



Databases of host species to support research on plant pests: the case of *Xylella fastidiosa*

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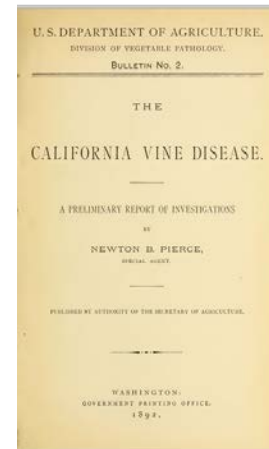
ROLE OF HOST PLANTS DATABASE

- Reliable host lists of generalist plant pests (e.g. *Anoplophora glabripennis*, *Ditylenchus destructor*, *Phytophthora ramorum*), are important for modelling, monitoring and regulatory needs
- Knowledge on the host range of a pest is crucial for all steps of Pest Risk Assessment and for Risk Management
- In the case of pest species with high genetic diversity, data related to genetic characterization (subspecies, strains, isolates) are extremely important



Xylella fastidiosa

- Plant pathogenic bacterium
- Described in California for the first time in 1892
- Detected in Europe for the first time in Apulia region (Southern Italy) in October 2013. Now present also in Corsica and Southern France (PAC Region).
- Has a very broad host range





Xylella fastidiosa

- High uncertainty on its potential host range in the European flora
- All xylem fluid-feeding insects in Europe are considered to be potential vectors
- There is a potential for consequences in the EU, as shown by the severe impact on olive in Apulia





X. fastidiosa HOST PLANTS DATABASE

- Before the publication by EFSA of the *X. fastidiosa* host plant database other researchers (especially from USA) made available lists of *X. fastidiosa* host plants
- EFSA published the first *X. fastidiosa* host plant database in 2013, updated in 2015
- EFSA is maintaining and keeping up to date a comprehensive database on host plants of *Xylella fastidiosa* on the basis of new scientific developments; new updates will be released



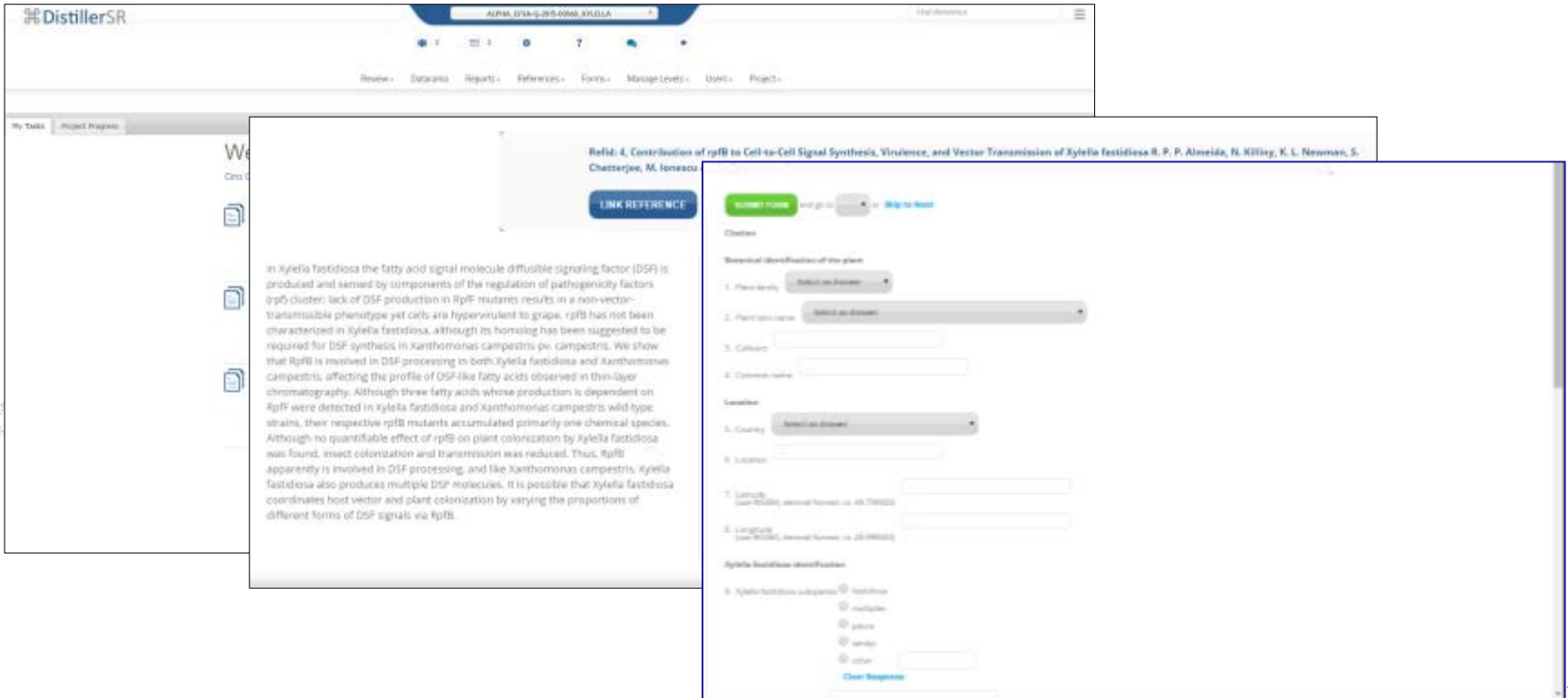
X. fastidiosa HOST PLANTS DATABASE

- EFSA host plant database is compiled with data extracted from scientific literature and includes:
 - Plant species and cultivars/varieties (when available)
 - Dates
 - Geographic location (location name and coordinates)
 - *X. fastidiosa* subspecies and strains
 - Type of data (experiment or survey)
 - Type of detection (e.g. microscopy, serology, molecular detection methods, culturing and identification of bacteria, etc.)



