# Phenotyping the banana biodiversity to identify climate smart varieties with optimal market potential in Africa and Europe

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## Abstract

Banana (*Musa* spp.) is the fourth most important crop in the Least Developed Countries, providing staple food for more than 400 million people (www.fao.org.faostat). It is an important source of income for many small and medium-scale producers that needs only limited inputs to ensure a harvest. However, yield and the value chain are far below their potential for many smallholder farmers in the cattle corridor areas (drought-prone) of Uganda. Intensifying banana production in a sustainable way (without expanding land use and considering biotic and abiotic pressure) means introducing suitable varieties that are resilient to the effects of climate change and remain high-yielding. The project, therefore, aims to sustainably improve banana production and productivity with climate-smart bananas. This would be achieved through the diversity search in the already existing banana varieties preferred by farmers. Also through consultations with stakeholders of the banana value chain. But also needed to do is the drought evaluation of recently released elite banana hybrids that are high yielding and also resistant to pests and disease. This would guide the selection and introduction of climate-smart banana varieties that are tolerant to climate change. Introducing diverse banana varieties that are high-yielding with acceptable sensory attributes, resistant to pests and diseases, but also tolerant to prolonged droughts is equivalent to climate-smart bananas. A baseline survey was conducted in Sembabule, Ntungamo, and Isingiro districts. More than 18 % of respondents suffered food and income insecurity, and loss of livestock during drought. The coping strategy reported was a reduction in the number of meals per day and the sale of animals. Also, not all preferred banana varieties were drought tolerant. Intervention; four banana hybrids: Kabana-6H, NAROban$^{-3}$, NAROban-4, and NAROban-5, identified on the basis of robustness and resilience to erratic rainfall, pest, and disease were established and being evaluated for drought tolerance. The successful banana varieties with tolerance traits to drought will later be promoted to farmers in the drought-prone areas

**Keywords:** Climate smart banana, drought, high yielding, pest and disease resistant

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