

Advances in detection and diagnosis of the main citrus bacterial diseases threatening Europe: Achievements of the Iberxyfas-CYTED network (2021-2023)

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Currently, three bacterial diseases pose a significant threat to citrus: Citrus Variegated Chlorosis (CVC), caused by *Xylella fastidiosa*; Huanglongbing (HLB), caused by three species of '*Candidatus Liberibacter*'; and Citrus Bacterial Canker (CBC), caused by *Xanthomonas citri* pv. *citri*. Although these devastating and important diseases are not present in Europe to date, they represent a serious concern for the European citrus industry, particularly in Spain, the world's leading citrus exporter. In a context of globalization and climate change, current conditions favor the emergence, spread, and establishment of new diseases like these, which underline the need to proactively address these threats.

One of the key strategies being implemented in the European Union (EU) to prevent the introduction of these diseases focuses on the development of rapid, sensitive, and specific detection and diagnostic methods. These methods are crucial for early identification of the pathogens responsible for CVC, HLB, and CBC, with the ultimate goal of preventing their entry into disease-free areas. Additionally, these methods are also valuable for enhancing the understanding of the pathogenesis of causal bacteria and the epidemiology of the diseases.

The IVIA, through mobility programs within the Iberxyfas-CYTED network, has conducted research and collaborations in up to five countries where CVC, HLB, and/or CBC are already present (Mexico, Costa Rica, Cuba, Brazil, and Argentina), which have contributed to the development of new molecular detection protocols, based on real-time approaches, and High Throughput Sequencing (HTS), highly sensitive and specific. And also, to the organization of training workshops and informative talks that have addressed the importance of the accurate diagnosis of these diseases. The main objective of all these research and international collaborations is to prevent the introduction of these threatening bacterial diseases in EU and contribute to a better integrated management of these diseases.

Funding

-LIFE18 CCA/ES/001109 (Development of sustainable control strategies for citric under threat of climate change & preventing entry of HLB in EU (**LIFE Vida for Citrus**))

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