How to use the EPPO Global Database?

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INTRODUCTION

The EPPO Global Database (GD) is a freely accessible web-based database which is maintained by the Secretariat of the European and Mediterranean Plant Protection Organization (EPPO).

Objective

The main objective of the database is to provide National Plant Protection Organizations (NPPOs) of EPPO member countries with a rapid and easy access to all pest-specific information that has been produced or collected by EPPO.

A few milestones

The development of the database was initiated by the EPPO Secretariat in 1984 to collect data on the host plants and geographical distributions of quarantine pests. The first database appeared in 1990, as an internal tool for the EPPO Secretariat. It was then suggested that it could also be a useful resource for EPPO member countries, and in 1991 the first version of the database was released to the NPPOs and called PQR (Plant Quarantine data Retrieval system). From 1991 to 2007, several PQR versions were distributed to NPPOs on different computer media (e.g. disks and CD-Roms). In April 2007, the EPPO Executive Committee agreed that the database should be made freely available on the EPPO website, as a downloadable piece of software. In parallel and since 1996, the EPPO Secretariat has also been maintaining the Bayer coding system in a separate database called EPPT (EPPO Plant Protection Thesaurus). EPPT contained scientific names, synonyms, common names and computer codes (now called EPPO Codes) for a large number of plants, pests and microorganisms of interest to agriculture, forestry and the environment. In 2014, a new web-based interface gathering the whole contents of EPPT and PQR, as well as EPPO pest-specific documents (e.g. datasheets and Pest Risk Analyses) was launched and called the 'EPPO Global Database'. In 2019, dynamic and revised datasheets on regulated pests were first published in the database to provide readers with automatically updated sections on pest identity, host plants and geographical distributions. Major improvements to lists of host plants were initiated in 2019 with the addition of bibliographic sources to individual host plant records and continued in 2020 with the simplification of host plant categories.

Frequency of updates

The database is constantly updated by the EPPO Secretariat in a 'real-time' mode. In practice, changes are made to the database almost every day.

Main contents

GD was designed to provide free access to the following information:

- Basic information for species of interest to agriculture, forestry and plant protection: plants (cultivated and wild) and pests (including pathogens and invasive alien plants). For each species: scientific names, synonyms, common names in different languages, taxonomic position, and EPPO Codes are given.
- Detailed information for pest species that are of regulatory interest (EPPO and EU listed pests, as well as pests regulated in other parts of the world). For each of these pests: geographical distribution (with a world map), host plants and categorization (quarantine status) are given.

- EPPO datasheets and PRA reports.
- EPPO Standards.
- Pictures of plants and pests.
- Articles of the EPPO Reporting Service (free monthly newsletter on events of phytosanitary concern, such as new pest outbreaks, new host plants).

HOW TO SEARCH AND NAVIGATE

Search tools

To search GD and obtain information on a pest or a plant, a simple search tool is available at the top of the page.



An advanced search tool is also available for more complex types of searches, such as searching for a string of characters, a given type of organism or taxonomic group (instructions are provided online).

Green bar menu



This green bar menu provides a rapid access to:

- Lists of EPPO Standards.
- Lists of *photos* included in GD and presented by types of organisms (acari, bacteria, chromista, fungi, insecta, nematoda, plantae, rodentia, viruses and viroids).
- Lists of all EPPO Reporting Service issues (back to 1974).

The 'Explore by' button allows users to obtain information, not starting with a pest / plant name, but with:

- Countries: to view lists of organisms present (or absent), lists of regulated organisms, articles of the EPPO Reporting Service for a given country.
- Regional Plant Protection Organizations / EU (European Union) / EAEU (Eurasian Economic Union): to view the same type of information as above.
- Data Sheets: to view a list of available EPPO data sheets.
- Taxonomy explorer: to view the taxonomic tree.
- PPP uses classification: to view the EPPO harmonized classification of plant protection products uses (please note that this classification is still under development).

