

fastidiosa subsp. *pauca*. It has been reported as potential biocontrol agent of the pathogen, being its population higher in citrus plant showing mild symptoms of variegated chlorosis. Further research is in progress to better characterize the different *Methylobacterium* strains, using both biochemical and molecular approaches, and to evaluate its activity in reducing the severity of olive quick decline syndrome.

Acknowledgment

This work has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N. 635646 "Pest Organisms Threatening Europe POnTE".

Bibliography

- Azevedo J.L., Araújo W.L. & Lacava P.T. 2016. The diversity of citrus endophytic bacteria and their interactions with *Xylella fastidiosa* and host plants. *Genetics and Molecular Biology*, 39, 4, 476-491 (2016) doi: 10.1590/1678-4685-GMB-2016-0056.
- Araujo WL, Marcon J, Maccheroni W Jr, Van Elsas JD, Van Vuurde JWJ & Azevedo JL. 2002 Diversity of endophytic bacterial populations and their interaction with *Xylella fastidiosa* in citrus plants. *Applied Environmental Microbiology* 68:4906–4914.
- Andreote F.D., Lacava P.T., Gai C.S., Araújo W.L., Maccheroni W. Jr, van Overbeek L.S., van Elsas J.D. & Azevedo J.L. 2006. Model plants for studying the interaction between *Methylobacterium mesophilicum* and *Xylella fastidiosa*. *Canadian Journal of Microbiology*, 52:419–426.
- Cazorla F.M. & Mercado-Blanco J. 2016. Biological control of tree and woody plant diseases: an impossible task? *BioControl* 61:233–242. DOI 10.1007/s10526-016-9737-0

Attempts to develop sustainable biocontrol strategies of *Xylella fastidiosa* infections in olive

D'Attoma G., Morelli M.*, Cicco S., Saponari M. and Saldarelli P.

*CNR, Istituto per la Protezione Sostenibile delle Piante, Bari (IT)

Abstract: *X. fastidiosa* is a plant pathogenic bacterium, which is causing the 'Olive Quick Decline Syndrome' (OQDS), on olive trees in the southern part of Apulia region. The knowledge of mechanisms regulating olive- *X. fastidiosa* interactions is fundamental to develop biocontrol strategies. In Pierce's Disease (PD) the pathogen virulence relies on a fine balance between motile cells, which move and proliferate in xylem vessels, and sticky cells forming a biofilm and responsible for vessels blockage and insect acquisition. This different behaviour is regulated by diffusible signalling factors (DSF), synthesised by a bacterial *rpfF*-gene, that regulate genes inducing biofilm formation. DSFs produced by the olive-infecting strain (CoDiRO) of *X. fastidiosa* were analysed by Gas Chromatography-Mass Spectrometry analysis. Preliminary results showed that a family of unsaturated fatty acids, with a chain length of 12-18 carbon atoms, is produced. They will be further characterised by nuclear magnetic resonance (NMR). These studies may be applied in a "pathogen confusion" strategy for mitigating *X. fastidiosa*-infections by altering DSFs level in planta. Pursuing this approach, a plant viral-based vector has been engineered to induce *rpfF* transient expression. This approach would make *X. fastidiosa* cells less motile and more sticky in xylem vessels, thus lowering their virulence. A model system is being evaluated to verify the DSF expression and accumulation directed by a viral-*rpfF* recombinant vector.

Acknowledgment

This work has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N. 635646 "Pest Organisms Threatening Europe POnTE" and grant agreement N. 727987 "Xylella fastidiosa Active Containment Through a multidisciplinary-Oriented Research Strategy XF-ACTORS".

Bibliography

- Chatterjee *et al.*, 2008. Cell-to-cell signaling in *Xylella fastidiosa* suppresses movement and xylem vessel colonization in grape. *Molecular Plant-Microbe Interactions*, 21(10), 1309-1315.