INTERNATIONAL WORKSHOP

SURVEILLANCE AND CONTROL OF CASSAVA DISEASES IN AFRICA

PÔLE DE PROTECTION DES PLANTES (3P) SAINT-PIERRE, LA RÉUNION ISLAND

JUNE 10-13, 2014



















The Safe-PGR project (*Towards Safer Plant Genetic Resources through improved viral diagnostics*) was initiated in 2012 to improve the knowledge of the viruses infecting the crops addressed by four partner's BRCs in Guadeloupe, Madeira, Azores and Reunion, and develop classical or new diagnostic techniques for the species they deal with: banana, garlic, sugarcane, sweet potato, vanilla and yam. The project is funded by the French National Agency for Research and the governing bodies of Azores, Madeira, Guadeloupe and Reunion. The research consortium involves teams from INRA (BFP, ASTRO), CIRAD (BGPI, AGAP, PVBMT), CBA Azores and ISOPLEXIS Madeira.

Methods: The project aims at exploring the molecular diversity of the viral families affecting the targeted crops, optimize classical diagnostic methods taking into consideration data generated through this analysis of viral diversity and develop new multi-pathogen diagnostic methods based on metagenomics and deep-sequencing technologies (Roche 454). Eight nucleic acids extraction methods for metagenomics studies have been tested and compared. Two complementary methods based on the extraction of double-strand RNA and viral particles have been selected. Bioinformatics tools have been successfully developed for analyzing the metagenomics data. These methods are currently used for the screening of 1500 plants from the CRB germplasm collections.

Virus discovery : The preliminary bioinformatics analyses of plant EST databases and of the first deep sequencing results generated, allowed the tentative identification of a total of 25 new viruses in Garlic, Sugarcane, Yam and Vanilla for which new and efficient detection assays have been developed and implemented. Further characterization of a new *Allexivirus* of garlic and new *Potexvirus* of vanilla will be presented.

IT CAPACITIES IN LA RÉUNION ISLAND



a Réunion island The Plant Protection Platform Center (3P Center) is CIRAD's largest laboratory and hosts and manages most of the technical IT resources for the entire island.

Henri BROUCHOUD IT Manager, Cirad, France

The IT infrastructure includes all that is necessary for high level science activities : virtualized datacenter, high bandwidth networks, high performance workstations...

Since 2003 the 3P Center has been involved in several regional programs and projects in which it has taken the lead in IT activities, especially the creation and development of a Web portal for biodiversity and sustainable agricultural production. The 3P Center has also helped to develop a database of regional pests and diseases that contains a visual inventory of plant pests and diseases in the Indian Ocean area.

Another project involves innovative applications for smartphones that can automatically recognize plants from pictures, or observation statements and visual diagnosis of plant diseases on the spot.