BIOVEXO


Dr. Stephen Webb

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

Stakeholder Dialogue Biobased Industry – Hosted by Nachaltig Wirtschaften
On-line event, Vienna, 15.12.2021
https://nachhaltigwirtschaften.at/de/veranstaltungen/2021/20211215-stakeholderdialog-biobased-industry.php#program

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BIO-BASED INDUSTRIES Public-Private Partnership

Bio·based Industries Consortium

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An Innovation Action co-funded by:

BBI JU

Project key data

Overall budget: 8.0 M€
EU contribution: 6.6 M€
Start date: 01/05/2020
End date: 30/04/2025
11 partner consortium
GA No. 887281

Consortium

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Project overview

As a response to the increasing *Xylella* outbreaks in Europe, the BIOVEXO Project explores innovative biopesticides, which target the *Xylella* bacterium.

Six candidate biocontrol solutions acting either against *Xylella* or its vector will be tested within the BIOVEXO Project:

- two bacterial strains
- a microbial metabolite
- two plant extracts
- an entomopathogenic fungus

These biopesticides will be tested for use in curative and preventive approaches of *Xylella fastidiosa*. Following the small-scale on-field validation and improved formulation, the BIOVEXO Project aims to upscale production of best-performing biopesticides.

A large pilot scale on-field validation of control strategies for integrated pest management, including a real-life evaluation in two major *Xylella* outbreak regions in Europe will be conducted.

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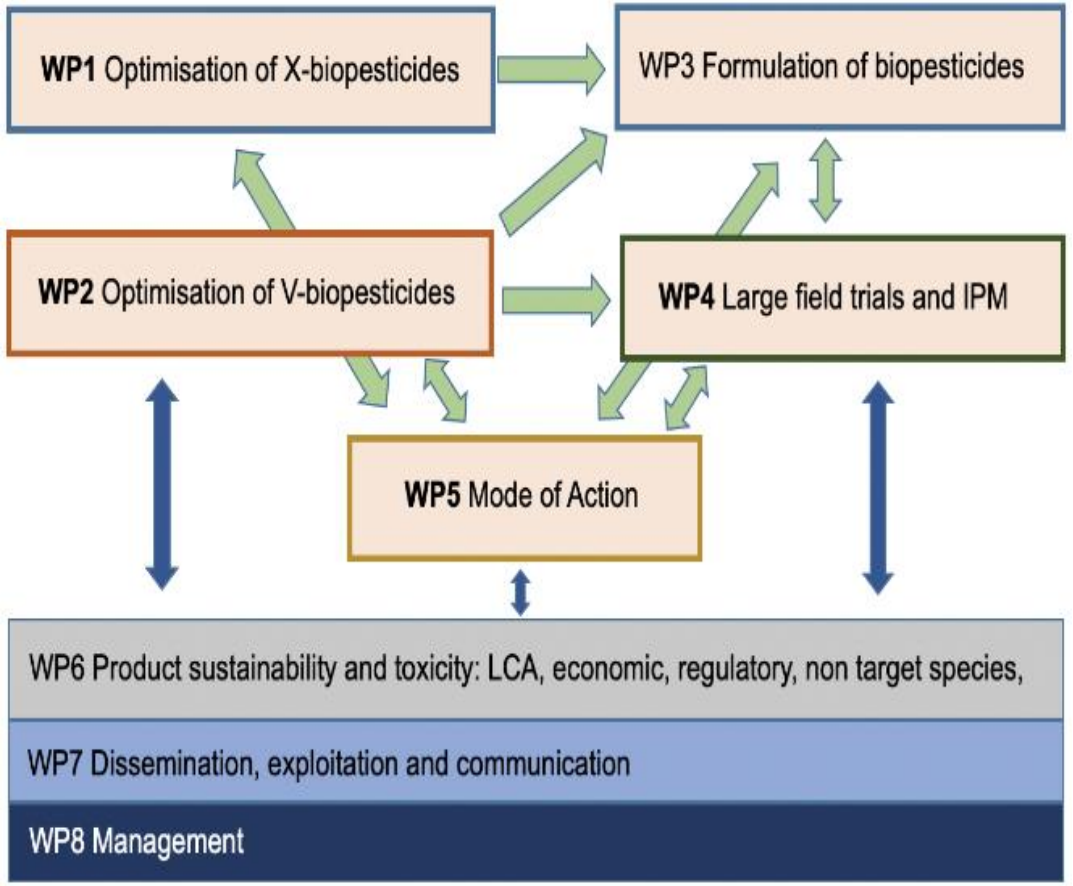
BIOVEXO Specific Objectives and Work Packages