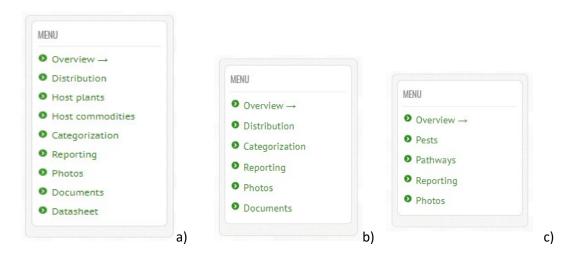
EPPO GD Desktop: EPPO GD Desktop is the 'off-line' version of GD which replaced PQR in July 2018. It is a piece of software which first needs to be installed on computers. Once installed, no Internet connection is needed to run it. All installation instructions are provided online via GD.



Important note about GD Desktop: EPPO GD Desktop does not contain EPPO Standards, PRAs and other EPPO pest-specific documents (these are only available via the EPPO Global Database). EPPO GD Desktop is updated at intervals and not in a real-time mode (version date is indicated).

Left hand-side menu

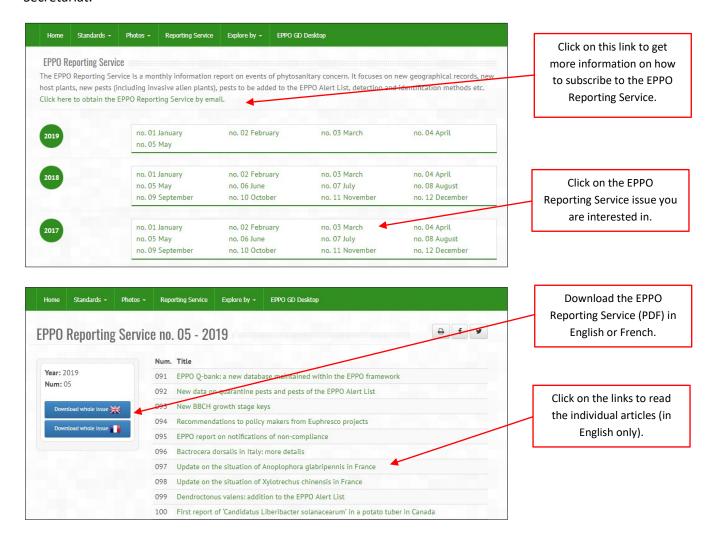
The left hand-side menu is a contextual menu where buttons appear only if information is available. The menu may be different for pests or plants (e.g. 'host plants' & 'host commodities' to reflect the fact that pests are associated with their host plants and parts of them; 'pathways' to reflect the fact that plants can transport pests).



See above examples of menus for: a) a regulated pest, *Popillia japonica*; b) an invasive alien plant, *Pontederia crassipes*, c) a cultivated plant, *Solanum tuberosum*.

Additional information about the green bar menu 'Reporting Service'

Each issue of the EPPO Reporting Service is stored in the database in English and French (as PDF files and back to 1974). In addition, every month and after being sent to all subscribers by email, individual articles of the EPPO Reporting Service (English version only) are transferred into GD by the EPPO Secretariat.



In the following chapters, the main contents that can be found under the different buttons of the left hand-side menu are presented with guidance on how to search data.

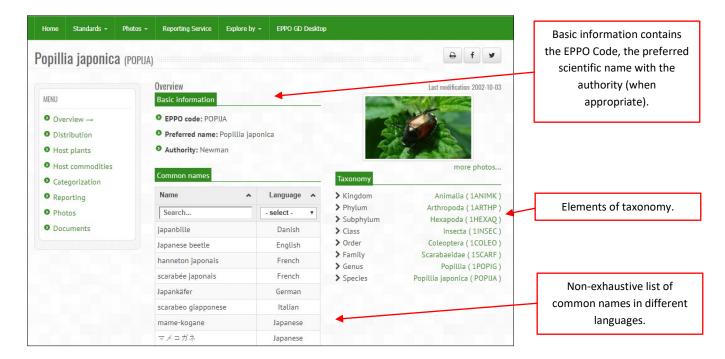
OVERVIEW

In the 'Overview' section, the database provides basic information on individual species (or other higher taxa). As of April 2022, more than 94 500 species are included in GD:

- 55 600 plant species (cultivated, wild, weeds);
- 27 200 animal species (e.g. insects, mites, nematodes, rodents), biocontrol agents;
- 11 700 microorganism species (e.g. bacteria, phytoplasmas, fungus, viruses, viroids and viruslike).

