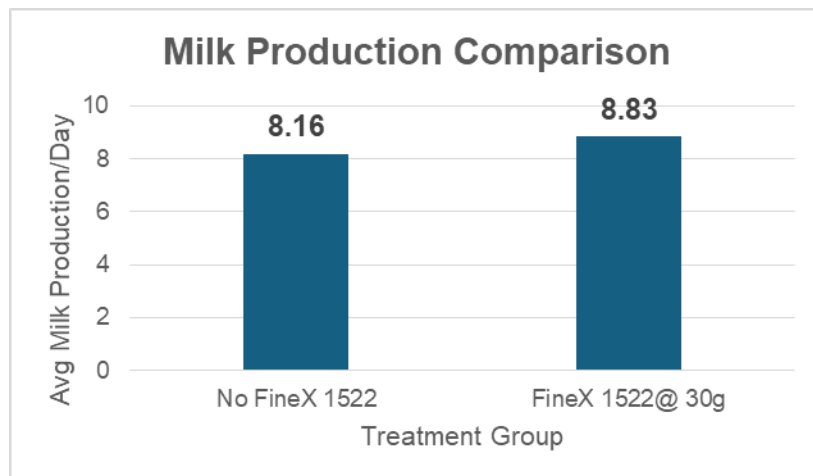


Chart.2 Effect on Milk Fat Percentage

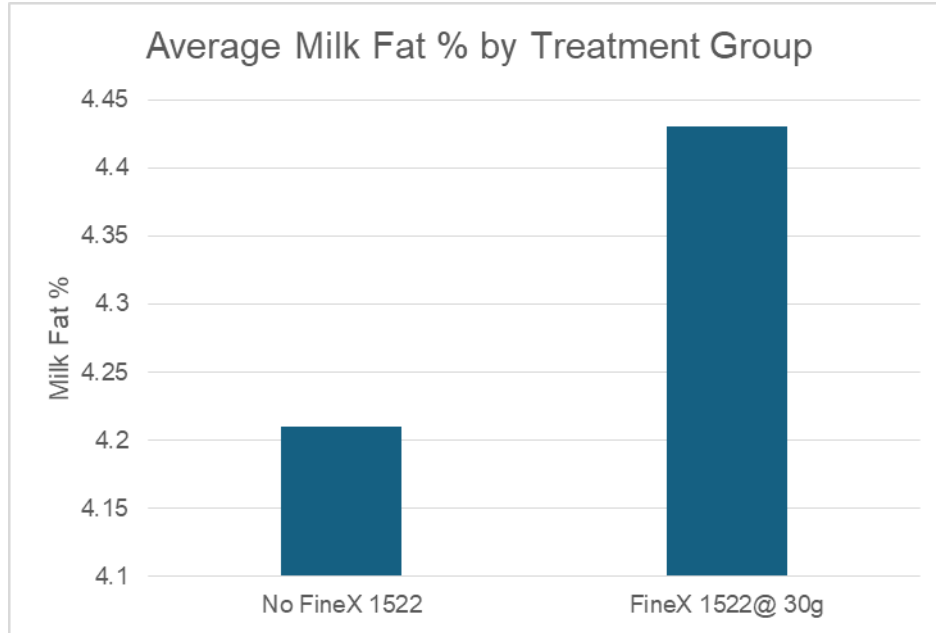
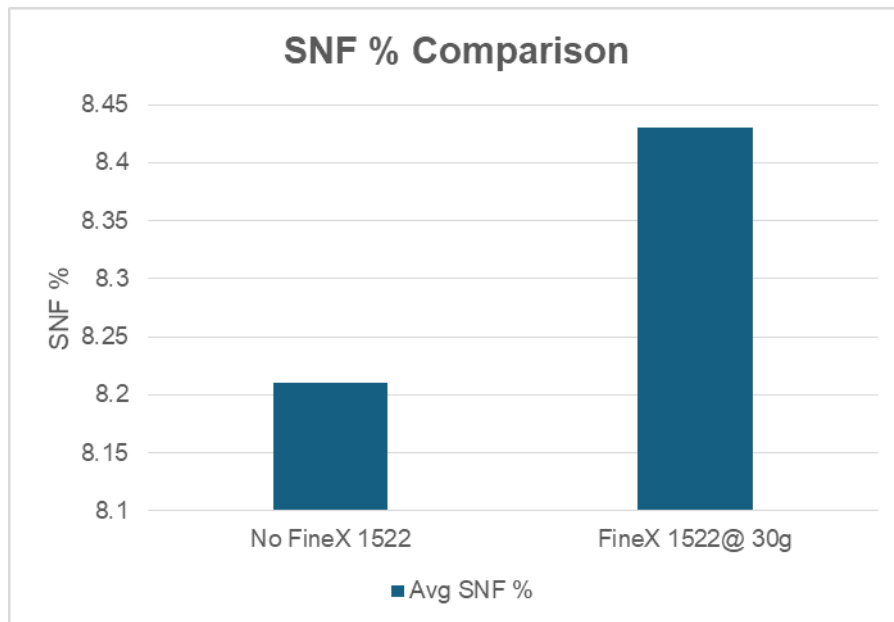