HOST PLANTS DATABASE UPDATES

The existing database adapted for migration into «Distiller»



DistillerSR ALPHA (2024-09-09) KYLLIA

Home > Datasets > Reports > References > Forms > Manage Levels > Users > Project

My Tasks PROJECT Progress

Web...
Cris...
[Icon]
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RefId: 4, Contribution of *rpfB* to Cell-to-Cell Signal Synthesis, Virulence, and Vector Transmission of *Xylella fastidiosa* R. P. P. Almeida, N. Kötting, K. L. Newman, S. Chatterjee, M. Ionescu

[LINK REFERENCE](#)

In *Xylella fastidiosa* the fatty acid signal molecule diffusible signaling factor (DSF) is produced and sensed by components of the regulation of pathogenicity factors (*rpf*) cluster; lack of DSF production in *RpfF* mutants results in a non-vector-transmissible phenotype yet cells are hypervirulent to grape. *rpfB* has not been characterized in *Xylella fastidiosa*, although its homolog has been suggested to be required for DSF synthesis in *Xanthomonas campestris* pv. *campestris*. We show that *RpfB* is involved in DSF processing in both *Xylella fastidiosa* and *Xanthomonas campestris*, affecting the profile of DSF-like fatty acids observed in thin-layer chromatography. Although three fatty acids whose production is dependent on *RpfF* were detected in *Xylella fastidiosa* and *Xanthomonas campestris* wild type strains, their respective *rpfB* mutants accumulated primarily one chemical species. Although no quantifiable effect of *rpfB* on plant colonization by *Xylella fastidiosa* was found, insect colonization and transmission was reduced. Thus, *RpfB* apparently is involved in DSF processing, and like *Xanthomonas campestris*, *Xylella fastidiosa* also produces multiple DSF molecules. It is possible that *Xylella fastidiosa* coordinates host vector and plant colonization by varying the proportions of different forms of DSF signals via *RpfB*.

Host Plant Identification

1. Plant family:

2. Plant genus name:

3. Cultivar:

4. Common name:

Location

5. Country:

6. Subarea:

7. Longitude:

8. Latitude:

Xylella fastidiosa Identification

9. Xylella fastidiosa subspecies: fastidiosa
 multiplex
 pauca
 sensu lato
 other:

[Clear Response](#)



HOST PLANTS DATABASE UPDATES

Literature search:

ISI Web of Science

('xylella')

OR

('Pierce* disease' OR 'Plum leaf scald' OR 'Phony disease' OR 'Almond leaf scorch' OR 'Citrus variegated chlorosis'
OR 'Bacterial leaf scorch' OR 'Coffee leaf scorch' OR 'Crespera disease' OR 'Mulberry leaf scorch' OR 'Oleander leaf
scorch' OR 'Periwinkle wilt' OR 'Ragweed stunt')

AND

('host* NEAR/2 plant*' OR 'host* NEAR/2 range')

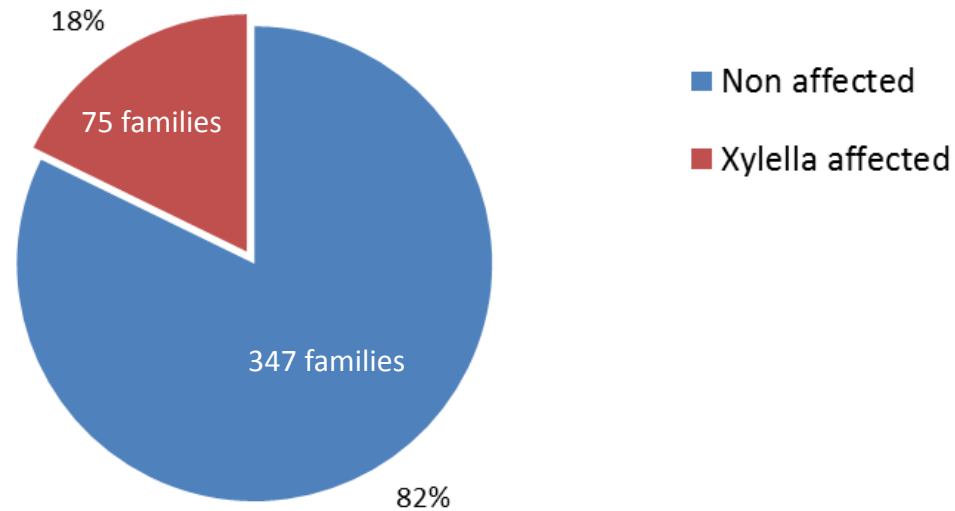
Search Period: from 2013 to 20 November 2015

- 358 references and abstracts collected
- 192 references retained after title and abstract screening
- 110 references retained after full text screening
- 68 papers relevant for data extraction