For each species, GD contains:

- A preferred scientific name (with authorities, if appropriate);
- Synonyms or other scientific names (also with authorities, if appropriate);
- Common names in different languages;
- Taxonomic position;
- EPPO Codes (<u>for more information see the EPPO website</u>).



When appropriate, a list of synonyms or other names (e.g. acronyms for viruses) is indicated under 'Other scientific names'. Notes on the taxonomy or any other elements concerning the pest / plant concerned can also be inserted in the species 'Overview'.

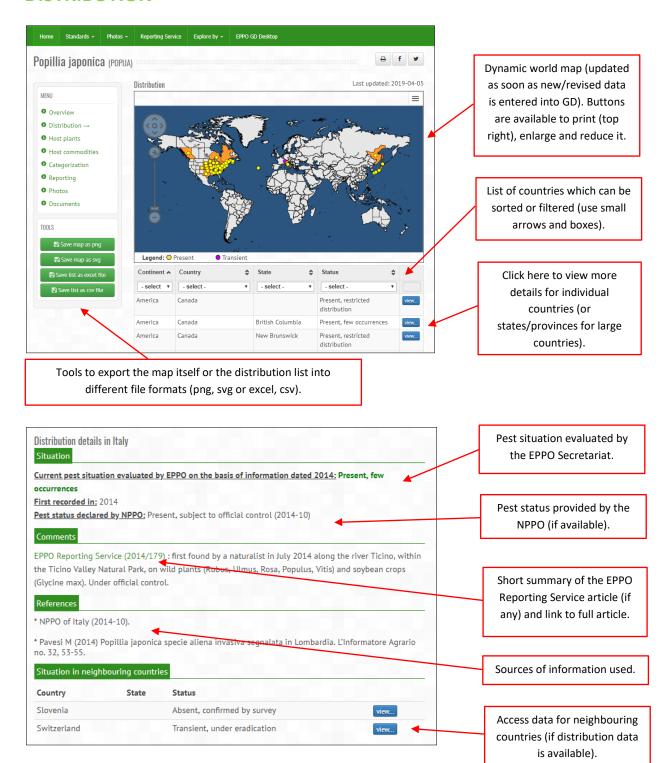


Important note about the taxonomy displayed in GD: the database is NOT a primary source for taxonomy (classification and nomenclature) and should not be considered as such. The EPPO Secretariat follows different sources (literature, databases) to provide some elements of taxonomy to its users. However, it does not attempt to provide all levels of the taxonomic tree or exhaustive lists of accepted taxa.

For a smaller sub-set of species (more than 1 700), GD provides data on their geographical distribution, host plants, categorization, and documents. These species mainly correspond to:

- pests of the EPPO A1 and A2 lists and of EU Plant Health legislation;
- pests of the EPPO Alert List;
- plants of the EPPO List of invasive alien plants and of EU concern;
- other quarantine pests and invasive plants of interest to other regions of the world.

DISTRIBUTION



As shown in the screen capture above, the distribution of a pest in a specific country is evaluated by the EPPO Secretariat on the basis of the different pieces of information that are available at a given date (which is specified).

In order to ensure consistency within the database, a small number of presence/absence categories are being used. The current distribution categories are as follows:

- Present, no details
- Present, widespread
- Present, restricted distribution
- Present, few occurrences
- Transient*
- Absent, pest no longer present
- Absent, pest eradicated
- Absent, intercepted only
- Absent, invalid record
- Absent, unreliable record
- Absent, no pest record
- Absent, confirmed by survey

Pest status declared by NPPO: when NPPOs are providing the EPPO Secretariat with an official pest status. Pest status is included under this field. As this is a text field, the exact wording provided by the NPPO can be inserted here. NPPOs are encouraged to follow the guidance given by ISPM 8¹. In the past, when a NPPOs did not communicate any 'official pest status' but only provided a general statement, the information was summarized in another field called **'From NPPO'** which displayed a summary of the pest situation using the standard presence/absence categories (legacy from PQR).

