

March 2017



[www.musanet.org](http://www.musanet.org)



## The 2016 MusaNet Members Meeting



MusaNet held its second global meeting since its launch in 2011, at Bioversity International, Montpellier, France on 14-15 October 2016.

The meeting brought together 35 MusaNet members (see photo above), including most of the Expert Committee.

The objectives of the meeting were to:

- 1) Announce the publication of the updated Global Strategy for the Conservation and Use of *Musa* Genetic Resources
- 2) Report on the activities in the regions, ProMusa and within each of the Thematic Groups that took place over the last 5 years
- 3) Discuss and agree on the priorities for the next 5-10 years within and across the Thematic Groups.

Small group and plenary discussions allowed full participation in producing interesting ideas on various topics on *Musa* genetic resources. The meeting was considered to be a success in setting the baseline work plans for each Thematic Group, and for further discussion on potential global projects that would involve all Thematic Groups.

Thank you to all who attended!

Download [the meeting report here](#), which includes links to all presentations in pdf.

## Exploring the Banana Diversity of Bougainville

Organized by the National Agricultural Research Institute (NARI), Bioversity International and the Meise Botanical Garden, the banana collecting mission in the Autonomous Region of Bougainville (AROB) was carried out from 19 to 31 October 2016 on the islands of Bougainville, Buka and Sohano.

The collecting team was composed of Janet Paofa (curator of the *Musa* collection in NARI Laloki), Gou Rauka (phytopathologist in NARI Lae), Steven Janssens (Research Fellow at Meise Botanical Garden), Gabriel Sachter-Smith (Banana taxonomist consultant for Bioversity International) and Julie Sardos (co-chair of the MusaNet Diversity Thematic Group, Associate Scientist in Bioversity International). A local guide, Mr Zohn Bosco, accompanied the team.



The team collected 61 potentially new varieties and wild types of banana for further conservation, including some cooking diploid AA that could be useful for plantain breeding. Numerous leaf samples were collected for population genetics studies which will 1) allow for a better understanding of geneflow and populations dynamics of wild species on Bougainville, 2) allow the species *M. bukenis* and *M. maclayi*, which are apparently sympatric in this island, to be better defined and 3) provide additional insight into the domestication of Fe'i bananas that were domesticated from the section *Australimusa*.

A report on the collecting mission will soon be published on MusaNet.



Top left: itinerary of collecting mission on Bougainville, right: local farmer with Fe'i bananas (photo G. Sachter-Smith). Bottom: location of Bougainville.

## MusaNet Regional Workshop in Uganda on EAHBs

The second MusaNet regional workshop on *Musa* characterization and documentation took place at the NARO collection in Mbarara, Uganda, from 12-16 December 2016. In attendance were 16 curators from the East and Southern African (ESA) region and Bioversity staff from Montpellier and Kampala (see photo below). The group spent 3 days on a local farm characterizing East African Highland Banana (EAHB) accessions and discussing the results in order to develop a minimum list of descriptors that are most discriminating for the EAHB subgroup.

Throughout the week there was extensive knowledge exchange on EAHBs, field management, characterization and documentation using tablets. They tested the new MusalD application (for identifying varieties) at the NARO collection and used the MusaTab application (for field characterization) during the field sessions. The week was rounded out with a guided visit to a local banana market and a performance by a group of local traditional dancers. The dedication and enthusiasm of the curators and the support of the Uganda Bioversity staff were crucial to the success of this workshop.

The workshop report and all presentations are found on the MusaNet website [here](#).



## 30<sup>th</sup> Anniversary of the ITC

Bioversity's International *Musa* Germplasm Transit Centre (ITC) celebrated its 30<sup>th</sup> anniversary in January, with an event that brought together Bioversity International scientists (including several MusaNet members) and key donors such as the Belgian Development Cooperation (see photo below).

The Katholieke Universiteit Leuven (KU Leuven) in Belgium houses the ITC, which holds the world's largest collection of bananas, with more than 1,500 samples representing hundreds of banana varieties. Accessions are held in perpetuity in medium term storage (*in vitro*) and long term storage (cryopreservation).

You can read more about the ITC collection and the 30<sup>th</sup> anniversary celebration [here](#). To see the presentations from the event click [here](#).