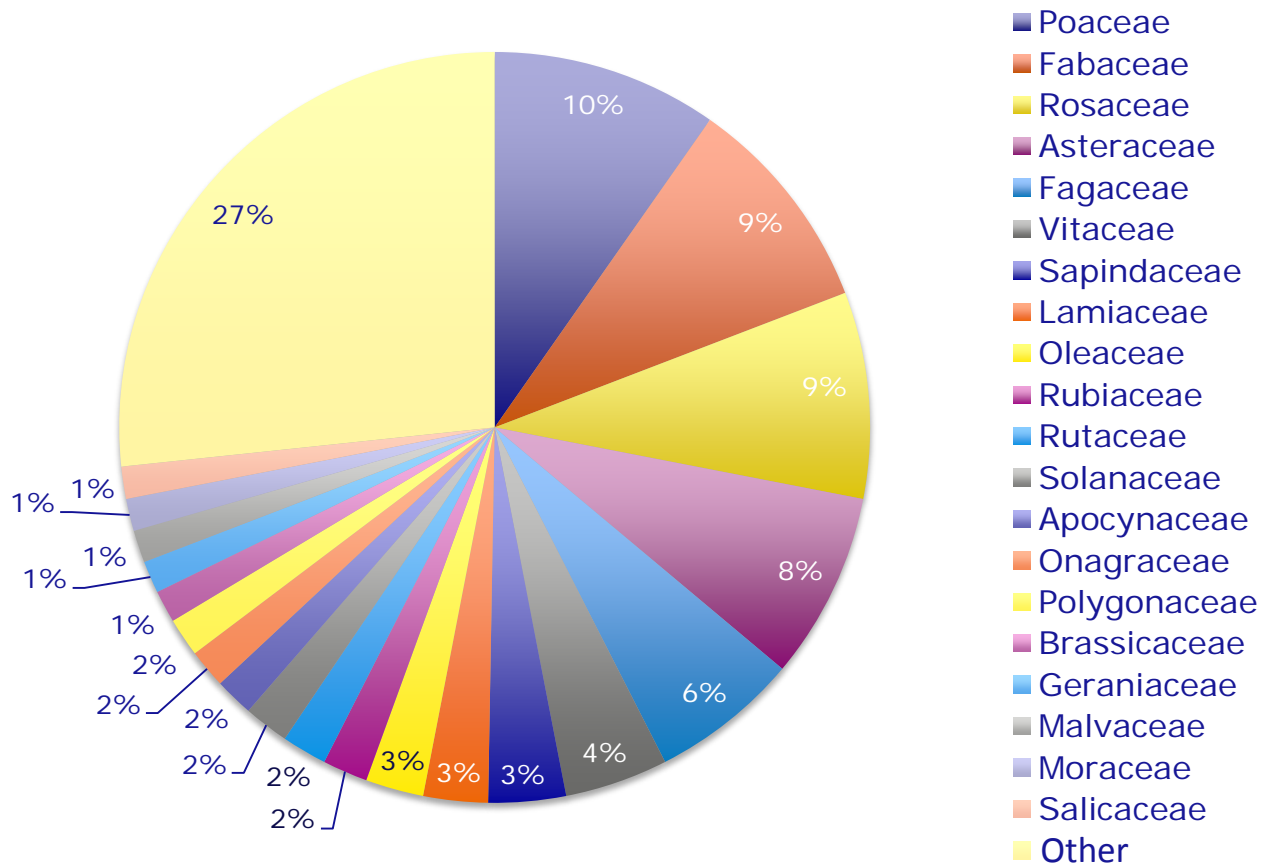
RESULTS (20 NOVEMBER 2015)

Angiosperms and Gymnosperms families





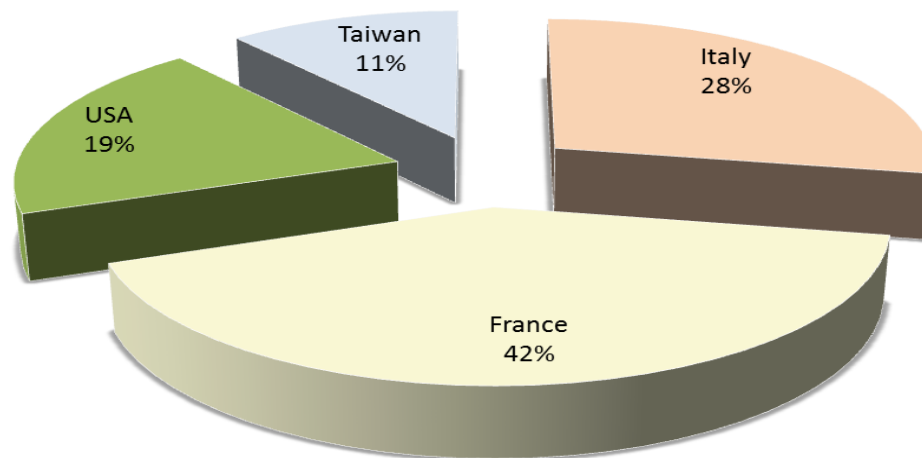
RESULTS (20 NOVEMBER 2015)





RESULTS OF THE LAST UPDATE (2013 – 2015)