First recorded: when the date of first detection of a pest in the country is known, this is indicated.

Eradication in: when the date of eradication of a pest is known, this is also indicated.

From CABI Pest (or Disease) Map number x (date): EPPO and CABI have a long-standing exchange of information about pest distributions. In particular, EPPO collaborates with CABI in the preparation of the CABI distribution maps of plant pests and distribution maps of plant diseases. Therefore, when a CABI map exists for the pest concerned, the information that is provided by the CABI map is indicated in this particular field (with the number of the map and its year of publication).

Comments: under this section, the EPPO Secretariat can add any comment that is felt useful to better describe the pest distribution in a country. In particular, when an article published in the EPPO Reporting Service provides some additional details, an active link is included. By clicking on this link, the EPPO Reporting Service article can be viewed in full.

References

All references that have been used to describe the pest distribution are listed under 'References'. They can be bibliographic references, Internet sources and declarations/official notifications made by NPPOs (with a date). Some very short notes may be attached to some references, for example to

^{*} In 2022, it was agreed to change the former category 'Transient, under eradication' into 'Transient', as information on phytosanitary measures (e.g. eradication or any other phytosanitary measures) can be reflected in other fields: 'Pest status declared by NPPOs' and/or 'Comments' (see below).

¹ ISPM 8 Determination of pest status in an area. https://www.ippc.int/en/publications/612/

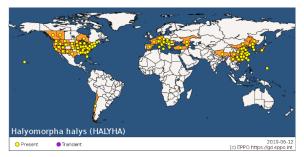
indicate that it is a first published record, or that it provides detailed names of localities or of particular host plants.

NOTES about world maps:

- 1) On world maps, only data on presence is shown by displaying a bright yellow dot on the 'centre' of each country together with an orange background. If it is considered that the pest is transient, this is indicated by a purple dot.
- 2) For large countries (e.g. Australia, Brazil, Canada, China, India, Russia, USA), geographical data is given as far as possible at provinces/states level. However, there may be cases where information is only available at country level. In such cases, the whole country is shown in pale orange instead of orange on the map (see example below).

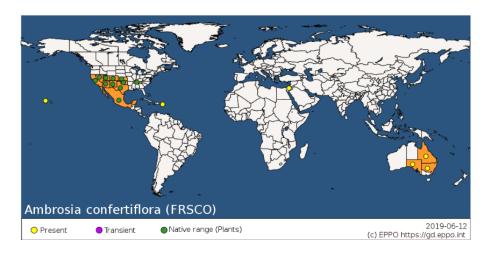


In this example, as the EPPO Secretariat could not obtain information for individual Chinese provinces, the entire territory of China appears in light yellow with a single dot.

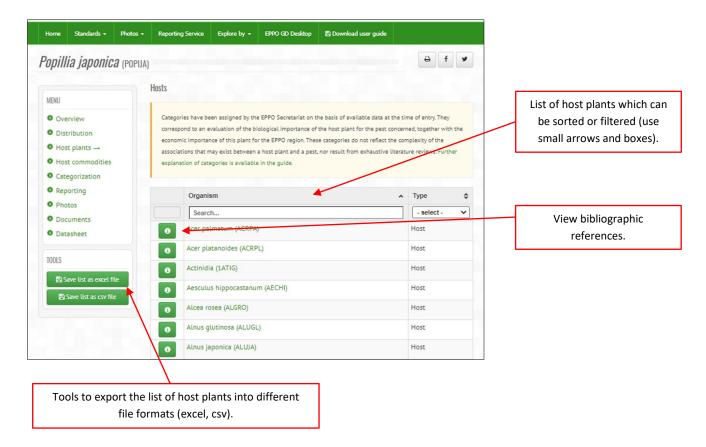


In this example, as information is available for individual Chinese provinces, yellow dots and orange backgrounds are displayed on each province.

3) For invasive alien plants (only) and when the native area is known, this is indicated by a green dot on individual countries.