## PAG Banana Genomics Workshop

As in previous years, a banana genomics workshop was organized in January at the annual Plant and Animal Genome (PAG) conference in San Diego under the umbrella of MusaNet. Six speakers were invited to present their recent scientific outputs in various areas of genomics. We welcomed James Dale (Queensland University of Technology), Guillaume Martin (CIRAD), Pat Heslop-Harrison (University of Leicester) and Robert Miller (University of Brasilia and Co-Chair of the GTG). MusaNet coordinator Nicolas Roux (Bioversity International) presented the Global Strategy for the Conservation and Use of *Musa* Genetic Resources and Mathieu Rouard (Bioversity International, Chair of the ITG and workshop co-organizer) gave an overview of recent achievements with information systems, namely MGIS and Banana Genome Hub. The other co-organizer of the workshop was Angélique D'hont (CIRAD and chair of the GTG).

About 60 people attended the workshop, which was followed by a small evening meeting. Further information and the presentations can be found at:  
<https://pag.confex.com/pag/xxv/meetingapp.cgi/Session/4170>





Top photo: Banana workshop at PAG; Bottom photo: Evening meeting – from left Valentin Guignon, Jaroslav Dolezel, Mathieu Rouard, Angelique D’hont, Robert Miller, Nicolas Roux, Guillaume Martin and Chris Cullis.

## New Release of MGIS

In March 2017 a new release of the [Musa Germplasm Information System \(MGIS\)](#) will be published including Passport Data from eight additional partners. Thank you to [ARI](#), [BPI](#), [CENAREST](#), [FAVRI](#), [INERA Mulungu](#), [INRAB](#), [TBRI](#), [UNIKIS](#) for signing the DSA and sharing data from their collection.

Also in the new release of MGIS are several new features:

- A bibliographic module for ITC accessions - so far 1,091 ITC accessions are linked to at least one publication. This information is cited at the bottom of the Passport Data accession page.
- A Passport Data Completeness Index for Musa (PDCIm) is now calculated for each accession. This index is a measure of the completeness of the Passport Data information and will serve as a basis to improve the data quality of the MGIS database.

- A genotyping module with access to molecular markers (SNPs) from Next Generation sequencing data.

In addition, a few improvements and bug fixes were carried out:

- a new layout for printing accession Passport Data pages.
- new google maps on collection and accession pages.
- a unified list for ordering material, exporting data and comparing accessions.
- the possibility to zoom on photos by using the mouse wheel.

Please visit the site and do not hesitate to send feedback (with the contact form). If you are a registered user (anyone can be), you can comment on accessions to alert us about errors or to provide additional information. You too can help improve the content of MGIS!

Read more about the new release [here](#).

**Musa Germplasm Information System**  
Explore Banana Diversity

HOME ACCESSIONS COLLECTIONS GENOTYPING TOOLS ABOUT CURATION GENOME BREEDING R\_Chase Log out

**MGIS**  
The Musa Germplasm Information System (MGIS) contains key information on Musa germplasm diversity, including passport data, botanical classification, morpho-taxonomic descriptors, molecular studies, plant photographs and GIS information on 3698 accessions managed in 12 collections around the world, making it the most extensive source of information on banana genetic resources.

**Highlighted Accession**  
*Pisang Oli (ITC1157)*

**Participating collections**  
CORBANA  
USDA United States Department of Agriculture  
NARS NATIONAL AGRICULTURAL RESEARCH ORGANISATION  
On seedling, Characterizing and Banking Agricultural Research in Uganda

**News**  
30/11/2016 New release of MGIS  
21/12/2015 MGIS embarks new partners' Data PLUS new features  
09/01/2015 The MGIS development team launches a new version

**WHO'S PARTICIPATING**  
Organizations  
Data curators

**LEGAL INFORMATION**  
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Terms and Conditions of Use  
Data sharing agreement  
Privacy policy

**FEEDBACK**  
Contact us  
Citing MGIS

Last updated: February 15th, 2017

MusaNet

Young *Musa* researcher: Gabriel Sachter-Smith

We are pleased to feature Gabriel Sachter-Smith in this newsletter, an enthusiastic young *Musa* taxonomist currently based in Washington State, USA.

