

1st half 2014:

In this issue: a training program, meetings, conferences and visits from our partners. Discover the highlights of the Cabaré project from the second half of 2014. Happy 2015 and we hope you enjoy reading our newsletter!

PIF specialist Nathan Nang at the CIRAD.

Nathan Nang is a PIF (seedlings from stem fragments) specialist from CARBAP (Central African Research Centre on Bananas and Plantains). He brought his specialist knowledge of the PIF method to the Cabaré project during a mission to Guadeloupe from 7 to 16 July 2014.

The PIF method is a horticultural technique for obtaining multiple banana plants from bulbs. It is based on the activation of meristematic zones of bulbs isolated from carefully selected discards which are first cleaned, trimmed and dried for 48 hours. After this first stage, regular incisions are made on the bulbs from the center outwards. The bulbs are then placed in germinators with an inert substrate (sawdust or perlite). After a month and a half, the newly formed plants are removed and new incisions are made in order to start a new cycle.

Nathan Nang supervised a theoretical training program as well as practical exercises in the field and the greenhouses. This set up the growth of the plant material required for the trail that will be undertaken in Guadeloupe to compare the activation of eBSV infectious alleles in in-vitro plants and horticultural plants (using the PIF method).



Theoretical training program (right: Nathan Nang).



Discards are cleaned following selection and picking. They are then trimmed.



The plants, after cleaning and incision using the PIF method. We can see the fragments from which future plants will grow.

Submission of 6th and 7th expenditure reports.

The financing of our project with European funds requires us to file a project expenditure report every 6 months in order to receive the grant. Each report requires a lot of work and to meet the deadlines it is important to provide a steady and daily effort throughout the project. The CIRAD Cabaré team rose to the challenge and submitted the 6th and 7th project expenditure reports in September and November 2014.

Teresa Martinez (IDIAF) on assignment in CIRAD Guadeloupe.

Teresa Martinez, PhD student in the Cabaré project and project coordinator for the Dominican Republic, undertook her final visit to CIRAD Guadeloupe. This trip (from 29/09/14 to 11/21/14), allowed her to continue her thesis work in the CIRAD laboratories in Neufchâteau under the supervision of Pierre-Yves Teycheney, her supervisor.



Highlights:

July:
PIF training course supervised by Nathan Nang (CARBAP) from 7 to 16 July 2014.

August: P-Y Teycheney (CIRAD) attends the Annual Conference of the Australian plant pathology Society and the 29th International Horticulture Conference in Brisbane.

September:
6th expenditure report submitted.

Teresa Martinez (IDIAF) visits CIRAD Guadeloupe from 29 September to 21 November 2014.

European day of cooperation in Guadeloupe.

October:
Several Cabaré partners attend the regional closure meeting for the Caribbean Banana project in St. Lucia.

Luis Perez Vicente (INISAV) attends a meeting on banana fusarium at the FAO headquarters in Rome.

Departure of Sandra Kermorgant.

November:
7th expenditure report submitted.

Luis Perez Vicente (INISAV) attends the Global Banana Conference in the Philippines.

December:
Claire Durot, new Cabaré project manager, recruited.

The Cabaré project newsletter



Teresa's work focuses on assessing the risk of spreading banana streak virus (BSV) via dissemination of interspecific banana hybrids and plantains carrying endogenous infectious BSV sequences.

The new interspecific banana hybrid creation method uses two types of progenitors, *Musa acuminata* (A) and *Musa balbisiana* (B). The genome of the parents of *M. balbisiana* contains endogenous sequences of banana streak virus (eBSV). Some of these sequences are infectious and can be expressed in AAB and AAAB hybrids following biotic or abiotic stress, which leads to the infection of plants. Teresa Martinez' thesis aims to assess, using by multi-local trials, the risk of spread of the banana streak virus (BSV) through the dissemination of interspecific banana hybrids and plantains carrying endogenous infectious BSV sequences.

During her third visit to Guadeloupe, Teresa analyzed plant material (leaves) and mealybugs taken from the trial plots in the Dominican Republic. Analysis showed that activation of infectious eBSV started at least 3 months after the start of the crop as seedlings and at least 4 mealybug species are present in the plot: *Dysmicoccus neobrevipes*, *Planococcus citri* D. *brevipes* and *P. stocki*, the first two being vectors of BSV.



Teresa Martinez (IDIAF) at CIRAD Guadeloupe.

September 25, 2014, Guadeloupe: European Cooperation Day in the Caribbean.