HOST PLANTS



The pest/host plant combinations are classed in the following seven categories:

- Major host: a host plant which is important for the pest, or on that plant the pest is considered to be important. This category is assigned by the EPPO Secretariat, resulting from a qualitative judgement, and using available information (e.g. the plant is frequently considered in the literature as an important host, significant damage is observed). The fact that the host status has been demonstrated (full cycle, Koch's postulate completed) or that the plant is a preferred host (choice studies) will be indicated together with the bibliographic references whenever data is available.
- **Host:** the plant is listed as a host in the literature. The fact that it is a confirmed host, or a preferred host will be indicated together with the bibliographic references whenever data is available. Similarly if the plant is only used by certain pest stages (adult/larval feeding) or has been shown to be a poor host (e.g. as used in nematology) this could also be indicated if known.
- **Alternate**: this category is used for organisms which need distinct hosts to complete their life cycle (e.g. some aphids, some rusts).
- Wild/weed: self-explanatory.
- **Experimental**: the plant has been shown to be a host only in inoculation studies or under laboratory conditions, but there are no records of infection in the field or the environment.
- **Doubtful host**: the information provided is weak or subject to controversy.
- Non-host: the plant has clearly been shown NOT to be a host. The main objective of this
 category is to be able to correct past errors, close controversy (similarly to the category
 'Absent, invalid record' for geographical records in GD), or to be able to clearly state that a
 plant is not a host.



Important note about the classification of host plants in GD:

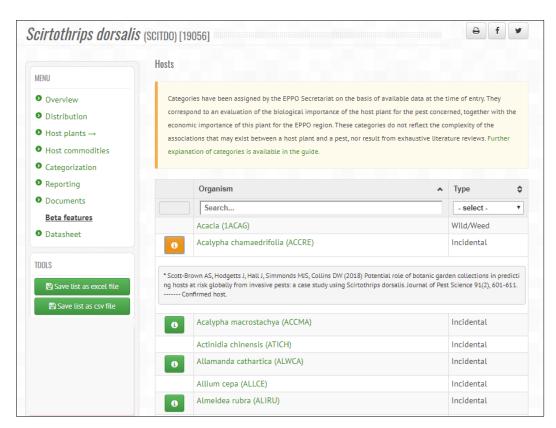
Important note about the classification of host plants in GD: Categories have been assigned by the EPPO Secretariat on the basis of available data at the time of entry. They correspond to a qualitative evaluation of the importance of the host plant for the pest concerned and remain indicative only.

Addition of references for host plant records

Since September 2019, references to scientific papers or other sources are given for host plant records. Concerning the past content of GD, it is not realistic to add references for 14 000 existing host records over a short period of time, but this will be done gradually, and all new entries will be substantiated with references.

When references are available for a host plant, this is indicated by a small green icon References can be viewed by simply clicking on the green icon (see example below).



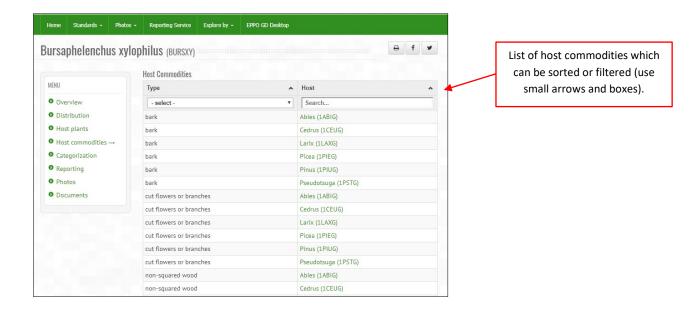


HOST COMMODITIES AND PATHWAYS

GD distinguishes between the host plants of a regulated pest (i.e. the plants which it can attack and damage in its area of distribution) and the plant commodities/pathways (e.g. plants for planting, fruits, seeds, cut flowers) liable to carry this pest in international trade. Historically, the host plant information mainly derived from the EPPO datasheets on quarantine pests, while the commodity information came from the EPPO pest-specific phytosanitary requirements (EPPO Standards PM2 – no longer updated but used in the early developments of the database), Annex IV of the EU Directive, and results of EPPO PRAs (Pest Risk Analyses).



