MURONGO MARIUS FLARIAN	**PhD IN DRYLAND RESOURCE MANAGEMENT**
	**Title of thesis**: **Farmer perception and soil factors influencing tissue culture banana (*musa x paradisiaca*) adoption and production in smallholder farms in Uganda** **Summary** The rate of adoption of tissue-culture banana (TCB) at smallholder farmer level in Uganda has been low since the technology was introduced over 20 years ago. Farmer perceptions that limit adoption, soil biotic and abiotic factors influencing production, and the contribution of local soil amendments that enable TCB adoption, growth and production needed further study. This was achieved through survey, lab examinations and randomised controlled field experiments. Smallholder farmers perceived TCB as an expensive-input intensive technology whose products rate low on organoleptic qualities compared to non-tissue culture banana (NTCB). The banana weevil and the root knot nematode varied considerably in space and time, and largely devastated TCB than NTCB. However, application of bio slurry from cow dung and local banana brew, significantly increased soil nutrient capacity at variable depths, reduced nematode pest population, and caused normal growth and yield of TCB cultivars up to the 12 month after planting (MAP). Adoption of NTCB was largely influenced by the banana weevil than it was by nematodes in the same farmers' fields. Variations in soil pH, and N significantly influenced TCB distribution.

Smallholder banana farmers should use locally available cattle manure and the bi-products from banana brewing to offset the nutrient requirement deficit for TCB production, control banana pests, and increase yield of the banana.

The application of cow dung and banana bio-slurries causes changes in the occurrence of phytochemicals in the root of TCB. Some of the phytochemicals probably act as a defence against the weevils and nematode attack on the TCB plants resulting in growth of the plants.

Selected pictures of interest from the study

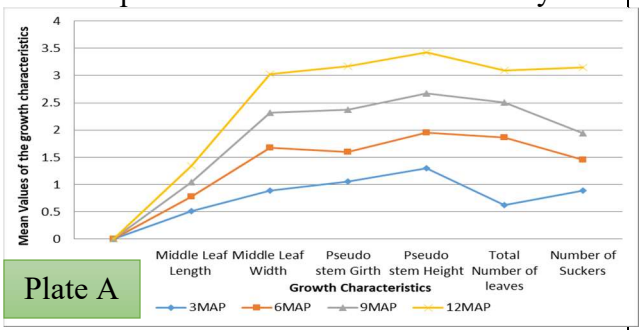

Plate A

Plate A:Graphical growth progression of treated TCB cultivars,
Plate B: Field growth of the treated banana at 12MAP

Plate B

Season for production and location of the smallholder banana farms influence the distribution and prevalence of soil biotic (banana weevils, and parasitic nematodes) and abiotic (pH, N, P, K, and OM) factors. Critical understanding of seasonal and spatial distribution of banana weevils and nematodes is an essential basis for developing strategic and affordable less expensive local inputs in banana production to manage the pests below the threshold level in smallholder banana farms.