1. **Optimise production of antagonistic bacteria and onion extract for *Xylella*-targeting (X)-biopesticides for prevention and cure**
2. **Optimise production of active substances against *P. spumarius* for vector-targeting (V)-biopesticides preventing infection**
3. **Formulate X- and V- biopesticides and upscale for field trials**
4. **Perform large scale validation of X- and V-biopesticides and their combination in integrated pest management**
5. **Examine mechanistic effects of X- and V-biopesticides on the target organisms**
6. **Ensure sustainability of the BIOVEXO products**



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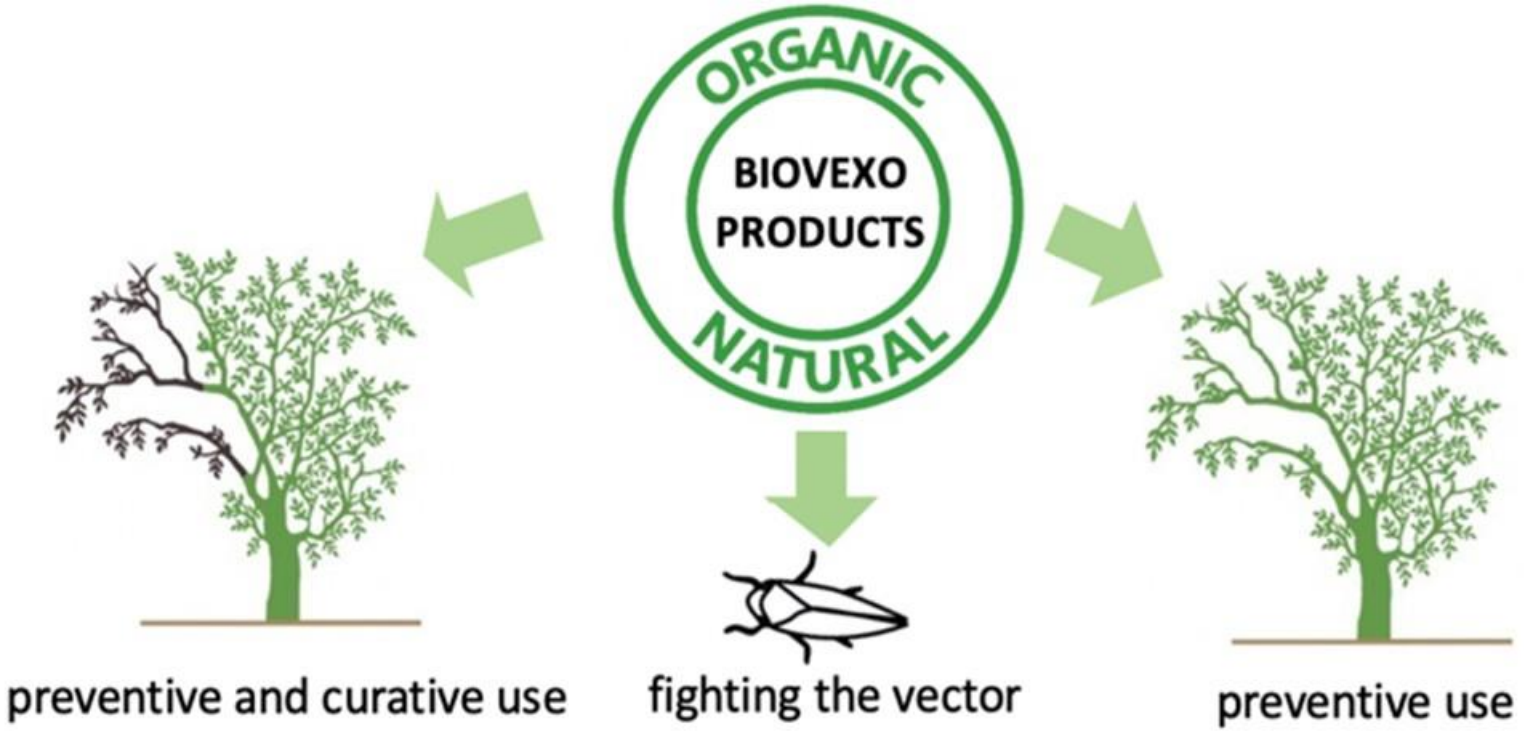
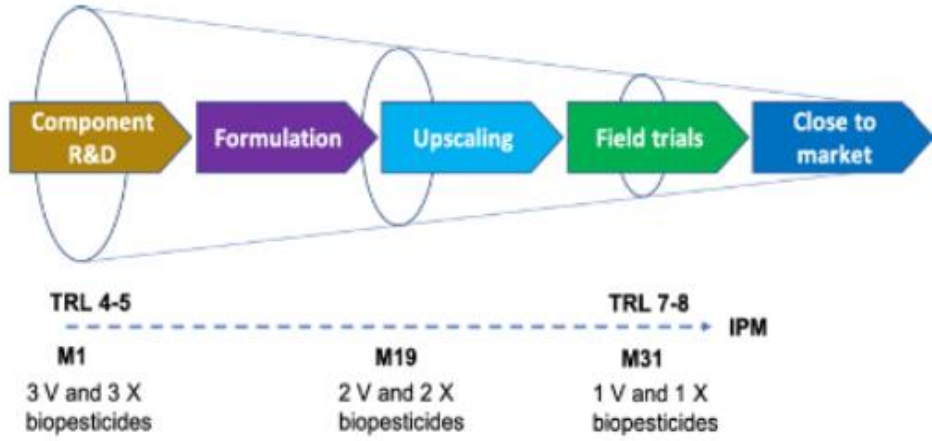
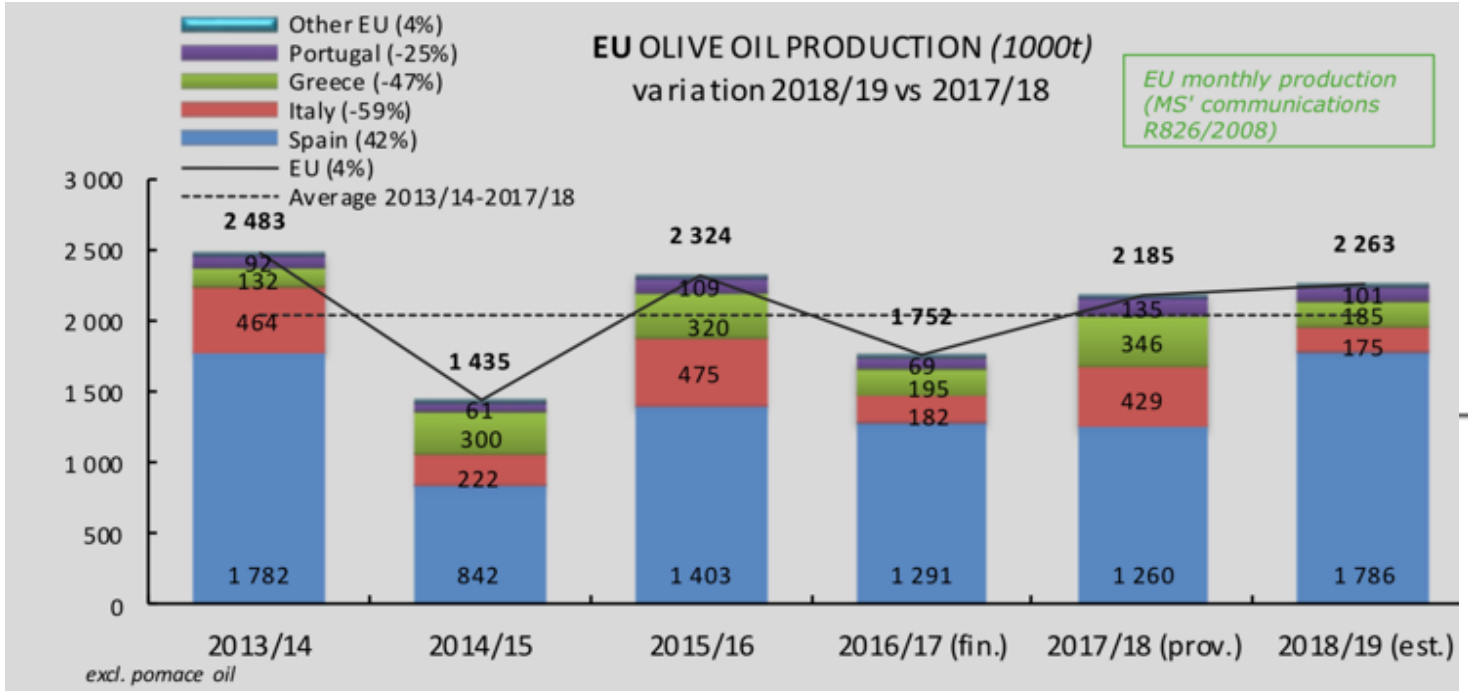
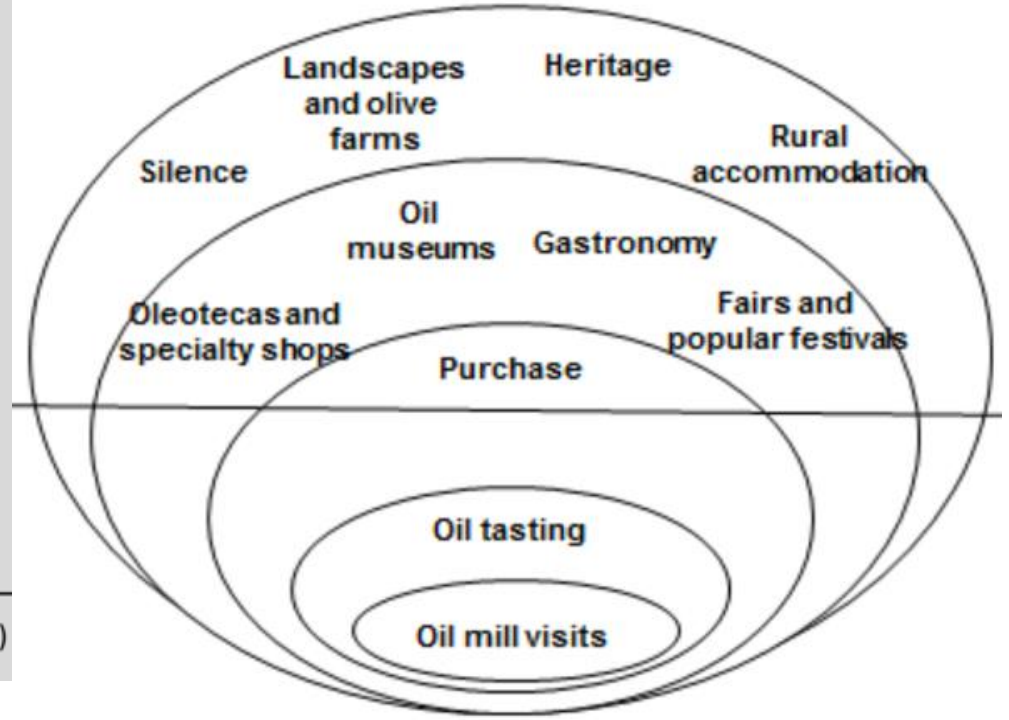
BIOVEXO demonstrates environmentally sustainable and economically viable plant protection solutions, combining the use of *Xylella*-targeting biopesticides (X-biopesticides) with biopesticides combatting the insect vectors transmitting the disease (V-biopesticides), and makes them available for ready use in integrated pest management.