The European Cooperation Day was held on September 25, 2014 at the Raizet Centre in Abymes (Guadeloupe). This day was intended to highlight collaboration projects as part of the Interreg IV program. This year, the JTS (Joint Technical Secretariat) focused on Dominica. The Cabaré project was invited to this event to present its partnership with Dominica and its future prospects. Sandra Kermorgant

(project manager) and Pierre-Yves Teycheney (coordinator) represented Cabaré.

Dominica is a beneficiary partner of the Cabaré project. It does not have a partnership agreement with the project but benefits from its innovations. As such, this country has already benefited from the training provided: fifteen people in Dominica were trained (out of a total of 110 people for the entire Caribbean). Moreover, in 2012, training in the diagnosis of black Sigatoka was given in Dominica. Seven people from the Ministry of Agriculture of Dominica and CARDI (Caribbean Agricultural Research and Development Institute) were given training.

Throughout the day, CIRAD Communications Officer Sophie Della Mussia was in charge of the CIRAD information stand. This stand presented four CIRAD collaboration projects including the Cabaré project.



Sandra Kermorgant, Project Manager, outlining the Cabaré project activities conducted with Dominica.



The CIRAD presentation stand, carefully prepared by Sophie Della Mussia, the Communications Officer for CIRAD Antilles-Guiana. It presented four collaboration projects: CaribVET, Devag, Caribbean Sustainable Banana Plan and Cabaré.

Le Cabaré website is online!

The Cabaré project website is coming along nicely. It was finished and translated into the three project languages (English, Spanish and French). For now, it is still available at the following address: <http://cabare-travail.cirad.fr/>. Why not take a look?

In early 2015, the new address will be: <http://cabare.cirad.fr/>.



A look at the Cabaré test plots.

Experiments were set up in May 2014 in each partner country. These experiments aim to optimize monitoring of black Sigatoka and banana streak.

Black Sigatoka

Two experimental plots were set up in Cuba and the Dominican Republic to:

- Evaluate the resistance of new CIRAD hybrids (in Cuba and the Dominican Republic) and the INIVIT hybrids (in Cuba) to black sigatoka;



New banana hybrids assessment plot for black Sigatoka in the Dominican Republic (Jetty, August 2014).

In Cuba, hybrid resistance to black Sigatoka is evaluated in two different climatic zones in Artemisa Province and Villa Clara (INIVIT station).

- Evaluate the effect of fertilization on the severity of black Sigatoka on CIRAD and INIVIT hybrids.



Experimental plot measuring the effect of fertilization on the severity of black Sigatoka in banana plants in the Dominican Republic (Barranca, La Vega, July 2014).

In October 2014, the fertilization program had to be postponed in the Dominican Republic for logistical reasons.

Disease levels are measured monthly. Analysis of the results will take place in 2015 when the banana plants blossom and during picking.

Banana streak virus

An experiment was set up in the Dominican Republic in May 2014 to assess the effect of different plant production methods (discards, vitro plantlets from tissue culture) on the activation level of infectious eBSV alleles. Similar experiments (with the same experimental setup) will take place in Cuba and Guadeloupe in the first quarter of 2015.



Experimental plot evaluating the effect of different methods of plant production on the spread of banana streak virus disease in the Dominican Republic (Barranca, La Vega, May 2014).

The IBP and INIVIT are continuing the production in Cuba of two hybrid in-vitro plant varieties (FHIA 18 and FHIA 21).

Similarly, in Guadeloupe, the in vitro multiplication of plants will be continued for two varieties of plantain (French Clair and Pelipita) and using the PIF method for the Pelipita variety. They will be introduced to the experimental plots in the first quarter of 2015.

Things are happening with Cabaré !

- Pierre-Yves Teycheney (CIRAD, Guadeloupe) attended the Annual Conference of the Australian plant pathology Society from the 13 to 15 August 2014.

In his speech, Pierre-Yves addressed risk management for BSV when using interspecific hybrids. His speech included work from T. Martinez' thesis. He also participated in the 29th International Horticulture Conference, which was also held in Brisbane from 17 to 22 August 2014.

- The final seminar of the Interreg Sustainable Caribbean Banana project was held from 13 to 16 October 2014 in Rodney Bay, St. Lucia.

A total of 66 participants from 10 countries attended the conference, including Mr. Eric La Moussaye and Luis Manuel Lopez, Ambassadors of France and Mexico to St. Lucia, Matthew Walter, Minister of Agriculture in Dominica and John Moses Baptiste, Minister of Agriculture in St. Lucia.