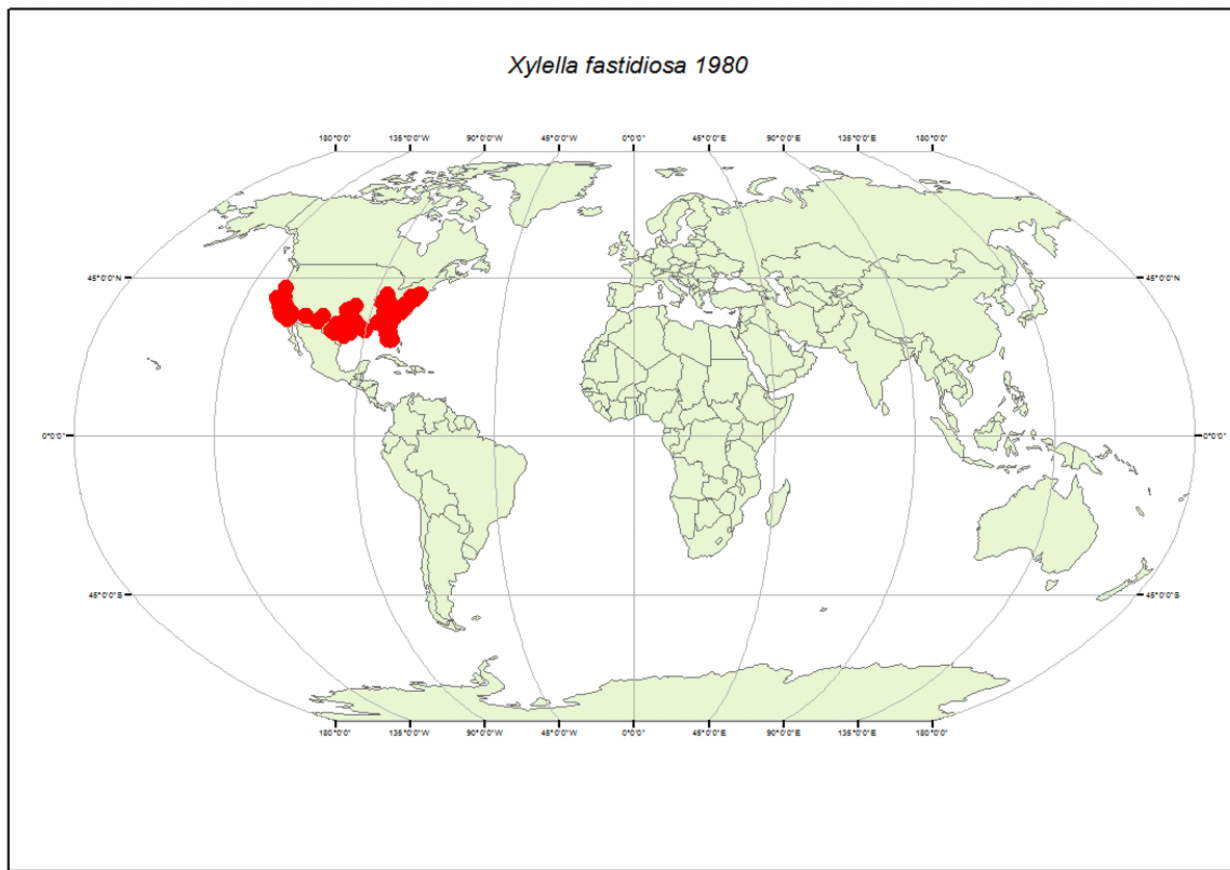
Origin of new host species





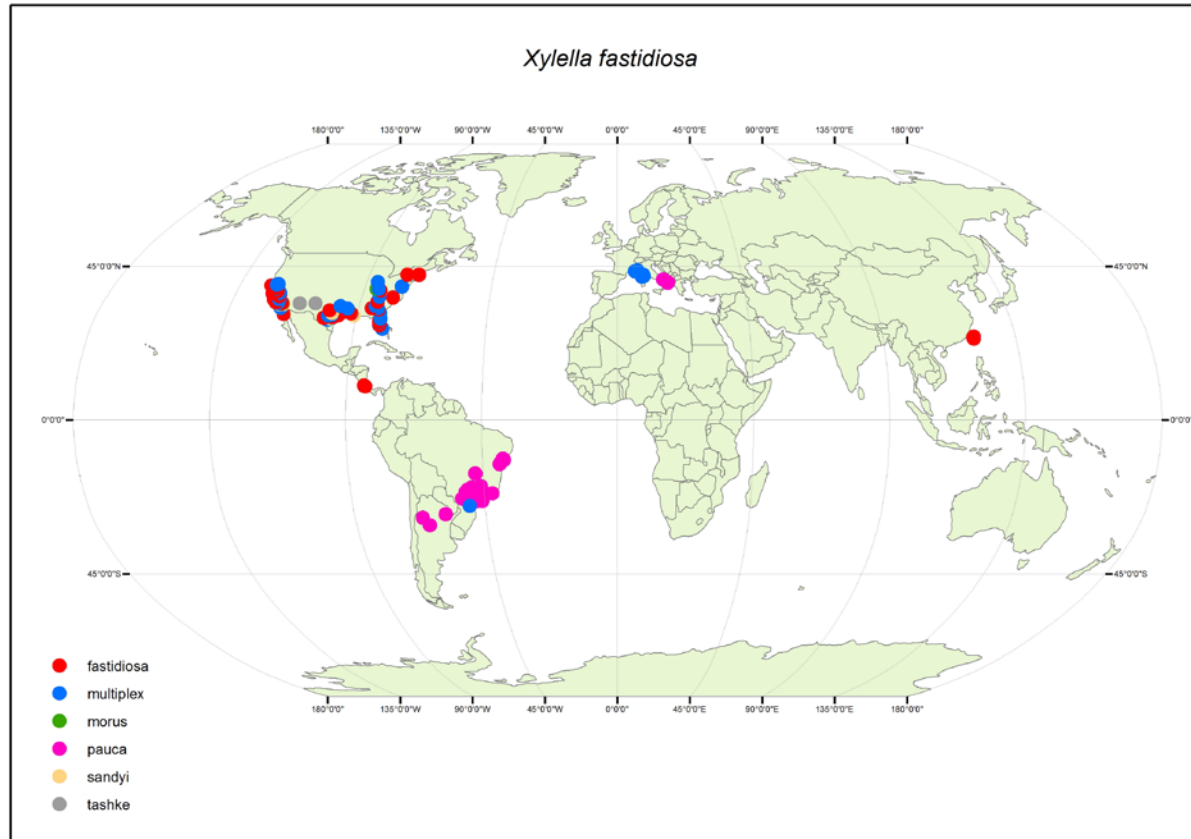
RESULTS

- 359 species (+ 44)
- 204 genera (+ 15)
- 75 families (+ 5)
- New outbreaks:
 - Corsica
 - PACA region



