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P56 The quest for climate smart varieties: phenotyping the banana biodiversity

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Bananas (\textit{Musa} spp.) are giant perennial herbs that are produced in more than 120 tropical and subtropical countries. They are the largest fruit crop in the world with an annual production of 141 million tonnes [for comparison, global apple production was 81 million tonnes in 2013] (2013, FAO). Only 15\% of global banana production, mostly “Cavendish bananas”, is exported; the vast majority of bananas produced (85\%, including Cavendish) are locally traded and/or consumed. The Bioversity International \textit{Musa} Germplasm Transit Centre (ITC), hosted by the Catholic University of Leuven (KU Leuven), houses a unique collection of banana diversity. It now holds over 1500 banana accessions, as a global heritage for the benefit of current and future generations. The proposed project aims to expand ITC’s services and boost the use of its conserved germplasm by establishing an automated \textit{Musa} phenotyping and nursery facility to increase the ITC’s capacity to screen the conserved material for beneficial traits and to multiply on-site healthy plant material in African fields.

The project has teamed up with the Belgian private sector to develop and install a climate-controlled container (Farm Flex) that will provide a more dynamic setup for ITC research, which can be easily and rapidly rearranged to fit the specific needs of an experiment. The initial focus will be on screening the banana diversity for drought tolerance. The phenotyping facility will allow the work to be automated and therefore performed faster and with higher levels of accuracy/high throughput. The Farm Flex will also be adapted to be used as an in-field nursery in Africa to rapidly and cheaply supply healthy plant material.