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Project Deliverables



Profiling olive cultivars that might be tolerant to Xylella fastidiosa

• One of the key strategies to mitigating the impact of *Xylella fastidiosa* on olive trees in Apulia is to search for naturally resistant or tolerant plants that have been selected from existing olive <u>cultivars</u> and spontaneous seedlings that have survived in infected areas. This strategy has been widely used in fighting *Xylella fastidiosa* infections in grapevines in the USA and <u>citrus in Brazil</u>.

Xylella fastidiosa

The bacterium *Xylella fastidiosa* is one of the most threatening plant pests in the world. It can colonize more than 550 plant species and is pathogenic on a wide range of them, including grapevine, citrus, almond, oleander, orange, peach, coffee, avocado, olive tree, and oak. Once confined to North and South America, *Xylella fastidiosa* was first detected in Europe in 2013. Cultivars



 Building on that background, POnTE project scientists investigating the Xylella fastidiosa epidemic in Apulia used RNA-sequence analysis to test the interaction between olive trees and the bacterium, learning to recognize susceptible and resistant traits in the plants.



POnTE Project

The EU Horizon 2020 financed POnTE project started in 2015 and concluded in 2019. POnTE gathered 25 organizations and 120 researchers from 10 EU and three non-EU countries to foster and share knowledge for the prevention, detection, control, and management of a group of plant pests threatening crops, biodiversity, and the economy in Europe.

- The collected data confirmed findings from field observation indicating that the Leccino cultivar is less harmed by the bacterium if compared to the highly susceptible Ogliarola cultivar.
- More specifically, Ogliarola responds to the infection by emphasizing the droughtlike symptoms and water stress, accelerating desiccation. Leccino, on the contrary, has shown a lesser susceptibility to these traits and a smaller bacterium population, suggesting that its adoption may attenuate the transmission of the pest.

New findings, new questions

Thanks to the POnTE project, researchers were able to leverage RNA sequencing tools to support empirical observation on the existence of varieties of cultivated olive trees that are less susceptible than others to the infection. Thanks to the discovery of these resistant traits, Italian and European authorities repealed the ban on planting new olive trees in infected areas, giving renewed hope to olive growers who live in areas where it is impossible to eradicate the bacterium. The discovery of the Leccino's resistant traits and genes paves the way for future breeding programs to protect olive trees from *Xylella fastidiosa* infection. But the research on resistant cultivars is still far from being completed, as it requires long tests in the field in order to identify additional cultivars within existing olive biodiversity.



PHOTO CREDITS: IPSP - CNR Bari