Spirasol

Sampling of Phythophthora infestans and Ralstonia spp. from wild Solanum

ABSTRACT

In nature, plants and their pathogens are contantly adapting to each other as well as to various climatic changes. This potentially leads to diverged populations with high genetic diversity in both plant and pathogen. Understanding such variety in the pathogen and the degree of adaptation to biotic and climatic variables is of major importance for resistance breeding and to understand if and how new epidemics could arise.
Their geography and relevance in plant breeding make wild tomato spp excellent models for this study.

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Project leader : Emmanuel Szadkowski
Project leader's institution : INRA-INRAE
Project leader's RU : GAFL

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Funding : Labex

GOAL

The goal of this project is to establish a database with pathogen samples from four diverse wild tomato species (each with unique habitats) for further studies into pathogen diversity and adaptation.

ACTION

This exploratory project encompasses one major sampling trip for two devestating tomato (and potato) pathogens, the oomycete Phytophtora infestans and the bacterial species complex Ralstonia solani (RSSC). Sampling will take place in November/December 2017 and will span three geographical regions in Peru. 1. Central : Lima, 2. North : Chiclayo/CajaMarca 3. South: Arequipa/Tacno.
Together with the Peruvian Partners at CIP, we will extract DNA from all samples from both pathogens and prepare the samples for long term storage. Genotyping for both pathogens will be done in Europe PVBMT (RSSC), GAFL/TUM (Phytophthora infestans).

RESULTS

At the end of this projects we will have gained insights in the global diversity of two major tomato pathogens. With our genotyping data we can see which patterns occur in both species and if these unrelated pathogens show similar (or in fact dissimilar) genetic clustering and if and how this relates to the different host species as well as climatic variables.

PERSPECTIVES

The initial results will form the basis for more detailed population genetics studies as well as molecular studies to unravel which genes are involved in different adaptations and how these genes can be utilised in future breeding programmes.
In light of global climatic changes, understanding the link between pathogen – host and climate adaptation will be of utmost importance to mitigate future disease epidemics.