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Research Article

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Effect of Different types of Silage on Milk Yield and Composition in Sri Lankan Dairy Cows

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ABSTRACT

Dairy cattle feeding is a critical component of the dairy production system, as it underpins overall herd health, productivity, and sustainability. In tropical countries such as Sri Lanka, dairy farming is strongly influenced by bimodal monsoon patterns followed by prolonged dry spells, resulting in seasonal fluctuations in forage availability. Consequently, feed conservation strategies, particularly silage production, play a vital role in ensuring a consistent year-round supply of quality forage. Across the diverse agro-ecological zones of Sri Lanka, dairy farmers utilize a range of locally available raw materials for silage preparation. This study evaluates the effects of different types of silage on milk yield and milk composition of dairy cows in selected regions of Sri Lanka. Milk production parameters, including daily milk yield and compositional traits such as fat, protein, and total solids, were assessed and compared among cows fed different silage types. The findings of this study provide insights into the suitability and nutritional effectiveness of various silage materials under tropical conditions and offer practical recommendations to optimize feeding strategies and improve dairy productivity in Sri Lanka.

Keywords: Silage, Maize Silage, Legume silage, Grass silage, Milk yield

Introduction

Dairy cattle feeding is one of the most critical aspects of the dairy sector, which provides a strong foundation for other herd management practices to achieve the productivity. Being a tropical country, Sri Lanka also exposes two main monsoon seasons followed by dry spells. Therefore, feed conservation plays an important role to ensure year-round forage availability. In different agro economic zones of Sri Lanka, farmers practice silage preparation using different raw materials available in their vicinity. This study aims to evaluate the impact of different types of silage on milk yield and composition of dairy cows in Sri Lanka [1].

Objective: to assess the effect of silage on performance of dairy cows.

Materials and Methods

This is a basic descriptive study at a cross section and sixty dairy cows in mid to late lactation (140-305 days postpartum) were selected randomly. These cows were randomly assigned to three groups of 20 cows each. Three silage types with different raw materials were fed to the respective groups of animals and relevant data were recorded: Milk Yield, Milk Composition. Experimental Design:

Cow units	Type of Silage
Group 1	Maize silage
Group 2	Grass silage
Group 3	Legume Silage

All the cows were fed with 10kg of silage in each type with the other feed ration ingredients and investigate for sub clinical mastitis and other common disease screening test. The milk

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All the cows were fed with 10kg of silage in each type with the other feed ration ingredients and investigate for sub clinical mastitis and other common disease screening test. The milk yield was measured by the calibrated milk meter and weigh using a digital scale.

Weekly Milk samples were analyzed for fat, protein and lactose, using standard methods.

Results

Table 1: Average daily Milk Yield by type of Silage fed to the dairy cows

Cow Unit	Average Milk Yield /head/day(Kg)
Group 1	18.3
Group 2	10.0
Group 3	15,7

Table 2: Type of silage and Milk Composition (%)

Cow units	Fat	Protein	Lactose
Group 1	3.3	3.2	4.5
Group 2	3.8	3.1	4.8
Group 3	3.6	3.4	4.7

The incorporation of maize silage into dairy diets consistently enhances milk yield by providing high-energy, high–dry matter forage. Phipps et al. demonstrated that replacing grass silage with maize silage at levels above 50 percent of the forage mix boosted milk production by approximately 2.3 kg per cow per day. The high starch content and favorable fermentation profile of maize silage support sustained rumen microbial growth, translating directly into higher lactation performance. Legume silages promote greater voluntary intake and rapid rumen fermentation, often leading to higher milk yields than comparable grass silages.

Conclusions

Maize silage is the most effective in enhancing milk yield, while legume silage improves milk protein content.

Grass silage, although beneficial, resulted in lower milk production compared to the other silages.

These findings highlight the importance of selecting the appropriate type of silage to optimize milk production and composition in dairy cows.

This basic research paves pathway for different potential areas of research for silage and animal productivity.

Limitation

Financial, physical, technical, skilled HR, technology, Infrastructure

References

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