As a case by case analysis based on the conclusions of PRAs (or other studies) has to be done by the EPPO Secretariat, the 'host commodities' and 'pathways' lists are available only for the EPPO/EU listed pests.



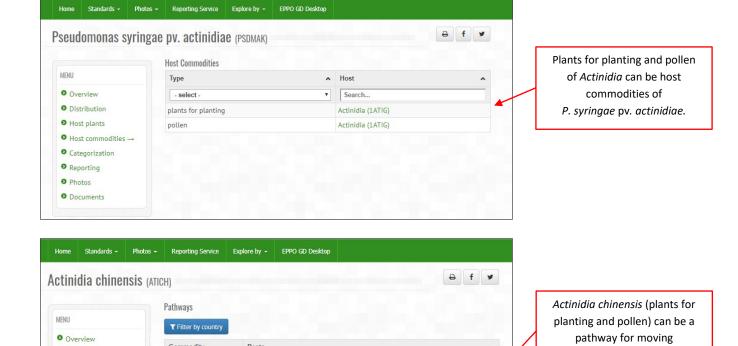
In the database, the following categories are available (some are rarely used and cannot be searched for, as they are not attached to a specific plant species):

- Agricultural machinery
- All commodities
- Bark
- Bulbs or tubers
- Cut flowers or branches
- Fruits or vegetables
- Manufactured articles
- Non-squared wood
- Packaging material
- Plants for planting
- Plant waste
- Pollen
- Seeds
- Soil/growing medium
- Squared wood
- Stored products

Information on host commodities is included at genus level to avoid generating too long lists. However, search tools in GD allow to reflect the fact that species belonging to a genus that is considered to be a host commodity may also act as pathways (see example below).

P. syringae pv. actinidiae as it

belongs to the genus Actinidia.



Search tips

Pests

Pathways →

1) To get a list of host plants for a given pest: start your search with a pest and click on 'host

Pseudomonas syringae pv. actinidiae (as Actinidia) (PSDMAK) Pseudomonas syringae pv. actinidiae (as Actinidia) (PSDMAK)

A Pests

▼ Search..

Commodity

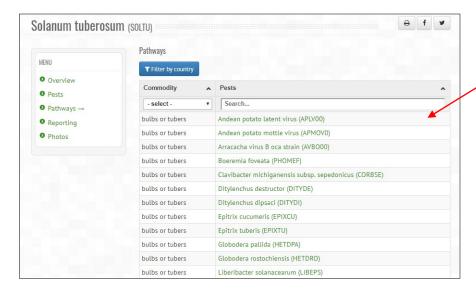
- select -

pollen

plants for planting

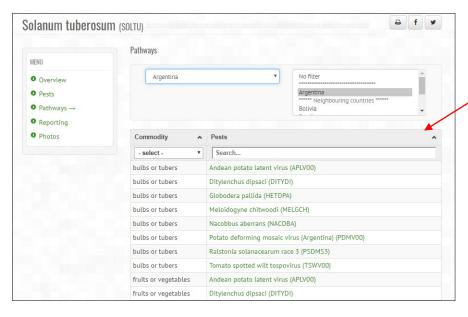
- 2) To get a list of host commodities for a given pest: start your search with a pest and click on 'host commodities'.
- 3) To get a list of pests associated with a plant: start your search with a plant and click on 'pests'.
- 4) To get a list of **pathways** (associated with a plant) that can transport pests: start your search with a plant and click on 'Pathways'. This list can be filtered by a country, in order to obtain a list of pests that are associated with the different plant commodities AND that are present in the country chosen. See our example below.

1st step: Get a list of commodities liable to carry potato pests. Start your search with 'potato' and click on 'Pathways'.

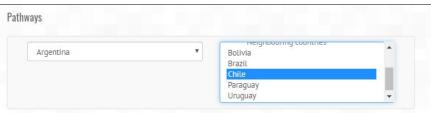


In this example, GD provides a list of pests that can be transported by different potato commodities (e.g. seed and ware potatoes, plants for planting, true seeds, contaminating soil).