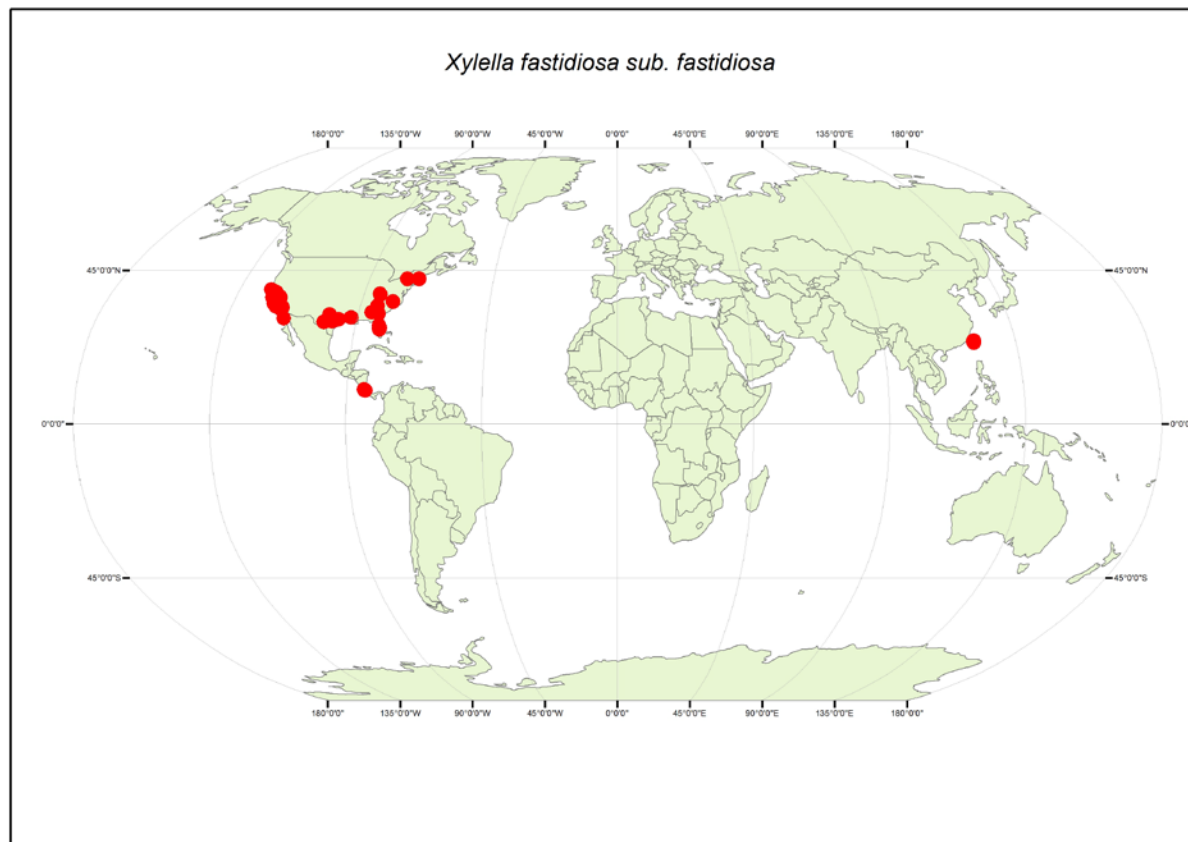


RESULTS





RESULTS



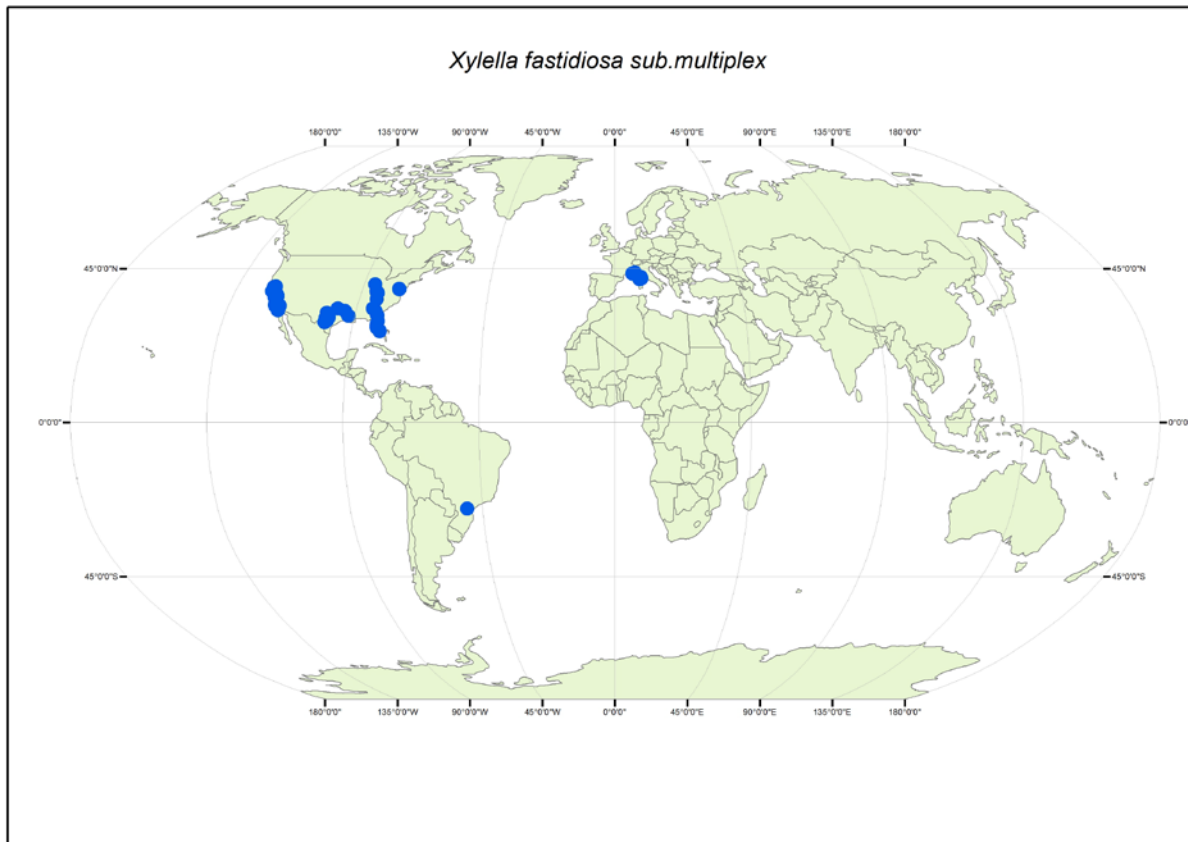
Subspecies *fastidiosa*

Among the hosts we have the following genus

