COST Action FA0807 Integrated Management of Phytoplasma Epidemics in Different Crop Systems

Short-term Scientific Mission (STSM) Report

STSM Grantee: Assunta Bertaccini assunta.bertaccini@unibo.it
Alma Mater Studiorum, University of Bologna, Bologna (IT)

STSM Host: Arty Gungooshing-Bunwaree, Agricultural Research and Extension Unit (AREU), Quatre Bornes (Mauritius) agbunwaree@yahoo.f

STSM Topic: Surveys and sampling in main crops of Mauritius towards sustainable management of phytoplasma diseases

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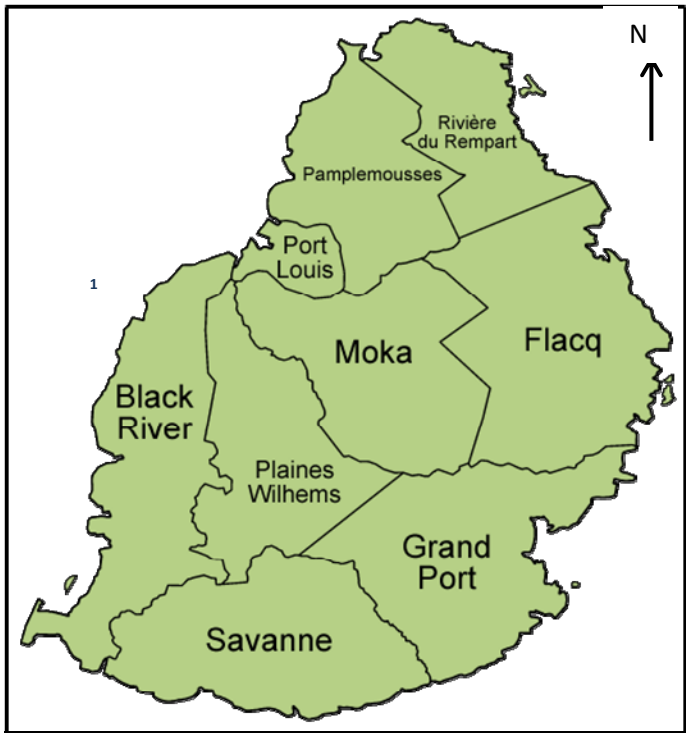
Purpose of the visit

Since phytoplasmas have been reported in Mauritius in the last 15 years, the aim of this STSM was the survey of main crops growing in the main agricultural areas to verify phytoplasma symptoms presence and incidence. This is a first step that can help in understanding the epidemiology of phytoplasma-associated diseases in a confined environment (average diameter of Mauritius island is 50 km).

Mauritius Island



Description of the work

During the stage at the Agricultural Research and Extension Unit (AREU) of Mauritius some surveys on the main crops growing in the main agricultural areas of Mauritius were carried our to verify phytoplasma symptoms presence and incidence. Main crops surveyed were those where the phytoplasma presence was already reported such as tomato, watercress, okra and palm.

Collected samples were used for nucleic acid extraction and the extracted DNAs were divided in batches for the parallel analyses in the two laboratories (AREU and Italy).

A total of about 200 samples was prepared, 30 of which were further processed with preliminary PCR and nested PCR assays on 16Sr DNA to verify phytoplasma presence in sample extracted. The majority of the samples were positive and RFLP and/or sequencing to verify phytoplasma identity are in progress. Testing of the other processed samples will be carried out in parallel in the two laboratories.

Inspection of several crops in different environments

A comparison of phytoplasma strains identified during the survey will be carried out on other genes than 16Sr DNA. In particular tuf, rp and secY genes will be amplified and studied by RFLP analyses and in some case also with sequencing. The results will help in epidemiological definition of phytoplasma strains in a restricted area.

The planned surveys on local insect populations in order to verify and evaluate the possible presence of insects vectoring phytoplasmas were not performed since it was not the most appropriate season for extensive insect collection. Since no information were collected about presence of possible insect vectors for phytoplasmas the growers were requested to rogue out symptomatic plants at the appearance of first symptoms and to continue with sanitation at field level during all crop cultivation time in order to eliminate possible source of infection. Use of insect-proof nets for seedling production, avoid the re-planting a new crop in the vicinity of phytoplasma infected ones, and elimination of first plants that show phytoplasma symptoms were recommended to reduce the pathogen dissemination. The risk represented by these pathogens cannot be underestimated because phytoplasma diseases can spread fast under poor management conditions and the effectiveness of suggested measures in containing the disease spreading is under evaluation.

Discussions about joint research plans towards implementation of information on epidemiology of tomato and okra phytoplasma diseases into the COST project were agreed.