Olive farming economics - more than just the oil itself





European olive oil production.
Source: DG Agri Dashboard: Olive oil (26.6.2019)

Olive oil tourism.
http://om.ciheam.org/article.php?IDPDF=6809

Estimated yield losses due to Xylella

Crop	Estimated yield loss (median)
Olive trees younger than 30 years	34.6%
Olive trees older than 30 years	69.1%
Almond	13.3%
Wine grape in southern EU	2.1%
Table grape in southern EU	1.0%
Wine grape in northern EU	0.5%
Citrus spp.	10.9%

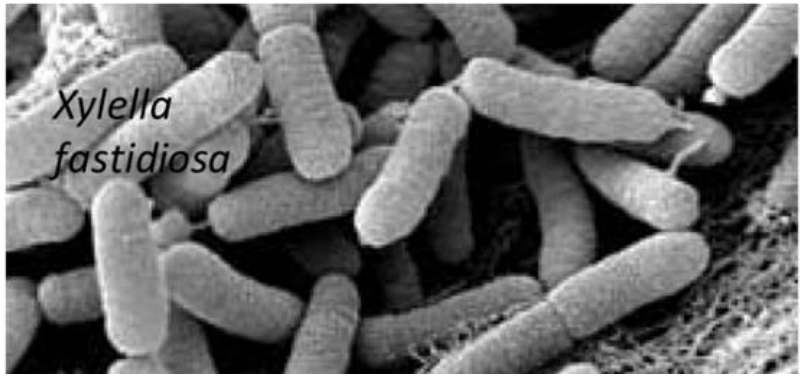
Estimated yield losses should Xylella become widespread in Europe.
Source: EFSA Journal 2019;17(5):5665