Citrus
Prunus
Vitis



RESULTS



Subspecies *multiplex*

Among the hosts we have

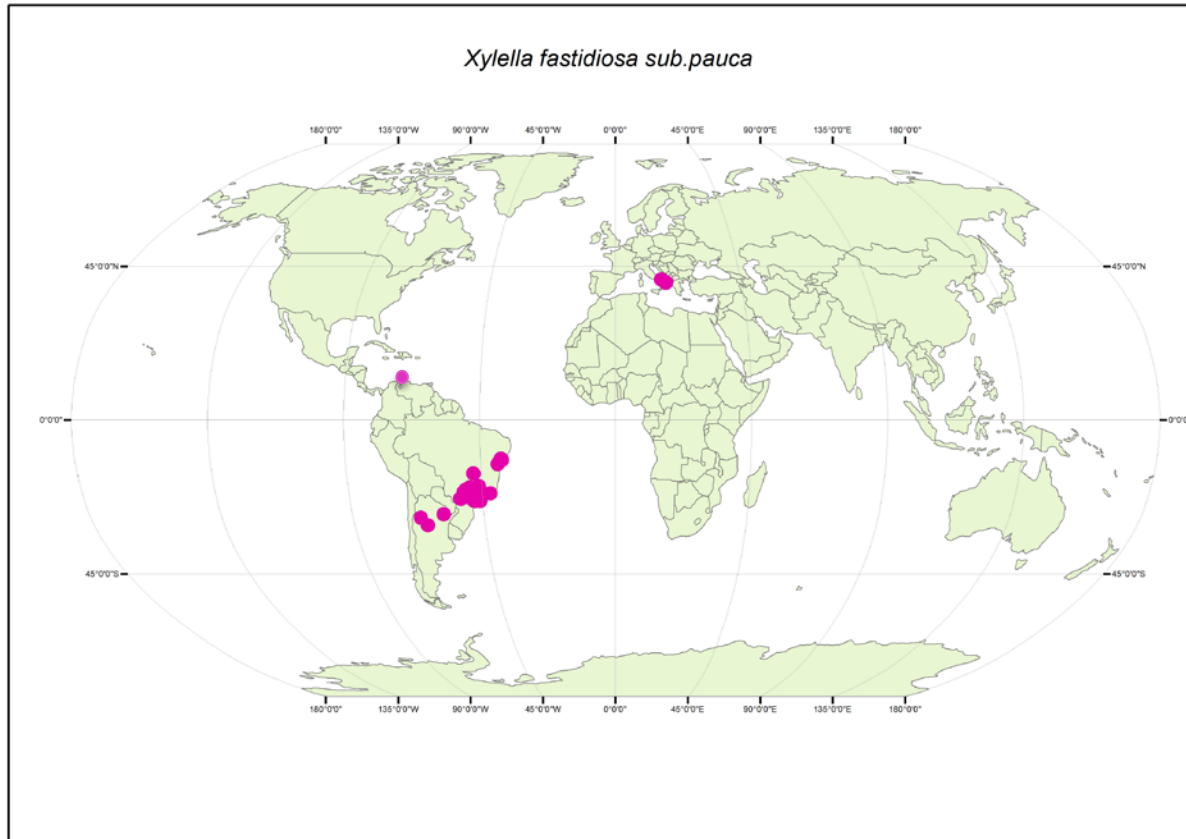
Olea europea

Prunus spp.

Quercus spp.