*1. What is your background and how did you become interested in banana research?*

I grew up in a small rural town high in the Rocky Mountains of Colorado USA, far away from any banana plants. I first became interested in bananas at about the age of 13 when I learned the simple fact that “bananas do not grow on trees” from my mother's friend who grew them as summer annual plants in her home garden near Washington DC. This interested me for some reason, I'm not sure why, and I brought it up as a fun-fact to share with friends at school. I was made fun of with the response “That's wrong, haven't you ever heard of a banana tree? Bananas definitely grow on trees”. I was pretty sure I was correct, but I had to find out for sure, so I went to the school library and did some research. I presented my friends with the correct answer that bananas, although tree-like, are not in fact trees. None of my friends cared, and we moved on. But for some reason in that process I became fascinated with banana plants, and continued to research them and began to learn all I could about them.

Throughout high-school, I reached out to experts in the field, and gained my first banana mentor, the late wild banana expert [Markku Hakkinen](#), who provided me with countless images and documents and was always happy to help answer my ever-growing list of questions. I grew banana plants in pots in my home, and eventually did science fair projects about bananas, including my first attempt at breeding when I crossed the AA cultivar ‘Rose’ with *Musa laterita* (see photo below left). I eventually chose to attend the University of Hawaii where I obtained my BS and MS degrees in Tropical Plant and Soil Science with a focus on breeding and genetics, and used every opportunity possible to learn more about bananas. Since I was first inspired by banana plants when I was about 13, I have never stopped being fascinated by them and am continually driven to learn all I can.

*2. Can you tell us about some notable recent or current Musa related projects?*

Shortly before the passing of Markku Hakkinen, he asked me to collaborate with him on his monograph on wild *Musa*. I was left with a basic outline, and many (but far from all) of his photos and documents, and am now in the process of attempting to produce a version of this publication in his honor within the framework of MusaNet.

Most recently, I was invited to join the Bioversity sponsored collecting expedition to Bougainville, Papua New Guinea (see story above and photo below right). This was really a dream come true, and I was so happy to be able to contribute to the knowledge of banana diversity in a professional capacity.

*3. Where would you like to be in 10 years and what would you like to be working on?*

My top interests in the world of bananas are understanding diversity, breeding, and wild species. So to me, the ultimate expression of these interests is in creating new types of bananas utilizing a diversity of wild species to explore the edges of what is possible in conventional banana breeding. I have been doing small breeding experiments when I can since that first cross in high-school, but I'd like to fully establish my own unique breeding program and be creating totally new types of bananas, and am currently working towards that.

I would also love to be exploring for new banana genotypes, both wild and edible, and help to understand them and make them available for use by the banana research community.

*4. What is your favorite banana species/cultivar and why?*



This is always a difficult question to answer because I love them all and there are so many different uses, so I have favorite individuals for specific purposes.

However, the AA cultivar 'Rose' holds a special place in my heart as it was the first banana plant I ever grew, and the first plant I had produce fruit. It is also a beautiful plant forming mats with many slender, rose colored pseudostems, and delicious fruit.



Left: Gabriel at 16, making his first cross between Musa 'Rose' (AA) and *M. laterita*. Right: On the recent Bougainville collecting mission, at a market in Arawa, with the cultivar "Moni".

## Upcoming Events

Eucarpia symposium: Crop Diversification in a Changing World: Mobilizing the green gold of plant genetic resources. 8-11 May in Montpellier, France

[www.eucarpiageneticresources2017.org](http://www.eucarpiageneticresources2017.org)

Sixth SBG Brazilian Symposium on Plant Molecular Genetics. 28 May to 6 June, Ouro Preto, Brazil. <https://www.sbg.org.br/copia-vi-sbgmp>

Genomics of Plant Genetic Resources conference in Germany 3-7 September  
<http://www.gpgr4.org/>

"Science Protecting Plant Health", a joint conference of the Australasian Plant Pathology Society and the Plant Biosecurity Cooperative Research Centre, to be held at the Brisbane Convention Centre, Queensland, Australia, from 26-28 September 2017.  
<http://sciplant2017.com.au/>

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.

<http://www.inivit.cu/evento/eng/index.html>



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