Participants were able to visit banana plantations and taste the four new varieties of CIRAD bananas and associated processed products (banana chips) while filling out tasting questionnaires.

The seminar brought together eight Cabaré partners including beneficiaries such as Ryan Anselm (Ministry of Agriculture of Dominica), Janet Conie (Banana Board, Jamaica), Lucius Alexander (Ministry of Agriculture, St. Lucia) and a representative of the Ministry of Agriculture of Haiti, but also the project's operational partners such as Catherine Abadie (CIRAD, Guadeloupe), Marlene Veita (Director of INISAV, Cuba), Lilian Morales (INIVIT Cuba) and Fabio Frias (IDIAF, Dominican Republic).

The partners expressed their desire to continue their collaboration, particularly in the perspective of a future Interreg V project on bananas and plantains.

Meanwhile, C. Abadie presented the training programs, diagnostic tools and epidemiological surveillance of black Sigatoka in the Caribbean.

- Luis Perez Vicente (INISAV, Cuba), Cabaré project coordinator in Cuba, attended a meeting on Fusarium wilt of banana at the FAO headquarters in Rome on October 7. He also spoke on black Sigatoka during an International Conference on Banana, held in the Philippines from 19 to 22 November 2014.

Arrivals and Departures

Sandra Kermorgant, Cabaré project manager, has completed her contract. After a rich and intense year at the CIRAD, she will continue her professional and personal projects in Guyana, "This year was very formative. I am optimistic for the future. I think that the knowledge and skills that I acquired here will help me succeed in my next adventure," she says.

Following the departure of Sandra, Claire Durot was hired as project manager. She will take office Jan. 15, 2015, with a Civic Volunteering Service contract, and will accompany the project to completion. Aged 24, Claire holds an engineering degree in agronomy from the ISA, Lille. During her studies, she did an internship with CIRAD Cameroon. She now wishes specialize in project management.



Cabaré Doctoral students

- Clara Landry, CIRAD

Working with the Cabaré project, Clara is doing a doctoral thesis at the University of the West Indies and Guyana. Her research focuses on "Modeling leaf epidemics in tropical perennial crops at different spatial scales: application on variety selection, Guadeloupe." She will defend her thesis on 18 May 2015.

- Elisa Javer-Higginson, INISAV

Working with the Cabaré project, Elisa is doing a doctoral thesis at the University of Havana on the "molecular diversity of BSV species present in the main producing areas of bananas and plantains in Cuba." Elisa will defend her thesis in May, 2015.

- Reina Teresa Martinez, IDIAF

Working with Cabaré, Teresa is doing a doctoral thesis at the University of the West Indies and Guyana on "Assessing of the risk of spreading the banana streak virus (BSV) by disseminating interspecific banana and plantain hybrids carrying infectious endogenous BSV sequences". Teresa is in her final year and is scheduled to defend her thesis in December 2015.

We're in the news!

The discovery of a new kind of virus: the Florendovirus, whose genome (or segments thereof) exists in fossils in the DNA of flowering plants, is being widely talked about. This discovery by an international team of researchers, including Pierre-Yves Teycheney, the Cabaré project coordinator for CIRAD Guadeloupe, was relayed in the following media:

- ✓ "Des fossiles qui permettent de remonter le cours du temps" (itv P-Y. Teycheney), *France Antilles Guadeloupe*, 20/11/14
- ✓ *RCI Guadeloupe* (itv de P-Y. Teycheney), 20/11/14
- ✓ *Radio Canada*, les samedis du monde, 15/11/14
- ✓ *Guadeloupe Première TV*, 26/11/14
- ✓ Florendovirus, retour vers le futur pour le CIRAD, *Nouvelles semaines* N°235

The publication is available in open access: <http://www.nature.com/ncomms/2014/141110/ncomms6269/full/ncomms6269.html>

The final meeting is coming!

Our closing meeting will be organized in the last week of June 2015 in Guadeloupe. On the program: scientific results, conferences and field trips.

© CIRAD Antilles Guyane
Direction régionale - Station de Neufchâteau-Sainte-Marie
97130 Capesterre Belle-Eau - Guadeloupe, FWI
Tel : (590) 86 30 21 - Fax : (590) 590 86 80 77

Editorial: C. Abadie, C. Durot, P.-Y. Teycheney, S. Della Mussia & S. Kermorgant.