



Tropentag, September 20-22, 2017, Bonn

“Future Agriculture:  
Socio-ecological transitions and bio-cultural shifts”

## Effect of Feeding Sweet Potato Vines Silage on Dry Matter Intake, Milk Yield and Profitability in Smallholder Dairy Systems

JESSE GAKIGE<sup>1</sup>, CHARLES GACHUIRI<sup>2</sup>, KLAUS BUTTERBACH-BAHL<sup>3,1</sup>, LUTZ MERBOLD<sup>1</sup>, JOHN GOOPY<sup>1</sup>

<sup>1</sup>*International Livestock Research Institute (ILRI), Kenya*

<sup>2</sup>*University of Nairobi, Animal Production, Kenya*

<sup>3</sup>*Karlsruhe Inst. of Technology, Inst. of Meteorology and Climate Research, Atmospheric Environmental Research, Germany*

### Abstract

Smallholder dairy production is a key economic activity in Kenya, responsible for the improvement of nutrition and livelihoods of many. Tropical (C4) grasses and stovers, which frequently form the bulk of cattles' diets have poorer digestibilities, lower energy and less protein than is required to sustain milk production and smallholders frequently purchase commercial dairy meal (CDM – a grain-based concentrate) to supplement their animals' diets and so lift production. A less expensive alternative to CDM would have immediate, positive effects on profitability and household income. A feeding trial was conducted to evaluate the effect of feeding sweet potato vines silage as an alternative to CDM on productivity of lactating dairy cows. Fourteen Friesian cows in late lactation fed a basal diet of Napier grass, were supplemented with either CDM or sweet potato vines silage mixed with wheat bran (SPVS). Milk production, feed intake, live weight (LW) change and income per liter of milk were monitored for a period of 56 days. Milk production for CDM was greater than for SPVS (7.6 l day<sup>-1</sup> vs 6.25 l day<sup>-1</sup>;  $p < 0.05$ ). Cows on CDM had a higher dry matter intake than those on SPVS (9.01 and 7.78 kg DM d<sup>-1</sup> respectively;  $p < 0.05$ ). LW change per week was not different between the two treatments. Gross margin per liter of milk was greater for SPVS than CDM (11.72 vs 0.26 Kenyan Shilling L<sup>-1</sup>;  $p < 0.05$ ). Our results showed clearly, that while supplementation with SPVS supports a lower level of production than CDM, its much lower cost means that sweet potato vine silage mixed with wheat bran is a viable and financially attractive alternative to commercial dairy concentrate and is suitable for adoption by smallholder farmers.

**Keywords:** Late-lactation, silage, sweet potato, vines