



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

Deliverable 5.2

X- and V-biopesticide activity against the vector

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1 Publishable Summary

The objective of BIOVEXO is to develop an environmentally sustainable and economically viable plant protection solution combining *Xylella*-targeting biopesticides (X-biopesticides) with biopesticides combatting the insect vectors transmitting the disease (V-biopesticides) and to make them for ready use in integrated pest management.

V-biopesticides can kill the insect vector of *Xylella fastidiosa*, e.g. *Philaenus spumarius*. In this deliverable, we focus on the possibility that not only V- biopesticides as microorganisms but also X-biopesticides, that trigger *Xylella fastidiosa*, can colonise the insect vector and form populations on and inside it, following application. In parallel, we follow up the survival and colonisation of the V-biopesticide entomopathogenic fungus on the insect.

Our results show the dynamics of populations of the X- and V- biopesticides across time, as well as which organs of the insect could be colonised. This was assessed with assay in the field with insects in cages, quantitative PCR and advanced microscopic techniques, such as confocal laser scanning microscopy, general staining and fluorescence *in situ* hybridisation.

We confirm that all the tested X- and V- biopesticides are able to colonise and survive on various parts of the insects. These results are promising as they show that the biopesticides are able to survive after spraying, but also suggest the possibility that the insects might carry the inoculated strains on olive trees under natural conditions.

In this study, we were not able to determine the presence of X- and V-biopesticides inside the insects, just on their surfaces. However, further research might lead to discover that they could also be present inside the body of the insects, such as inside the foregut where *Xylella fastidiosa* can be present.