



## **BIOVEXO – Biocontrol of *Xylella* and its vector in olive trees for integrated pest management**

Deliverable 1.1 Review of available biocontrol solutions against *Xylella*

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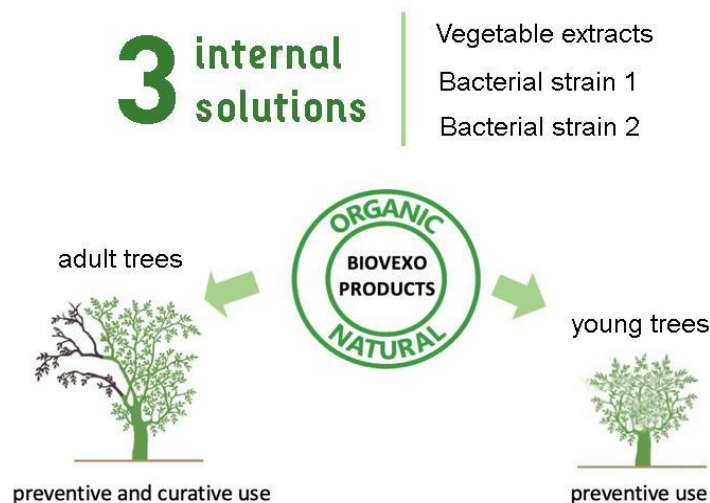


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## 1. Publishable Summary

*Xylella fastidiosa* is a vector-transmitted bacterial plant pathogen associated with serious diseases in a wide range of plants. The bacterium known to cause Pierce’s disease in grapevine was detected on olive trees in Puglia, southern Italy, in October 2013, the first report of the bacterium in the European Union and on this species. Since then, it has also been reported in France, Spain, Portugal and Germany. (<https://gd.eppo.int/taxon/XYLEFA/distribution>). The local plant health authorities of the most affected areas in Apulia and Balears have focused their control strategies in reducing the vector populations or removing infected plants in the affected areas. Recently, on 14 August 2020, following the latest scientific evidence made available by the European Food Safety Authority (EFSA) and experienced in the different EU outbreak areas, the Commission adopted new measures against *Xylella fastidiosa* (2015/789., s.f.), which allow Member States to reduce the buffer area from 10 km to 5 km and from 100 meters to 50 meters the radius of the surface of plants to be removed around a *Xylella*-infected plant in a territory in which “containment” measures are adopted. (Commission Implementing Regulation (EU) 2020/1201) repealing current Decision (EU) 2015/789.

It is therefore urgent to find measures to directly control, not only the vector but also the bacterium. Besides, the use of chemical pesticides to fight the vector is dangerous for preserving biodiversity of the affected areas. BIOVEXO project aims to use 3 biopesticides directly against *Xylella*, based on vegetable extracts and bacterial strains (Figure 1) and compatible with organic production. For this reason, academic and company partners from BIOVEXO project have compiled the present review reporting either the current status of biocontrol solutions provided by the consortium that are directly targeting the *Xylella* pathogen (X-biopesticides) or existing not official solutions outside the consortium that might be included in the integrated pest management in WP4.



**Figure 1:** Biocontrol solutions tested in WP1

Biocontrol solutions must target directly the bacterium and are being tested in two different locations in Apulia and in Mallorca, on a total of 528 young plants and 540 adult trees (Figure 2). The varieties of trees used for the small-scale field trials are Picual and Arbequina in Mallorca and cv Cellina di Nardò and Arbequina in Apulia.



**Figure 2.** Small scale field trials: location of orchards and number of trees. **1.** Mallorca, Spain – 288 plants (144 curative, 144 preventive) **2.** Brindisi 1, Italy – 144 plants (curative). **3.** Brindisi 2, Italy – 144 plants (curative). **4.** Taranto, Italy – 492 plants (108 curative, 384 preventive).

In parallel to testing our consortium solutions, we have also reviewed the literature regarding other solutions tested, which have been proposed to target *Xylella*. The list includes both *in vitro* and *in planta* experiments classified according to the different types of adopted control approaches (i.e. mineral formulations, chemical compounds and microbial metabolites, plant-derived natural products, microbial antagonists and genetically modified plants). This review will be useful to consider the state-of-the-art studies against *Xylella* worldwide in different species, as well as to evaluate their possible use in future trials.