



EPPO CODES

A brief introduction

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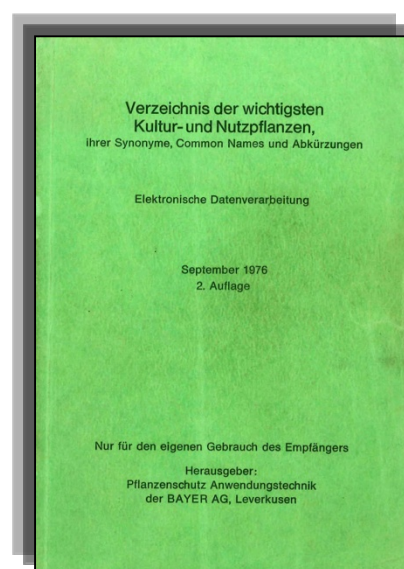
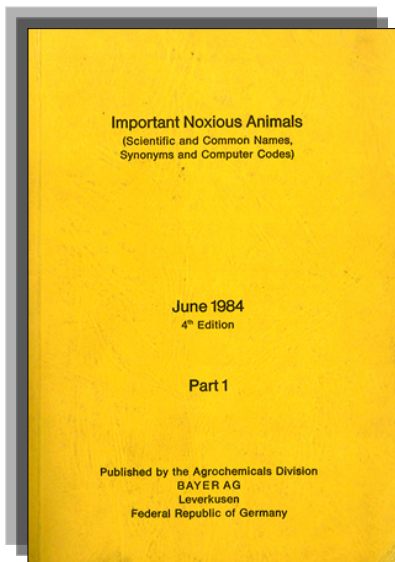
Brief history

Computer coding system: a BAYER initiative

In the 1970s, BAYER started to develop computer codes for plants, pests and pathogens important in agriculture and compiled their scientific and common names:



BAYER CODES



| | | | |
|-------|--------|--|---|
| 02549 | BEMIGO | EHA | BEMISIA GOLDINGI |
| 02550 | BEMIIN | EHA E E | BEMISIA INCONSPICUA SWEETPOTATO WHITEFLY WHITEFLY, SWEETPOTATO |
| 02551 | BEMILO | EHA | BEMISIA LONGISPINA |
| 02552 | BEMIMA | EHA | BEMISIA MANIHOTIS |
| 02553 | BEMIMY | EHA E E | BEMISIA MYRICA MYRICA WHITEFLY WHITEFLY, MYRICA |
| 02554 | BEMINI | EHA | BEHISIA NIGERIENSIS |
| 02555 | BEMIRH | EHA | BEMISIA RHODESIAENSIS |
| 02556 | BEMISH | EHA E E | BEMISIA SHINANOENSIS MULBERRY WHITEFLY WHITEFLY, MULBERRY |
| 02557 | BEMISP | EHA S | BEMISIA SP. MOSCA BLANCA |
| 02558 | BEMITA | EHA D D D D D E E E E E E H P S T | BEMISIA TABACI BEMISIA GOSSYPERDA *S BATATENMOTTENSCHILD LAUS BAUMWOLLMOTTENSCHILD LAUS TABAKMOTTENSCHILD LAUS WEISSE FLIEGE COTTON WHITEFLY SWEETPOTATO WHITEFLY TOBACCO WHITEFLY WHITEFLY, COTTON WHITEFLY, SWEETPOTATO WHITEFLY, TOBACCO KNIMAT ASH HATABAK MOSCA BRANCA DO FEIJAO (BRASIL) MOSQUITA BLANCA DEL TABACO (MEXICO) BEYAZ SINEK |
| 02559 | BEMITU | EHA | BEMISIA TUBERCULATA |
| 02560 | BEMIVA | EHA | BEMISIA VAYSSIERI |
| 02561 | BEMXSP | ENB D D D | BEMBIX SP. GRABWESPENARTEN KREISELWESPEN WESPEN, KREISEL- |
| 02562 | BERYMI | EGX | BERYTINUS MINOR |
| 02563 | BERYSP | EGX | BERYTINUS SP. |


Brief history

- 1996: BAYER transferred to EPPO the maintenance and development of the BAYER coding system
- 1990s-2000s: EPPO included codes into a 'Plant Protection thesaurus' (EPPT: an interface facilitating access to codes and names), developed a hierarchical system to reflect taxonomic links, and created codes for viruses
- 2007: it was agreed to rename BAYER codes 'EPPO codes'
- 2007: EPPT was made freely accessible on the Internet
- 2014: the whole content of EPPT is transferred into a new database (EPPO Global Database)