Chart.3 Effect on Solids-Not-Fat (SNF) Percentage



Effect on Milk Fat Percentage

- Milk fat percentage showed measurable improvement after FineX 1522 inclusion. Control phase average: 4.21%
- Values largely confined between 4.1–4.3%
Supplementation phase average: 4.44%

Frequently observed range: 4.4–4.6%

The absolute increase of 0.23 percentage points corresponds to a ~5.5% relative improvement. The fat percentage not only increased but also showed reduced variability, indicating better rumen fiber digestion and a more stable acetate supply for milk fat synthesis.

Effect on Solids-Not-Fat (SNF) Percentage

SNF content followed a trend similar to milk fat but with tighter consistency.

- **Control phase average: 8.21%**
 - Daily fluctuation range: **8.1–8.3%**
- **FineX 1522 phase average: 8.43%**
 - Stabilized within **8.4–8.6%**

The observed improvement of 0.22 percentage points translates to a ~2.7% relative increase. This rise indicates improved microbial protein synthesis and enhanced absorption of nutrients, particularly amino acids and lactose precursors.

The integration of production data with field observations indicates that FineX 1522 supplementation positively influenced both milk quantity and quality. The observed rise in milk yield suggests enhanced nutrient availability and utilization, likely due to improved rumen fermentation dynamics.

The improvement in milk fat percentage aligns with better fiber digestion and acetate production in the rumen, while increased SNF levels reflect enhanced microbial protein synthesis and overall nutrient absorption. Stable dung consistency noted during the trial (as reported in the field observations) further supports the role of FineX 1522 in maintaining digestive stability. Importantly, the improvements were sustained across the 20-day supplementation phase, suggesting that the response was not transient but metabolically supported.

In conclusion, under practical farm conditions, FineX 1522 supplementation at 30 g per animal per day resulted in:

- A significant increase in average milk yield
- Consistent improvement in milk fat and SNF percentages
- Enhanced stability of milk quality parameters over time

These results demonstrate that FineX 1522 is an effective nutritional intervention for improving productivity and milk quality in lactating dairy animals. Further long-term and multi-farm studies may help validate these findings across varied management systems.

Author Contributions

Parth Sutar: Investigation, formal analysis, writing—original draft. Shrinivas Sawant: Validation, methodology, writing—reviewing. Akshay Jagadish Wankhade:—Formal analysis, writing—review and editing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

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How to cite this article:

Parth Sutar, Shriniwas Sawant and Akshay Jagdish Wankhade. 2026. Effect of FineX 1522 Supplementation on Milk Yield, Milk Fat, and Solids-Not-Fat in Lactating Dairy Animals under Field Conditions. *Int.J.Curr.Microbiol.App.Sci.* 15(5): 64-69. doi: <https://doi.org/10.20546/ijcmas.2026.1505.009>