

## SHORT TERM SCIENTIFIC MISSION (STSM) SCIENTIFIC REPORT

This report is submitted for approval by the STSM applicant to the STSM coordinator.

**Action number:** CA16107

**STSM title:** Improving competence in and exchange of knowledge and diagnostic practices on selected *Xanthomonas* spp. of interest to Portugal and Slovenia

**STSM start and end date:** 20/01/2019 to 02/02/2019

**Grantee name:** Eva Garcia

### PURPOSE OF THE STSM

In Portugal, agricultural production is an important sector for the national economy. The production of cherry, citrus, almond, peach, apple and pear represent a substantial part of this agricultural sector. Considering that diseases related with *Xanthomonas* sp. have a very important impact in these fruit trees, it is extremely important to develop competences and improve our services to help the producers to deal with these threats.

The main goal of the present STSM was to acquire competences in *Xanthomonas* sp. detection and exchange of knowledge on this group of pathogens. Furthermore, interchange knowledge on *Xylella fastidiosa*, *Erwinia amylovora* and *Pseudomonas syringae* pv. *actinidiae*, as well as other Bacteria, Phytoplasma and Viruses of common interest, was also an objective.

### DESCRIPTION OF WORK CARRIED OUT DURING THE STSM

During the STSM, every topics of our purpose were considered.

Regarding to *Xanthomonas* sp., all procedures of pathogen diagnosis were performed, from culture media preparation to pathogen identification using morphological, biochemical and molecular methods. The pathogen extraction from a latent sample was made and all the procedures were done according to EPPO protocol. Additionally, extracts from different hosts previously analysed and positive for *Xanthomonas* sp. were plating, with the objective of training the morphological identification. Besides, three different media were used for morphological observation of numerous species and pathovars of *Xanthomonas* sp.. DNA extraction from some of these pure colonies was performed for barcoding and the sequences were analysed.

Protocols for *Erwinia amylovora*, *Pseudomonas syringae* pv. *actinidiae* and *Xylella fastidiosa* detection were considered and discussed.

Concerning *Clavibacter michiganensis* subsp. *sepedonicus* and *Ralstonia solanacearum* detection, pathogen extraction from potato samples and Immunofluorescence technique were performed.

Real-Time PCR, MALDI-TOF and LAMP assays were executed and their application in the different diagnosis methods were examined.

A meeting where protocols and procedures for detection of Phytoplasmas (*Candidatus phytoplasma mali*, *Ca. p. pyri* and *Ca. p. prunorum*) and Virus (*Tomato mosaic virus*, *Pepino mosaic virus* and *Potato spindle tuber viroid*) was carried out and the methods were discussed.

**DESCRIPTION OF THE MAIN RESULTS OBTAINED**

Protocols for detection of several species of *Xanthomonas* sp., *Clavibacter michiganensis* subsp. *sepedonicus* and *Ralstonia solanacearum* were learned and their implementation on FitoLab will be discussed. Likewise, protocols for some Phytoplasmas and Virus analyses were studied. Moreover, protocols for detection of *Xylella fastidiosa* and *Erwinia amylovora* were examined and improvements will be also discussed on FitoLab. New techniques were observed, namely MALDI-TOF, Immunofluorescence and LAMP, and their implementation on laboratory protocols will be considered.

**FUTURE COLLABORATIONS (if applicable)**