2nd **step:** Filter by country (Argentina in this example) to get a list of potato commodities liable to carry pests from Argentina. You can also get similar information for neighbouring countries (see top right box).



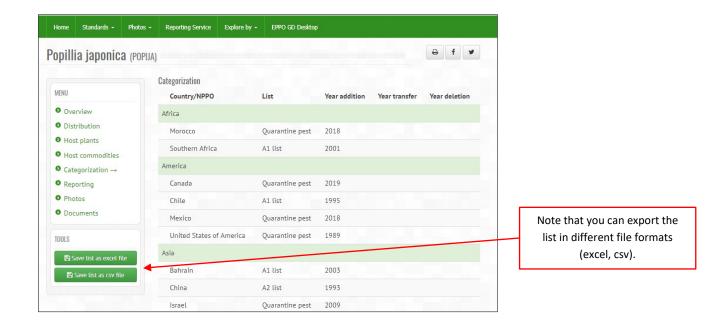
In this example, GD provides a list of pests that can be transported by different potato commodities from Argentina.



CATEGORIZATION

This section provides information on the 'quarantine status' of a pest in different countries, as well as for the European Union and the Eurasian Economic Union. For individual countries, the indicated date corresponds to the publication date of the lists of regulated pests.

When appropriate, the status of a pest in the different EPPO lists (EPPO A1 and A2 Lists of pests recommended for regulation as quarantine pests, Alert List, List of Invasive Alien Plants) is also mentioned with the date of first addition, and eventually of transfer and deletion. For the other RPPOs, EPPO has compiled lists of pests recommended for regulation whenever these were available.



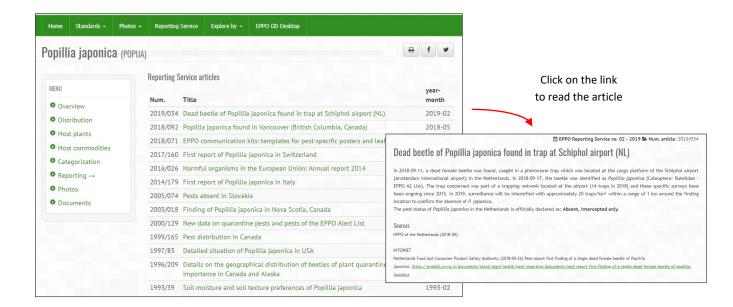
Search tips: To view lists of regulated pests for a given country, the EU or a Regional Plant Protection Organization, start your search by 'Explore by countries' (see Introduction – Green bar menu).



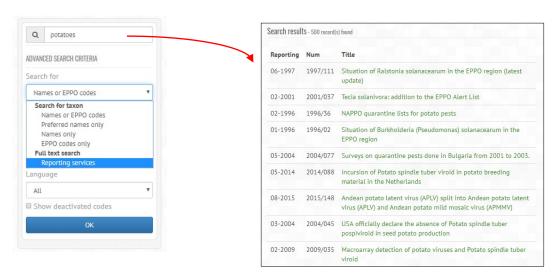
Lists of regulated pests are not available for all countries. It must be noted that the Secretariat is still in the process of incorporating quarantine lists that are being made available to EPPO, and it should be stressed that this only represents a small part of the information that is potentially available around the world.

REPORTING

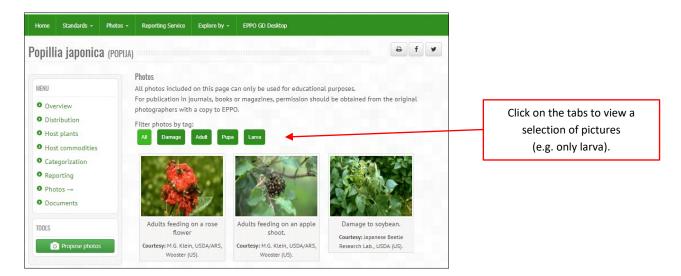
When EPPO Reporting Service articles are available for a given pest, they can be retrieved in this section (back to January 1974). As explained earlier (in the chapter on how to search and navigate), every month and after being sent to all subscribers, all articles of the EPPO Reporting Service (English versions only) are transferred into GD and indexed by the EPPO Secretariat.



