



EPPO-Q-bank

A database to support plant pest diagnostic activities

Increased risk of plant pathogenic quarantine pests and diseases, due to globalization and climate change, enhances the need for up-to-date knowledge and validated identification and detection methodologies. DNA barcoding is increasingly used as a diagnostic tool in phytosanitary laboratories. This method uses sequence data of short standardised genetic DNA markers to aid species identification.

EPPO-Q-bank database provides a wide range of information about specimens, isolates, strains or populations of quarantine species or their look-alikes and supports plant pest diagnostics using DNA barcoding by sharing curated sequence data. The data is curated by an international network of experts.

MISSION

The aim of EPPO-Q-bank is to support diagnostic activities of phytosanitary organizations: National Plant Protection Organizations, general inspection bodies, and private laboratories. A database with reliable sequences generated from vouchered biological material is an indispensable tool to identify and detect harmful quarantine organisms.

HISTORY

This database originally started as part of a Dutch project to strengthen the plant health infrastructure (Q-bank) financed by the Dutch Ministry of Economic Affairs. Q-bank was launched in 2010 and further developed in the framework of the EU funded project QBOL. In September 2018, the EPPO Council agreed that the database should be transferred to EPPO. The EPPO-Q-bank database was launched in May 2019.

CONTENT

EPPO-Q-bank is an open access database comprising

- Genomic sequence data of properly documented specimens, isolates, strains or populations of quarantine species or their look-alikes.
- For most of the specimens, isolates, strains or populations, **links to collections from which items may be obtained** for further studies, or for use as controls in identification and detection tests.
- **Barcoding protocols** published in EPPO Diagnostic Protocols or being identified as useful protocols by our curators.
- **Tools** to perform quick analyses of barcoding sequences, including single or multilocus blast and tree views.
- Links to other relevant databases, e.g. EPPO Global database.

Information is provided per discipline (arthropods, bacteria, fungi, nematodes, phytoplasmas, viruses & viroids, and invasive plants).

The screenshot shows the EPPO-Q-bank website interface. The top navigation bar includes categories: Arthropods, Bacteria, Fungi, Nematodes, Phytoplasmas, Plants, Viruses and Viroids, and Blast against all Q-Bank sequences. The main content area features a 'Welcome to EPPO-Q-bank!' message and a sidebar with navigation links and statistics (Species: 1875, Specimens: 8725, Sequences: 22951). A detailed view of a 'Molecular Decision Scheme' for Phytoplasmas is shown, including a flowchart for DNA extraction and EF-Tu analysis, and a list of candidate species like 'Candidatus Phytoplasma mali' and 'Candidatus Phytoplasma prunorum'.

Organisation

The entries in EPPO-Q-bank are updated by seven teams of curators with taxonomic, phytosanitary and diagnostic expertise from National Plant Protection Organizations and institutes with connections to relevant phytosanitary collections.

The curators work under the supervision of the EPPO Panel on Diagnostics and Quality Assurance and specialized EPPO Diagnostics Panels.

The EPPO Secretariat is in charge of the coordination of the work and of the development and maintenance of the database.

Insect curators

- Dr. T. Bukovinszki (NRC-NPPO, NL)
- J.-C. Streito (INRAE, FR)
- É. Pierre (INRAE, FR)

Phytoplasma curators

- Dr. M. Nicolaisen (U. Aarhus, DK)
- Prof. Dr. A. Bertaccini (U. Bologna, IT)
- Dr. N. Contaldo (U. Bologna, IT)

Fungi curators

- Dr. U. Damm (Senckenberg Museum of Natural History, DE)
- Ir. M. van Raak (NRC-NPPO, NL)

Nematode curators

- Ir E. van Heese (NRC-NPPO, NL)
- Dr. S. Kiewnick (JKI, DE)

Virus curators

- Dr.ir. R. van der Vlugt (PRI, NL)
- Dr. A. Roenhorst (NRC-NPPO, NL)
- Dr. S. Winter (DSMZ, DE)
- Dr. W. Menzel (DSMZ, DE)

Plant curators

- Dr. J. van Valkenburg (NRC-NPPO, NL)
- Dr. H. Duistermaat (Naturalis Biodiversity Center, BE)
- F. Verloove (Meise Botanic Garden, BE)

Bacteria curators

- Dr. M. Bergsma-Vlami (NRC-NPPO, NL)
- J. van de Bilt (NRC-NPPO, NL)
- Dr. B. Cottyn (ILVO, BE)
- Prof. Dr. P. de Vos (LM-U Gent, BE)