October 2017

MusaNet newsletter

www.musanet.org

Collecting wild bananas in Papua New Guinea

Musa scientists undertook an exciting exploration of the East coast of Papua New Guinea from 7 to 17 June, 2017, with the aim of collecting wild specimens for population genetics studies. The mission was organized by the National Agriculture Research Institute (NARI) in PNG, Bioversity International and the Botanic Garden of Meise, Belgium and was funded by the Belgium Government through the PhenSeeData project.

The collecting team visited two provinces on the East coast: in Madang province,

they collected samples of *M. acuminata banksii M. schizocarpa* and *M. peekelii* ssp. *angustigemma* while *M. acuminata* ssp. *banksii, M. schizocarpa, M. maclayi* spp. *maclayi* var *maclayi* and *M. balbisiana* were collected in Morobe Province. In addition to leaf samples, seeds were also collected that will be studied and conserved as part of the Global *Musa* Seed Bank being established by Bioversity International and the Botanical Garden of Meise (see story below).

The detailed report on the collecting mission, complete with photos of many specimens, is found on the MusaNet website here.

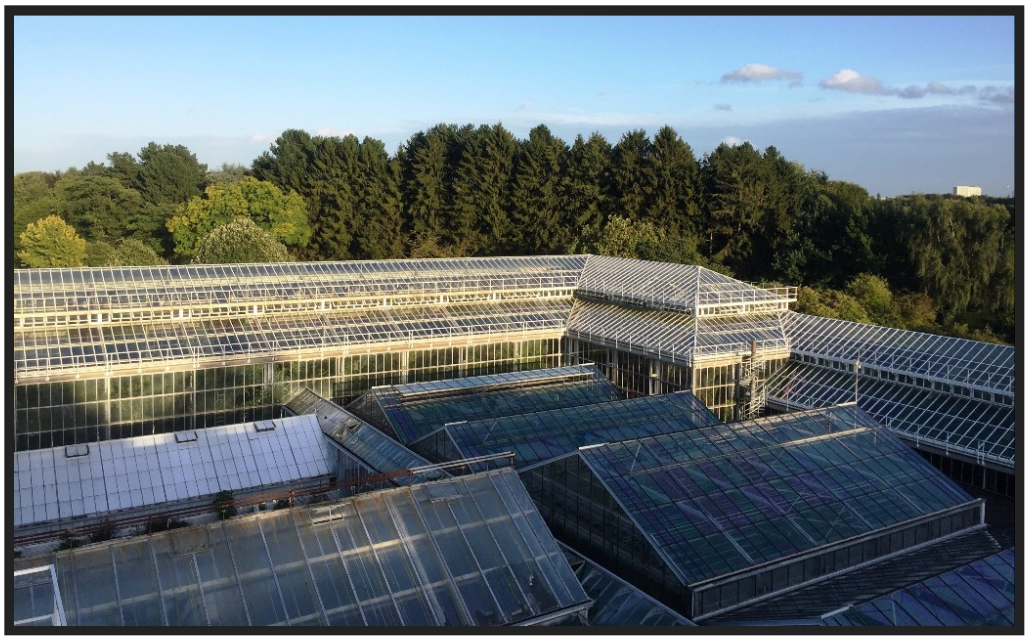
Collecting team in Madang Province (from Left to right: Benson Joe, Chapman Bade, Paul Hubub, Sinclair Magu, Leo Ainga, Samuel Vanden Abeele, Julie Sardos, Steven Janssens, Janet Paofa and John Kogliak)

Global *Musa* Seed Bank

Bioversity International and the Botanic Garden of Meise in Belgium have recently signed an agreement to establish the Global Seed Bank for Banana. This landmark partnership between Bioversity's International Transit Centre (ITC) and a botanical garden will pave the way for the long-term conservation of seeds of wild *Musa* species, and foster important collaborative research on population genetics, germination, virus indexing and optimal storage of banana seeds.

The seek bank has already been initiated with seeds of various wild species on both mainland Papua New Guinea (Madang and Morobe Provinces) and the island of Bougainville (Northern Solomons Province, Papua New Guinea) during recent MusaNet collecting missions (link to the reports here).

Concurrently, the Botanic Garden Meise will also undergo major renovations, including increasing their greenhouse facilities (photo below) and allocating 1,000 m2 for banana! After at least two years of initial research, the banana seeds will be available for distribution upon request under the conditions of the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA).



Minimum Descriptor List for characterizing EAHBs

MusaNet has published the new Minimum List of Descriptors for East African Highland Bananas (EAHBs) which comprises 18 key morphological descriptors (divided into vegetative, floral and fruit categories) that help discriminate within this important subgroup. The descriptors are modified from those originally published in the Descriptors for Banana book (IPGRI/CIRAD, 1996).

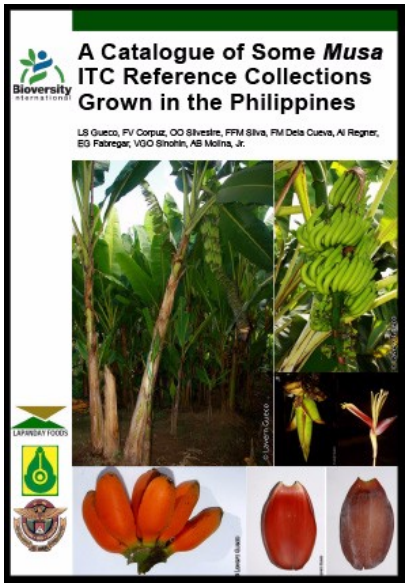
Following the methodology used to develop the minimum lists for *Musa* and for Plantains, the descriptors were identified and refined by a core team of experts (Deborah Karamura, Eldad Karamura (Bioversity) and Kodjo Tomekpe (CIRAD)) and tested/revised by curators (photo below) during the MusaNet East and Southern African

regional workshop on East African Highland Banana characterization and documentation, which was held in Dec 2016 at NARO, Uganda (see news link here).