Search tips: by using the advanced search tools (at the top of the screen), you can search through the 'full text' of the EPPO Reporting Service articles. In the 'Search for' box, choose 'Full text search', and indicate the term (English only) you are interested in as shown below. You will then obtain a list of Reporting Service articles where the term chosen has been used (either in the title of the article or its full text).



PHOTOS



Whenever pictures are available, they can be viewed together with the name(s) of the photographer(s) and a small legend. If you wish, you can enlarge each picture by clicking on the thumbnail image. Please note that all pictures can be used for educational purposes only. For publication in commercial journals, books, magazines, and websites, permission should be obtained from the original photographers and copy in EPPO.

The EPPO Secretariat warmly thanks all photographers who have kindly provided their photos (as of April 2022, more than 12 000 photos are included in GD). As more pictures of plants, pests and diseases are always welcome, online tools have been developed to allow users to submit photos (see our guide on how to submit photos).

DOCUMENTS



In this section, you can retrieve all pest-specific documents (as PDF files) that EPPO has produced:

- All EPPO Standards (except PP1²);
- EPPO datasheets (PDF documents for datasheets which are still awaiting revision see below);
- Mini datasheets of pests which were formerly included in the EPPO Alert List;
- EPPO PRAs only. Please note that the EPPO Secretariat is also maintaining another database on PRAs which contains more PRA documents (e.g. national PRAs, EFSA PRAs). See EPPO Platform on PRAs: https://pra.eppo.int
- Prioritization documents prepared for invasive alien plants.

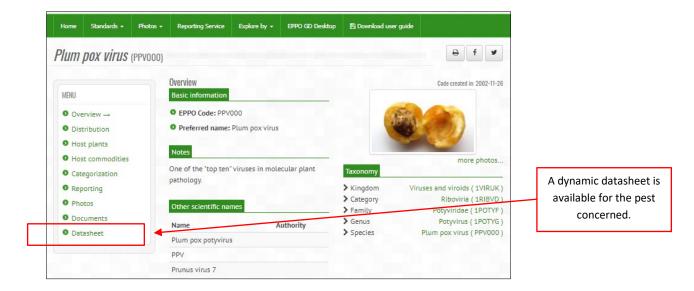
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EPPO Standards PP1 – Efficacy Evaluation of Plant Protection Products are maintained in a separate database. In this PP1 database, general Standards can be freely accessed but a subscription is required for specific Standards (i.e. fungicides/bactericides, insecticides/acaricides, herbicides, plant growth regulators, molluscicides, nematicides, rodenticides and side-effects).

DATASHEET

In 2019, EPPO datasheets on regulated pests started to be published in a dynamic format in GD. In the new dynamic datasheets, the information on pest identity, host plants and geographical distributions is directly generated by the database and automatically updated. This activity is part of a more general programme of revision of EPPO datasheets, and it is planned that dynamic datasheets will gradually replace the static PDF documents.

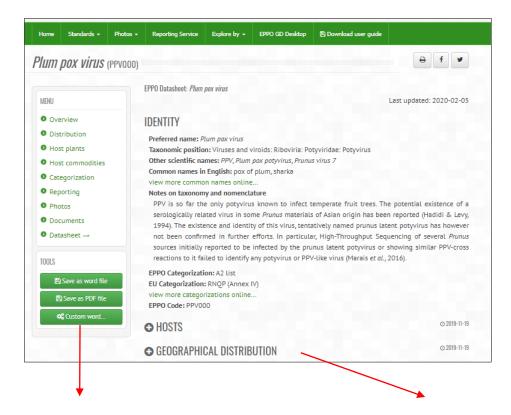
When searching the database with a pest, if a dynamic datasheet is available, this will be indicated in the left hand-side menu.



To obtain a complete list of available datasheets, you can select 'Explore by' and then click on 'Datasheets' in the top green bar menu.



Example of a dynamic datasheet.



The three sections:
IDENTITY
HOSTS
GEO. DISTRIBUTION
are dynamically
generated by the
database and are
automatically updated.

Export the datasheet as Word or PDF files



Expand sections by clicking on the icon

