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The Effect of Integrating Forage Legumes in Smallholder Crop/Livestock Farming Systems on Food, Fodder and Animal Performance

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Abstract

In a farmer participatory process, farmers in Uganda identified intensive dairy cattle farming based on improved breeds and Napier grass (*Pennisetum purpureum*) basal forage as a potentially viable enterprise to enhance income of resource poor households. Inadequate year-round fodder supply partly due to land shortage is a major constraint in this production system. Napier grass productivity declines during the dry season resulting in a decline in animal performance and household income. To alleviate this concern, a participatory on-farm study on maize/*Lablab purpureus* (lablab) intercropping was done to evaluate the effects of intercropping lablab with maize crop on stover and maize grain production and document farmers' experiences in testing food/forage technologies.

The study results showed that fodder dry matter and maize grain yields and cob size were increased by 26, 7 and 6%, respectively in maize/lablab intercropping systems compared to maize monocrops (4,373 kg⁻¹ha⁻¹yr⁻¹; 2,912 kg⁻¹ha⁻¹yr⁻¹; 134 g respectively). Mean percentage crude protein (CP) content of maize/lablab residues was higher (8.4% CP) in intercrops than monocrops (4.0% CP). Maize/lablab intercropping increased phosphorus and calcium content compared to maize monocrop. Cows that were offered residues from maize/lablab intercrop in addition to Napier grass as a basal diet during the dry season produced about 13% more milk than cows on sole Napier grass (7.7 ± 0.02 litres cow⁻¹day⁻¹).

Major benefits identified by farmers during a participatory technology evaluation survey were: weeds were suppressed by lablab plants thereby reducing on labour and cost required to weed the fields; lablab plants conserved soil moisture; maize stover yield and quality, food security and household income improved.

Major lesson learnt from the study was that testing forage legume/food technologies with resource poor farmers is a very big challenge. It requires patience and institutional support. However, it improves adoption of the innovations.

This study revealed that lablab could be introduced as a component crop in an intercropping with maize to improve fodder and food availability.

Keywords: Fodder, food, forage legume, intensive smallholder dairy farms