



## An integrated approach of diagnostic to detect inter and intraspecific diversity in *Erwinia*, *Xanthomonas* and *Pseudomonas*

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Integrated diagnostic of plant bacterial diseases combines several specific screening tools such as real-time PCR, LAMP or serological techniques with isolation, followed by phenotypic and genotypic identification of phytopathogenic bacteria, enhancing the accuracy of their diagnostic. The use of these integrated approaches has allowed to discover key differences among strains similar to well known species but showing distinct characteristics in molecular and/or serological and/or identification tests, including pathogenicity. The discovery of two new species as well as new variants of some bacterial species isolated from diseased plants is presented. The first example is *Erwinia piriflorinigrans*, a new pathogenic species described in Spain as causal agent of necrosis of pear blossoms and recently isolated from apple and other rosaceous hosts, that is closely related to *E. amylovora*, sharing in some cases the same habitat. The second example is a new *Xanthomonas* sp., also isolated in Spain but from peach and responsible of symptoms similar to those caused by *Xanthomonas arboricola* pv. *pruni*, although classified as different to such species according to multilocus sequence analysis, serology and PCR. The third example are the different types of *Pseudomonas syringae* isolated from kiwi in North Spain that show low virulence and different molecular characteristics than those of the virulent type of *P. syringae* pv. *actinidiae*. The description of these new species or infraspecific groups leads to a more comprehensive knowledge of the complexity of pathosystems in cultivated crops, demonstrating that similar symptoms can be caused by more than one pathogen and that new variants can also be observed. Moreover, the partial or complete genomes of these new taxons that are being determined will give clues about the evolution of bacterial species, offer new omics-based tools for improving detection, identification or taxonomy and will provide new data on the life cycle and ecology of bacterial plant pathogens.

**Key Words:** *Erwinia piriflorinigrans*, *Pseudomonas syringae*, Rosaceae, stone fruits, kiwi

### REFERENCES

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