Seeds for future generations –
Determinants of longevity

BOOK OF ABSTRACTS

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Germination and storage behaviour of wild banana seed

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Bananas are the most important fruit crop in the world with a yearly production of 129 million tons and they are cultivated in more than 120 countries in the humid and semi-humid tropics. Because of their sterility edible bananas are vegetatively propagated making seed conservation thus not an option for their long term storage. Until recent, banana collection existed mainly as field and in vitro collections. However, in the year 2003 a cryobank was established at the Bioversity International Transit Centre (ITC), Leuven Belgium.

During the last decades there is more and more interest in the CWRs (Crop Wild Relatives). They are considered an increasingly important resource in breeding for improving agricultural production and for maintaining sustainable agro-ecosystems. For wild bananas, Musa spp., standardized protocols for the germination and storage of their seeds are not yet available. In this study, we present some first results on the germination and storage behaviour of seed of Musa acuminata and Musa balbisiana, the wild ancestors of the edible bananas as well as from other crop wild relatives of Musa. In 2014, 48 seed batches were received from 7 providers. Greenhouse germination rates were rather low and erratic and never exceeded 10%. This could partially be improved by applying embryo rescue resulting in an in vitro germination rate between 0 and 96% (average of 30%). The chemical viability test using TTC gave a good estimate on the in vitro regeneration. Subsequently, non-dried (MC between 10.5 and 27.3%) and dried (MC below 10%) seed was subjected to different storage conditions; room temperature, 5 °C, -20 °C and -196 °C for different time periods. We concluded that when sufficiently dried, Musa seed can be stored at -20 °C as well as at ultralow temperatures.