RESULTS



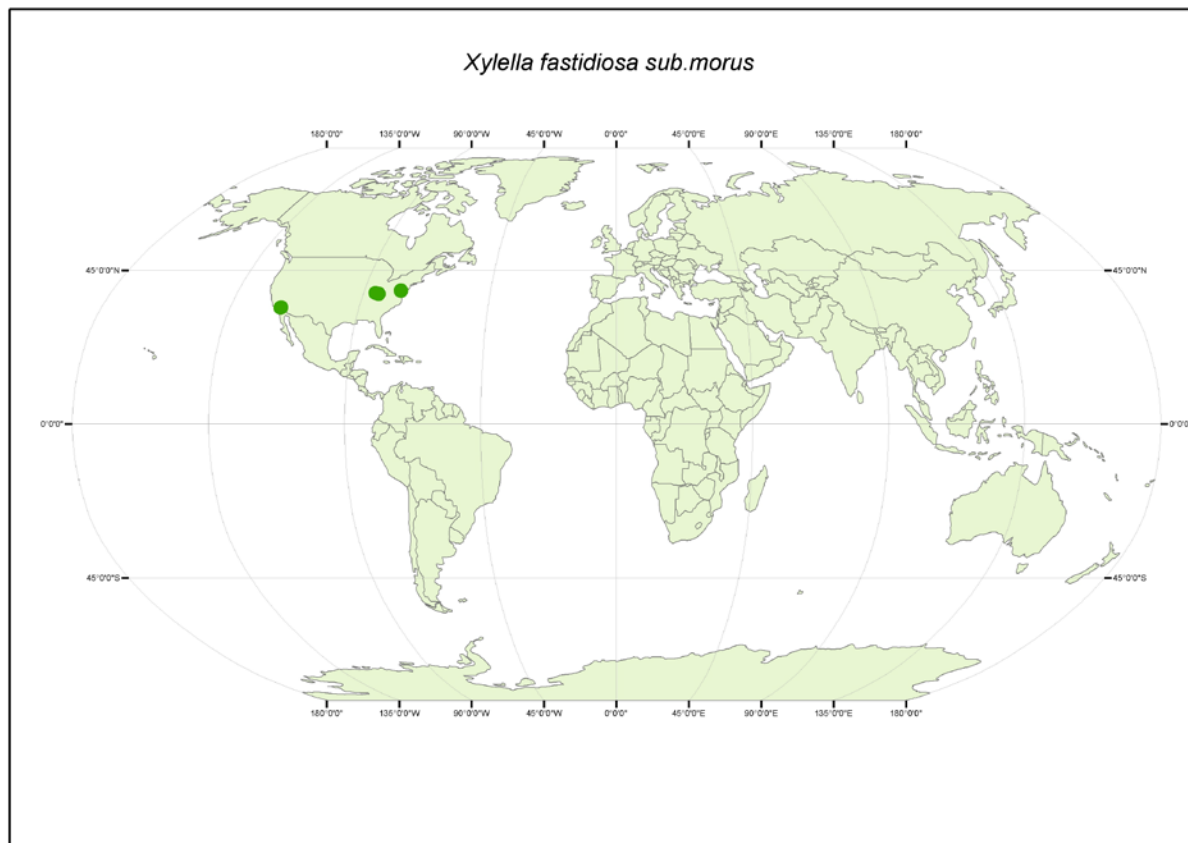
Subspecies *pauca*

Among the hosts
we have the
following genus

Citrus
Coffea
Olea



RESULTS



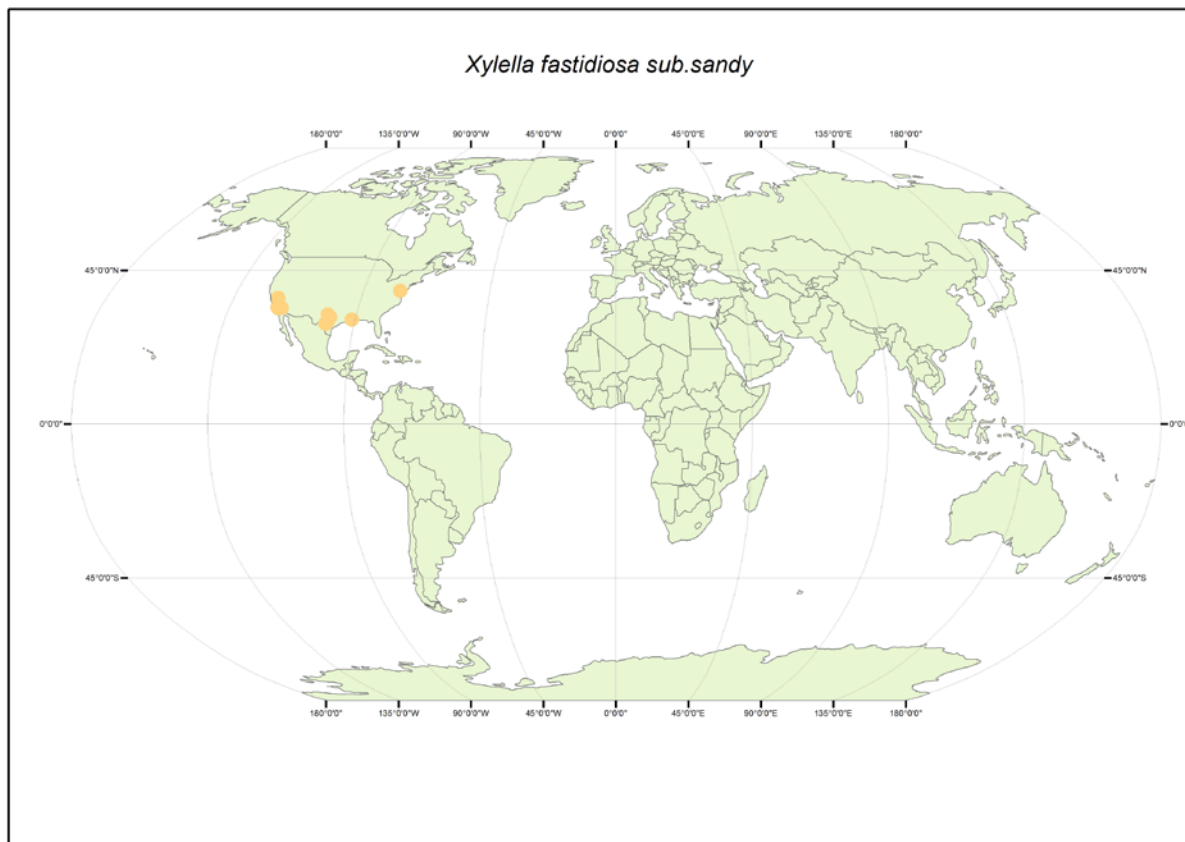
Subspecies *morus*

Among the hosts
we have:

Morus alba



RESULTS



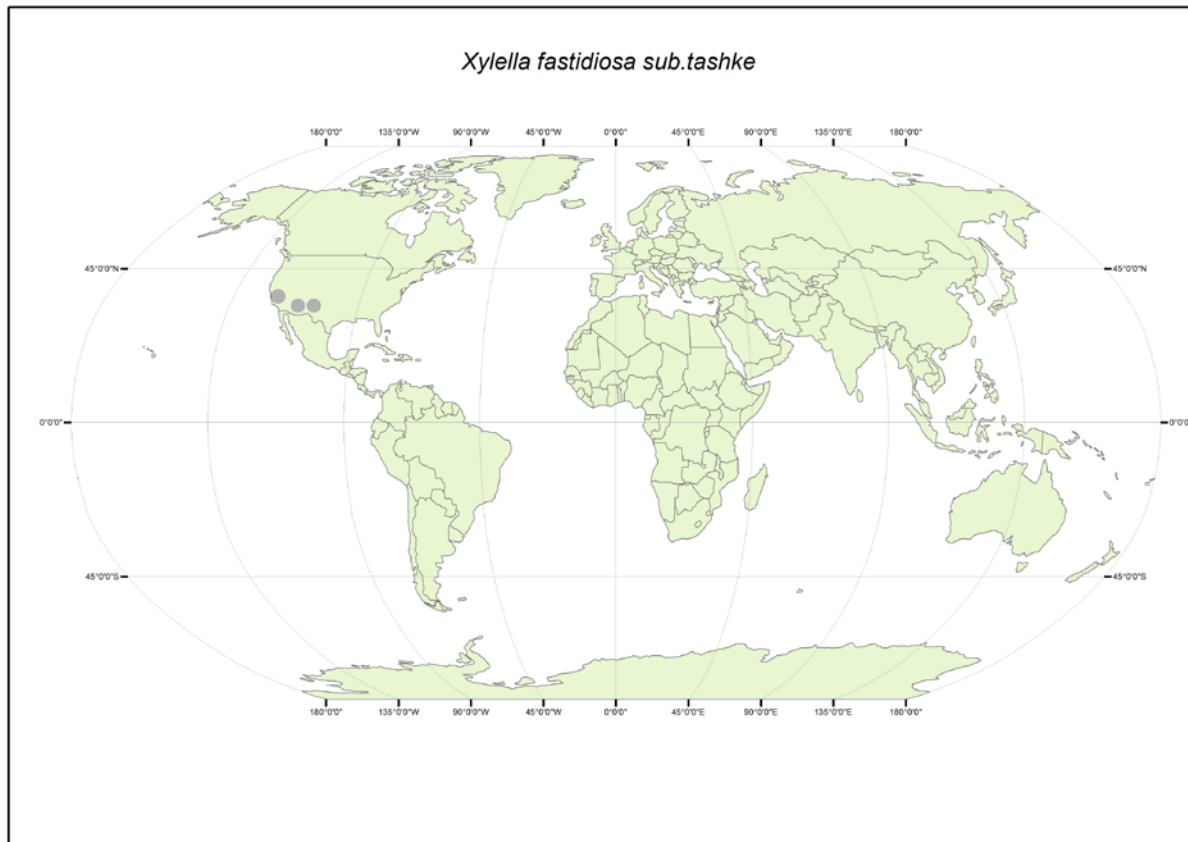
Subspecies *sandy*

Among the hosts we have:

Nerium oleander
Magnolia grandiflora



RESULTS



Subspecies *tashke*

Among the hosts we
have

Chitalpa tashketensis



CONCLUSIONS/1

- Host plants databases are important for research and for regulatory purposes
- Knowledge on the host range of a pest is crucial for all steps of Pest Risk Analysis (Risk Assessment and Risk Management)
- EFSA experience on *Xylella fastidiosa* providing supporting information to risk managers, demonstrated that the inclusion/exclusion of a species can have relevant economical and political implications



CONCLUSIONS/2

- Especially for microbial pests, numbers and type of detection methods is relevant for the inclusion of a host in the database
- In case of multiple detection methods (i.e. ELISA, PCR, microscopy, etc.) and in presence of contradictory evidences, particular attention should be paid before including a species in the database

A large, gnarled tree with sparse green and brown leaves stands in a dry, open field under a clear blue sky. The ground is covered in dry, brownish grass and some green shrubs. The text "THANKS FOR YOUR ATTENTION" is overlaid in the center in a bold, yellow, sans-serif font.

THANKS FOR YOUR ATTENTION