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“Development on the margin”

Incorporation of *Mucuna pruriens* as a Protein Supplement in the Diets of Lactating Dairy Cows

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Abstract

Napier grass is predominantly used as a feed resource for cattle in Rwanda. Velvet bean (*Mucuna pruriens*) is one of the herbaceous legumes that can be incorporated into the smallholder farming sector to improve milk production during the dry season. The objective of the study was to evaluate the effect of supplementing napier grass (*Pennisetum purpureum*) with velvet bean on milk yield and milk quality of lactating dairy cows. Eight in-calf crossbreds (Jersey × Ankole and Sahiwal × Ankole), average age of 3 years and liveweight of 230–280 kg were used in the study. The animals, individually housed, were divided into two groups and allocated to two treatment diets: Napier grass alone and Napier grass with *Mucuna*. During the study all animals were offered napier grass as the basal diet plus 3 kg of crushed maize, distributed in 2 rations per day. The velvet bean forage was harvested at 10 cm from the ground level and chopped into pieces of about 15–20 cm length. One group of the cows was supplemented with 8 kg fresh (equivalent to 2 kg DM) velvet bean forage daily, split into two equal rations after milking. The adaptation period was 14 days, the measuring period 77 days. The cows fed on velvet bean had higher milk yield ($p < 0.05$) compared to the cows fed napier grass alone with an average milk yield of 8.56 and 6.71 kg d⁻¹, respectively. The supplementation of lactating cows with *Mucuna* increased milk production by about 28%. However, the milk composition of the two treatments was not significantly different ($p > 0.05$). The protein content of the milk was 3.57% from the cows fed napier grass based diet and 3.53% from the cows fed napier with velvet bean. The fat content was 3.8% from napier grass based diet and 3.95% from napier supplemented with velvet bean. The cows that were fed napier grass with velvet bean had higher milk production throughout the experimental period. The study showed that forage legumes such as *Mucuna pruriens* can be effective protein supplements for use in feeding the lactating dairy cows in Rwanda.

Keywords: Legume forage, milk quality, Napier grass, protein supplements