

Resistance breaking strains of tomato spotted wilt orthotospovirus: distribution and evaluation of their impact on tomato and pepper production



Funding

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Research consortium

DAF (AU), CREA (IT), NIB (SI)

Contact information

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Goals

The goal of the project is to investigate the tomato spotted wilt orthotospovirus' genome differences between resistance breaking (RB) isolates from tomato and pepper and non-RB isolates of these hosts. This investigation seeks to clarify if previous reports of genome motifs responsible for RB phenotypes are universally present in RB isolates from geographically distant areas

Objectives

The project objectives are:

- to collect and phenotype a range of tomato spotted wilt orthotospovirus isolates from pepper, tomato and other hosts including weed species from Australia, Italy and Slovenia
- to generate full genome sequences of these isolates
- to compare full genome sequences of RB isolates and non-RB isolates to identify differences that potentially confer the RB phenotype
- to review diagnostic protocols for the detection of RB isolates on the basis of the newly derived genomic data

Key outputs and results

The expected project results are:

- knowledge of the impact of resistance breaking isolates in Australia, Italy and Slovenia
- a collection of geographically diverse, phenotypically and molecularly characterised, isolates of tomato spotted wilt orthotospovirus
- knowledge of the virus genetics: clarification of the presence of the putative single amino acid changes at positions Y118 or N120 in the non-structural protein (NSm) gene in RB-tomato isolates or identification of alternative putative motifs responsible for the RB phenotype in tomato, pepper and weed hosts