***Xylella fastidiosa* potential damage cost estimates:**

Italy €5.2 billion
Spain €17 billion
Greece €2 billion

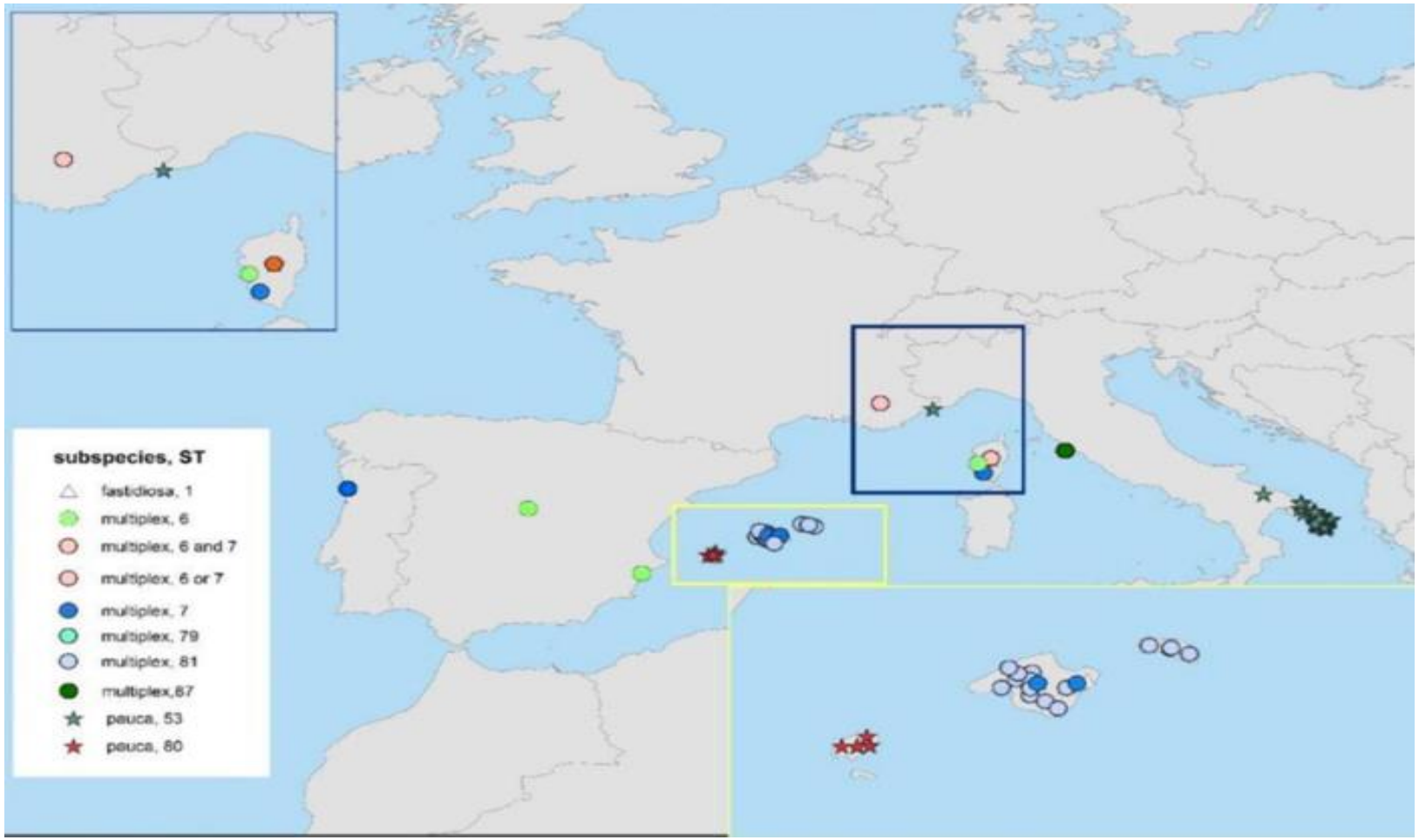
Also known as: Olive Quick Decline Syndrome (OQDS)

