

## PhD Research Progress Report (Feb 2019- Jan 2020)

**Name of PhD Student:** Noel Amos Madalla

**Field of study:** Horticulture Science, specialization in crop breeding

**University:** Swedish University of Agriculture Science (SLU)

**Timeline of study:** 26th February 2019 to 28th February 2022

**Research title:** Participatory Varietal Selection of Secondary Triploid Cooking Banana Hybrids Bred for Tanzania and Uganda

**Supervisors:** Prof. Rodomiro Ortiz, Sveriges lantbruksuniversitet, Sweden,  
Prof. Rony Swennen, Catholic Universiteit Leuven, Belgium  
Dr. Lewis Machida, Bioversity International, Tanzania  
Dr. Eva Weltzien, University of Wisconsin-Madison, Germany  
Dr. Robooni Tumuhimbise, National Agriculture Research Organization, Uganda

### The specific objectives of the study are to:

1. evaluate the agronomic performance and yield <sup>1</sup>stability of NARITA hybrids across crop cycles in research-station trials and on-farm in five sites in Tanzania and Uganda;
2. better understand the preferences of farmers for banana cultivars in Tanzania and Uganda, and the criteria they use for adoption or rejection;
3. assess banana varietal performance and edaphic-climatic factors contributing to the genotype-by-environment interaction (G×E) for plant growth and yield parameters;
4. optimize methods for assessing agronomic performance of banana hybrids in on-station and on-farm trials, particularly for validating the quantifying of bunch weight of EAHBs using non-destructive field observations<sup>2</sup>

### Achievements

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<sup>1</sup> Can simply be regarded as above-average performance in an appropriately chosen set of environments. Though, consistency of performance over the set of environments has also to be considered. A cultivar is also considered stable if it has adaptability for a trait of economic importance across diverse environments.

<sup>2</sup> Wairegi, L.W.I., van Asten, P.J.A., Tenywa, M. and Bekunda, M. 2009. Quantifying bunch weights of the East African Highland bananas (*Musa* spp. AAA-EA) using non-destructive field observations. *Scientia Horticulturae* 121:63–72.

<http://dx.doi.org/10.1016/j.scienta.2009.01.005>

1. Completed preparation of the research proposal namely " Participatory Varietal Selection of Secondary Triploid Cooking Banana Hybrids bred for Tanzania and Uganda". The proposal is submitted at Swedish University of Agriculture Science (SLU).
2. Prepared the introductory paper namely "Assessing end-users traits of importance in improved banana cultivars in Tanzania and Uganda". The paper is under the final review to incorporate supervisors' comments and be published at the university press. This will serve some credits for coursework at SLU
3. Prepared the preference ranking paper namely "Preference ranking of new banana cultivars with farmers in Uganda and Tanzania - understanding key traits for selection". The paper is under review by supervisors and will form the second chapter of my PhD thesis"
4. Attended a PhD course in "Biometrical methods for analyzing plant breeding trial data in the omics era" at the Swedish University of Agricultural Sciences (SLU), Alnarp, Sweden from 18th – 22nd November 2019"