Beyond *Xylella*, Integrated Management Strategies for Mitigating *Xylella fastidiosa* impact in Europe

Practice abstract 9

Identification of crop plants resistant to *Xylella fastidiosa*

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The **BeXyl** project addresses the urgent need for sustainable, long-term solutions to mitigate the impact of ***Xylella fastidiosa*** (***Xf***) by focusing on the identification and deployment of crop plants with enhanced resistance or tolerance to infection. Rather than relying solely on vector control, this approach exploits natural genetic and physiological variation in host plants to limit pathogen colonization, disease development, and yield losses. Resistant and tolerant cultivars can be readily integrated into existing agricultural systems and represent a key component of integrated pest and disease management strategies, while also reducing reliance on chemical inputs.

How will BeXyl make a difference?

Screening of Genetic Resources: large and diverse collections of economically important crops, including olive, almond, and grapevine, are systematically evaluated under both controlled and field conditions to identify genotypes with improved resistance or tolerance to ***Xf***.

Integration into Breeding Programs: selected genotypes are incorporated into breeding pipelines to develop new cultivars that combine durable resistance with desirable agronomic and commercial traits, ensuring their suitability for practical use.

Development of Genetic tools: molecular markers associated with resistance are being developed to accelerate selection and improve breeding efficiency through marker-assisted approaches.

Understanding resistance mechanisms: comparative studies are used to uncover the molecular and physiological processes underlying resistance, providing a foundation for more targeted and durable strategies.

Impact: By combining large-scale screening, applied breeding, and fundamental research, BeXyl aims to deliver resistant crop varieties that support sustainable agriculture. These efforts will help reduce disease impact, limit pathogen spread, and promote environmentally friendly production systems across affected regions.

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