Present in Apulia, Mallorca and Spain

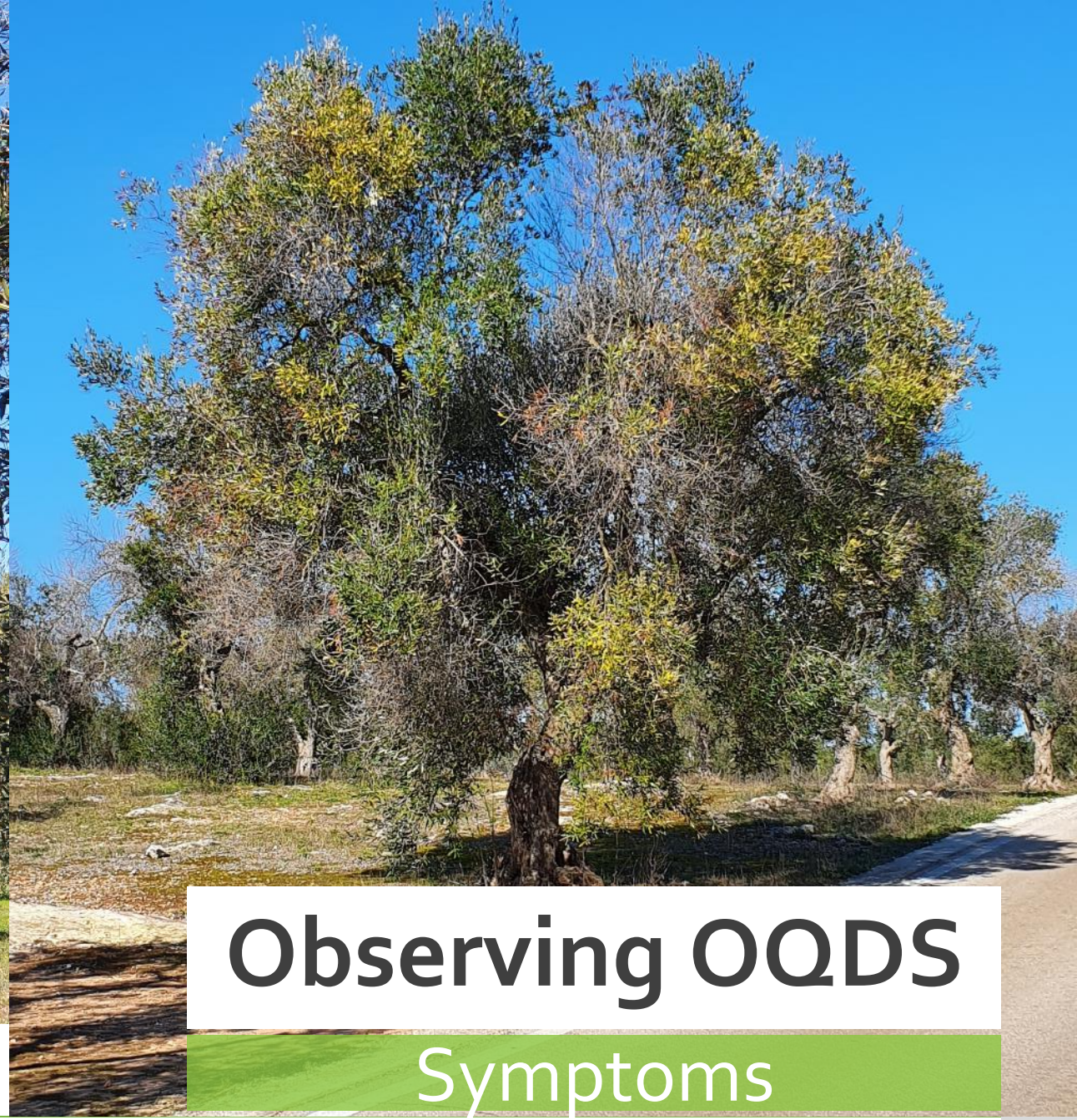


No solution currently available

Xylella sub-species and distribution



Sub-species and distribution of Xylella in the EU July 2019.
Source: EFSA supporting publication 2019:EN-1667



Observing OQDS

Symptoms

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Xylella epidemic on olive in Apulia

Different stages of the Olive Quick Decline Syndrome

30.10.2014 | 07.12.2014 | 25.07.2015 | 05.07.2015 | Sept. 2017 | Sept. 2018

Death of a Giant

The «Gigante di Alliste», a 1500 year old monumental tree in Alliste, Salento, IT

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Xylella epidemic on olive in Apulia

An announced disaster

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Xylella epidemic on olive in Apulia

