



## Effects of fodder conservation and ration formulation interventions on dairy performance in Kenya

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### ABSTRACT

Use of conserved forages and proper ration formulation has great potential to bridge the gap in dairy nutrition and reduce seasonal variations in milk yield. This study determined the effects of various fodder and ration formulation interventions on dairy farm performance in North Rift, Eastern, and Central regions of Kenya. Seventy-two farms were purposively selected as participating farms and assigned into six groups of twelve as follows: two groups on silage production, two groups on ration formulation, and two control groups having similar production systems and in the same geographical locations as the other groups. Data on daily dry matter feed intake and milk yield were recorded while laboratory analysis was done to determine milk butterfat and protein content. The data was analyzed using a multi-linear regression model to assess the relationship between independent and dependent variables. The results showed that farmers using feed rationing with advisory services had the highest average daily milk yield (19.7 kg/cow) compared to maize train silage (16.8 kg/cow) and those with silage support from Service Provider Enterprises (SPE) (13.3 kg/cow) ( $P < 0.05$ ). Daily dry matter feed intake/cow varied significantly across the interventions as well as feed utilization efficiency ( $P < 0.05$ ). Milk butterfat and milk protein content did not differ ( $P > 0.05$ ) across the interventions. In conclusion, use of maize train silage and feed rationing with advisory services increased milk yield and reduced seasonal milk fluctuation.

**Keywords:** Feed intake, Maize silage, Milk yield, Silage bales, Service provider enterprises.

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## Introduction

The dairy sector is the largest agricultural sub-sector in Kenya, and its share in gross domestic product (GDP) is approximately 4% (Odero-Waitituh, 2017). Dairy farming in Kenya is concentrated in the high altitude Agro-ecological zones of the Eastern, Central highlands and North Rift regions with a high and bimodal rainfall and relatively low temperatures between 15-24°C. More than three-quarters of the households in the regions engage in agriculture with 73% practicing integrated crop/dairy production (Wambugu *et al.*, 2011). Dairy feed management and utilization efficiency is the key determinant of dairy farm performance. Conserved forages have great potential to bridge the gap in forage supply and support milk yield during seasonal variations, which will reduce fluctuations in milk supply. The availability of quality forage all year-round is a major challenge

of dairy farmers in Kenya leading to low milk yields, low milk solid content and high cost of milk production (Kashangaki and Ericksen, 2018).

Faced with a myriad of constraints, the dairy farmers need to adopt a promising dairy and forage technology especially in utilizing the limited forage resources. This remains critical for increased fodder and milk production and improvement of the performance of dairy industry for economic growth (Mutavi, 2017). This justifies the need to adopt production-enhancing forage innovations and dairy feed rationing as better ways of stimulating milk production to meet the ever-increasing demand for milk.

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