

The Journal of Plant Pathology Editors' Choice May 2023

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Diagnostics are at the basis and core of our work as plant pathologists. At this day and age, diagnostics rely heavily on molecular assays, and we are truly grateful for the availability of such tools. This is particularly true for unculturable disease agents and for the discrimination of genetically related, but phenotypically different, sub-specific groups. We are still amazed at the fact that, nowadays, we can even diagnose individual genes that may be associated or even responsible for infection, disease or resistance. The ability to detect individual alleles and their expression also provides pivotal information on the epidemiological role of various hosts and vectors. For instance, one Editors' Choice paper today highlights a more complex interaction of a phytoplasma with an insect vector than with plant hosts: food for thought. Although we are so dependent on molecular diagnostics, there are many plant pathologists who cannot afford or do not have access to molecular laboratories: this is why the fourth and last EC paper is a favourite, as it guides us through a path -using morphology- to identify species within the notoriously complex genus *Fusarium*. We believe that the papers in the EC section remind us of the various levels at which we, as plant pathologists, must operate, starting from the morphological and visible and ending with the ability to describe and quantify gene expression, with all sorts of DNA-based analyses in the middle.

In this issue of the Journal of Plant Pathology we include three phytoplasma research papers in the Editors' Choice (EC) section of the journal. They go far and beyond the much needed but expected "identification and characterization" work. They also reflect the constant threat that Flavescence dorée phytoplasma (FDp) represents to European vineyards. The first paper "The first report on the occurrence of Flavescence dorée phytoplasma affecting grapevine in vineyards of Montenegro and an overview of epidemic genotypes in natural plant reservoirs" by Krstić and colleagues is a collaborative work of scientists from Montenegro and Serbia revealing for the first time FDp in a Montenegrin grapevine (Vectotype III, Map-FD3/VmpA-III genotype M51/III-c11). Also, after characterizing the epidemiologically informative *map* and *vmpA* genes, isolates from clematis

were assigned to the FD3/III-c cluster of genotypes, while those from alders were assigned to the FD1/III-f and FD2/II-d clusters, confirming the relevance of these FDp natural hosts in epidemiological studies even though *Scaphoideus titanus* vectors were not included in this study.

FDp identification is still a complex work involving not only assignment of a certain isolate to ribosomal subgroups 16SrV-C or -D but also to *map* and *vmpA* genotypes. Papers presenting new methods to make this job easier are more than welcome. Šeruga Musić and Plavec (Croatia) authored such a paper entitled "Differentiation of the Flavescence dorée phytoplasma genetic clusters by multiplex real-time PCR assay targeting the *map* gene". They developed a rapid and sensitive assay for the detection of the three Map-FDp genetic clusters by using a single primer pair and three distinct BHQ probes labelled with different fluorescent dyes. This enables early detection of FDp genetic types and discerning if isolates under research are more or less likely to cause new FD outbreaks.

The last EC paper in the phytoplasma section of this issue by Galetto and collaborators (Italy), although once again focused on FDp, deals with the transcriptional profile of selected Flavescence dorée phytoplasma genes during infection of insect vectors and host plants. It reveals a part of the "inner workings" of FDp in the different plant hosts ('Chardonnay' grapevine, broad bean) and insects (*Scaphoideus titanus*, *Euscelidius variegatus*). FDp appears to be metabolically more active in insects than in plants according to the genes selected in the study. Once again, this research reveals differential phytoplasma interactions with hosts from different kingdoms and provides new knowledge on the specificities of FDp interactions as compared to other phytoplasma-host systems.

A fourth and last paper included in this EC sections goes back to the roots of the profession of plant pathologists, i.e. the ability to identify pathogenic species without the help of molecular data. In "FusaHelp: a web site program for the morphological identification of *Fusarium* species" Oufensou et al. (Italy, Australia) provided an original type of paper for the Journal of Plant Pathology. Rather than a

typical scientific or review paper, the authors presented a new, computer-based and user-friendly tool for the morphological identification of common species of the genus *Fusarium*, which includes major pathogens of important crops, flowers, forest trees and even animals. Although additional molecular approaches are needed for an accurate identification of *Fusaria* at the species level, the morphological tool described in the manuscript will provide support for all those who need a quick clue on the identification, and

this may be particularly important for practitioners working on developing countries.

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