State of abandonment

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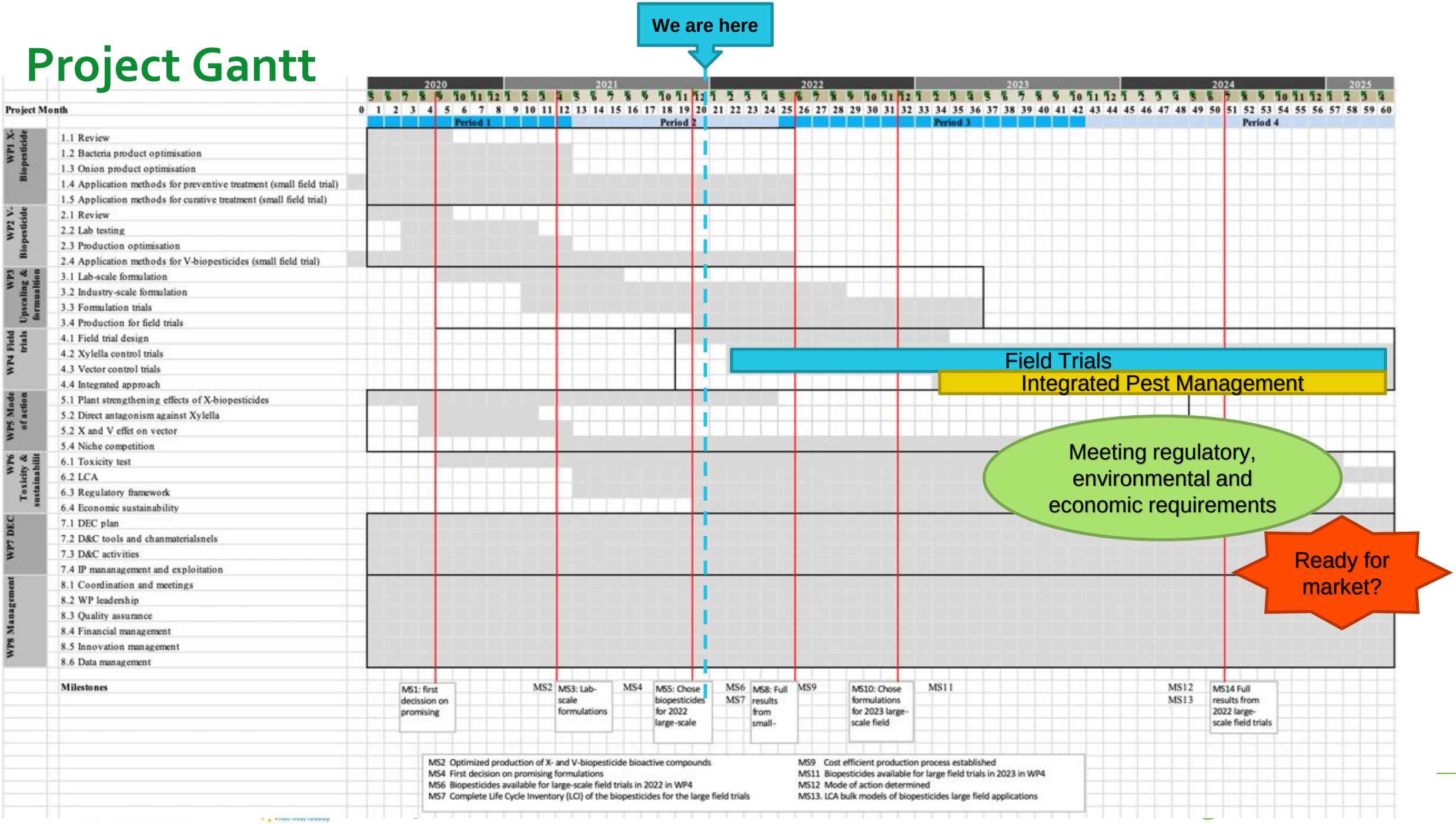
Project Gantt



Status Quo after 18 months of work

X-biopesticides: testing of both bacteria-based and plan-based extracts concluded

V-biopesticides: testing of substances against the vector concluded

Field trials:

- Small-scale trials in Apulia yield mixed results
- Small-scale trials in Mallorca in evaluation
- Large-scale trials in Apulia in preparation stage for spring 2022:

  Presently performing a careful double-check selecting the most effective products for field applications

  Taking a deep look into the most effective application methods (spraying vs. irrigation vs. endotherapy)