All the minimum descriptor lists can be found on the MusaNet here.

Catalogue of *Musa* Accessions in the Philippines

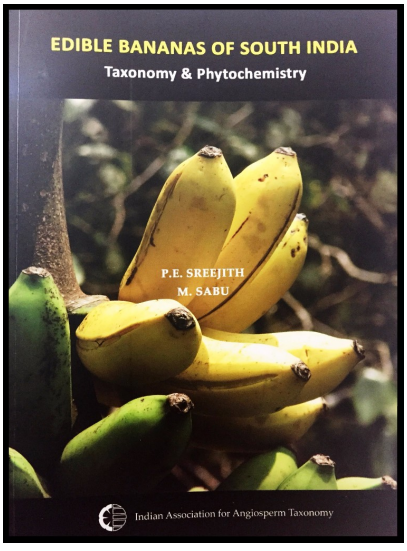
Bioversity International has published a catalogue describing 25 accessions from the *Musa* Germplasm International Transit Centre (ITC) grown in the Philippines. The accessions, which represent different subgroups, were planted in a field infected with Fusarium Wilt (*Foc* TR4) and were characterized using the minimum set of morphological descriptors and photos. Supplemental information is provided on the reaction of the accessions against *Foc* TR4 and Banana Bunchy Top Virus.



The catalogue was made possible by the project entitled "*Assessment of Musa Genetic Resources for their Host Reaction to Fusarium oxysporim f.sp. Cubense Tropical Race 4 (Foc TR4), Towards Understanding the Genetic Base of Host-Pathogen Interactions*" through funding from the CGIAR Research Program for Roots,Tubers and Bananas (RTB). Contributions were made by the University of Philippines at Los Banos, Lapanday Food Corporation and the Bureau of Plant Industry, all based in the Philippines.

The catalogue can be downloaded from the BAPNET website here.

New book on South Indian cultivar diversity



This book, by P.E. Sreejith and M. Sabu, is the first attempt to study the taxonomy and phytochemistry of Banana cultivars of South India. Twenty-four distinct edible cultivated bananas of South India are described under five genomic groups (AA, AAA, AB, AAB and ABB). The nomenclature of all taxa were updated in consultation with the latest code of nomenclature (both ICN & ICNCP), and synonyms are

provided of all available local names along with the area of cultivation. Detailed descriptions include colour photographs and a dichotomous key for easy identification. A total of 53 figures are also included that contains habit, infructenscence, hand, male and female flower and parts etc.

The phytochemical analysis of the fruit pulp of 13 edible banana cultivars was done using the Gas Chromatography–Mass Spectrometry technique. This is the first attempt to analyse and compare the fatty acids and volatile compounds present in the fruit pulp of South Indian bananas. The major compounds were listed with their retention time for each cultivar.

To order the book, please contact Dr. M. Sabu at msabu9@gmail.com

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Young *Musa* researcher: Vu Dang Toan

In this newsletter, we are pleased to feature Dr. Vu Dang Toan, Head of Science and International Cooperation Department at the Vietnamese Academy for Agriculture Sciences (VAAS).

1. What is your background and how did you become interested in banana research?
I have a MSc in Biotechnology with special focus on genetic diversity analysis and a Phd in Biotechnology with focus on plant molecular and physiology analysis, both from Yeungnam University in South Korea. I have been working at the Plant Resources Center for the last 18 years and started working with banana in the project "Conservation of crop genetics for food and agriculture".

2. Can you tell us about some notable recent or current Musa related projects?
I have been working together with colleagues to collect and conserve the cultivated banana varieties in Vietnam. I have also been working with wild banana by collecting and conserving wild banana from Vietnam and evaluation of the wild banana resistance to some biotic stress.

3. Where would you like to be in 10 years and what would you like to be working on?
I will continue with the conservation of cultivated and wild banana for food and agriculture. Moreover, I would like to evaluate and search for valuable traits of

cultivated and wild banana to provide data for the breeding programs

4. What is your favorite banana species/cultivar and why?
Musa coccinea is my favorite wild banana species because it has a very beautiful flower. A local variety "Chuoi Ngu Dai Hoang" is my favorite variety because it has a lovely aroma and sweet fruit.

Dr. Toan can be contacted at: vdtoannga2003@gmail.com

Upcoming Events

The Research Institute of Tropical Root and Tuber Crops (INIVIT) will convene the IV International Symposium on Roots, Rhizomes, Tubers, Plantain, Bananas and Papaya, to be held from October 24-27, 2017 in Varadero Resort, Cuba. The symposium will also commemorate the 50th anniversary of the creation of INIVIT. More info can be found here.

MusaNet Asia regional workshop on banana characterization and documentation, 13-17 November 2017 at MARDI, Jerangau Station, Malaysia.

IV Congreso Latinoamericano y del Caribe de Plantanos y Bananos, XVIII Congreso Nacional Mexicano de Productores de Plantano, XII Congreso del Comite Directivo de MusaLAC. 27 November to 2 December, Colima, Mexico. More info can be found here.

MusaNet ETG meeting on evaluation protocols to be held at Bioversity International in Montpellier, France, from 12-15 December.

The annual Plant and Animal Genome (PAG) conference will take place from 13-17 January 2018 in San Diego with the banana genomics workshop on the 16th January. More information, including abstract submission (deadline 27 October) is found here.


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