Field Trip Apulia and Stakeholder Event, Oct. 2021

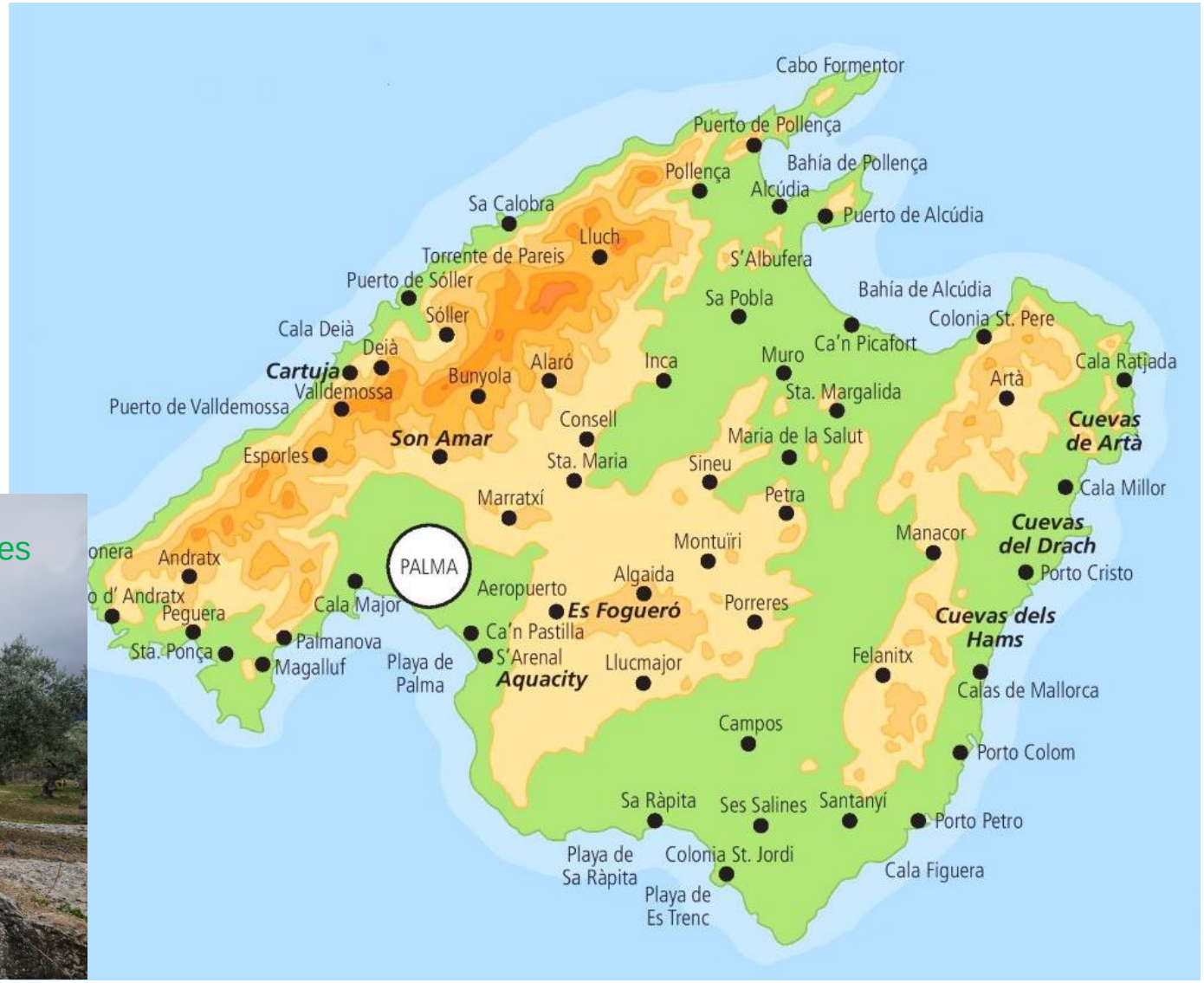
- "Xylella Forum 2021" for stakeholder input (olive growers, nurseries, public administration)
- Ca. 80 live and 120 on-line participants
- View plantations heavily hit by *Xylella fastidiosa*

Field Trip Mallorca, Dec. 2021

Olives: so far only limited infection on some branches or trees, but recovering

Almonds: Heavily hit

- Mapping the general status quo of Xylella in Mallorca
- Awareness creation
- Measures applied by public authorities



Hot off the press / 9.12.21 / www.ansa.it

Dogs being used to sniff out Xylella-infected olive trees

“Detection Dogs” used to find pathogen before symthoms develop

The first ‘anti Xylella dog task force’ with dogs specialized in the early detection of the bacterium through the sense of smell was presented this morning in the San Martino farm in Fasano (Brindisi) where the first dogs trained to identify the insidious came into action. olive tree disease.

The new four-legged special team is made up of six units: two Jack Russels, a Belgian Malinois Shepherd, a Hound, Nu Labrador Retriever and an English Springer Spaniel.

The project was born from the collaboration between the National Body of Italian Dog lovers, Unaprol, Coldiretti and Biovexo partner CNR-IPSP.

https://www.ansa.it/english/news/2021/12/07/dogs-being-used-to-sniff-out-xylella-infected-olive-trees_58a7c28c-e150-4364-a5db-867a8b284dd2.html

Project Coordination
Dr. Stephen Webb

RTDS GROUP

Scientific Coordination
Stéphane Compant, Ph.D.

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We'd love to hear from you. Here's how you can contact us!

Write us at biovexo@rtds-group.com

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