EPPO Global Database

Repository for all EPPO codes



EPPO
Global
Database

[advanced search...](#)




[Login](#)

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[Home](#) | [Standards](#) | [Photos](#) | [Reporting Service](#) | [Explore by](#)

<https://gd.eppo.int>

Solanum tuberosum (SOLTU)

Last modification: 1996-10-28


MENU

- [Overview →](#)
- [Pests](#)
- [Pathways](#)
- [Reporting](#)

Overview

Basic information

- ▶ **EPPO code:** SOLTU
- ▶ **Preferred name:** *Solanum tuberosum*
- ▶ **Authority:** Linnaeus



Other scientific names

| Name | Authority |
|---------------------------|-----------|
| <i>Solanum esculentum</i> | Necker |

Common names

| Name | Language |
|--|------------|
| <input type="text" value="Search..."/> | - select - |
| картоф | Bulgarian |
| creïllera | Catalan |
| creïllera | Catalan |
| pataquera | Catalan |
| patatera | Catalan |

Taxonomy

- ▶ Kingdom: Plantae (1PLAK)
- ▶ Phylum: Magnoliophyta (1MAGP)
- ▶ Class: Angiospermae (1ANGC)
- ▶ Category: Lamiids (1LAMD)
- ▶ Order: Solanales (1SOLO)
- ▶ Family: Solanaceae (1SOLF)
- ▶ Genus: Solanum (1SOLG)
- ▶ Species: Solanum tuberosum (SOLTU)

Associated Non-Taxonomic

|-- arable crops (NNNAC)

EPPO codes: a few general principles

For pests and pathogens:

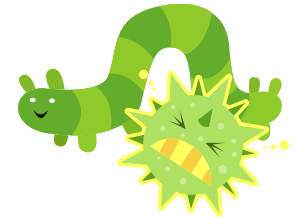
6 letters = 4 (genus) + 2 (species)

B E M I T A

The species *Bemisia tabaci*: BEMITA

An unspecified species of the genus *Bemisia*: BEMISP

Genus *Bemisia*: 1BEMIG



Special case of viruses:
codes are constructed with the acronyms
Tomato yellow leaf curl virus (TYLCV) = TYLCV0



EPPO codes: a few general principles

For cultivated and wild plant species (including weeds)

5 letters = 3 (genus) + 2 (species)

S O L T U

Solanum tuberosum: SOLTU

An unspecified species of *Solanum*: SOLSS

Genus *Solanum*: 1SOLG



Mnemonic element: whenever possible, codes are constructed on the basis of the current scientific name



EPPO codes: a few general principles

1 biological entity = 1 unique code



Change of preferred scientific name:

Gnorimoschema absoluta = *Tuta absoluta*

➔ The code **GNORAB** remains the same



Newly described species:

Phytophthora pinifolia

➔ A new code **PHYTPF** is created



EPPO codes: a few general principles

A code once given may not be deleted or used again for other purposes

In some instances, often resulting from successive taxonomic changes (e.g. synonymization), codes have to be deactivated (NOT deleted) to avoid duplication of codes

1 biological entity = 1 unique code



A few numbers ...



March 2017

- 40 600 plant species (cultivated, wild, weeds)
- 24 900 animal species (e.g. insects, mites, nematodes, rodents), biocontrol agents
- 9 300 microorganisms species (e.g. bacteria, fungus, viruses and virus-like)
- 400 non-taxonomic codes (e.g. crop groups)

In total more than 74 800 species important for agriculture and plant protection

More than 2 000 new codes are created per year

What is the content of the database?

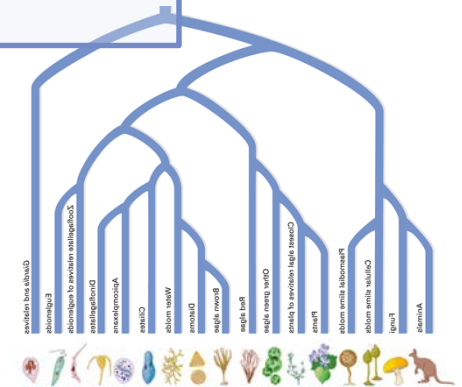
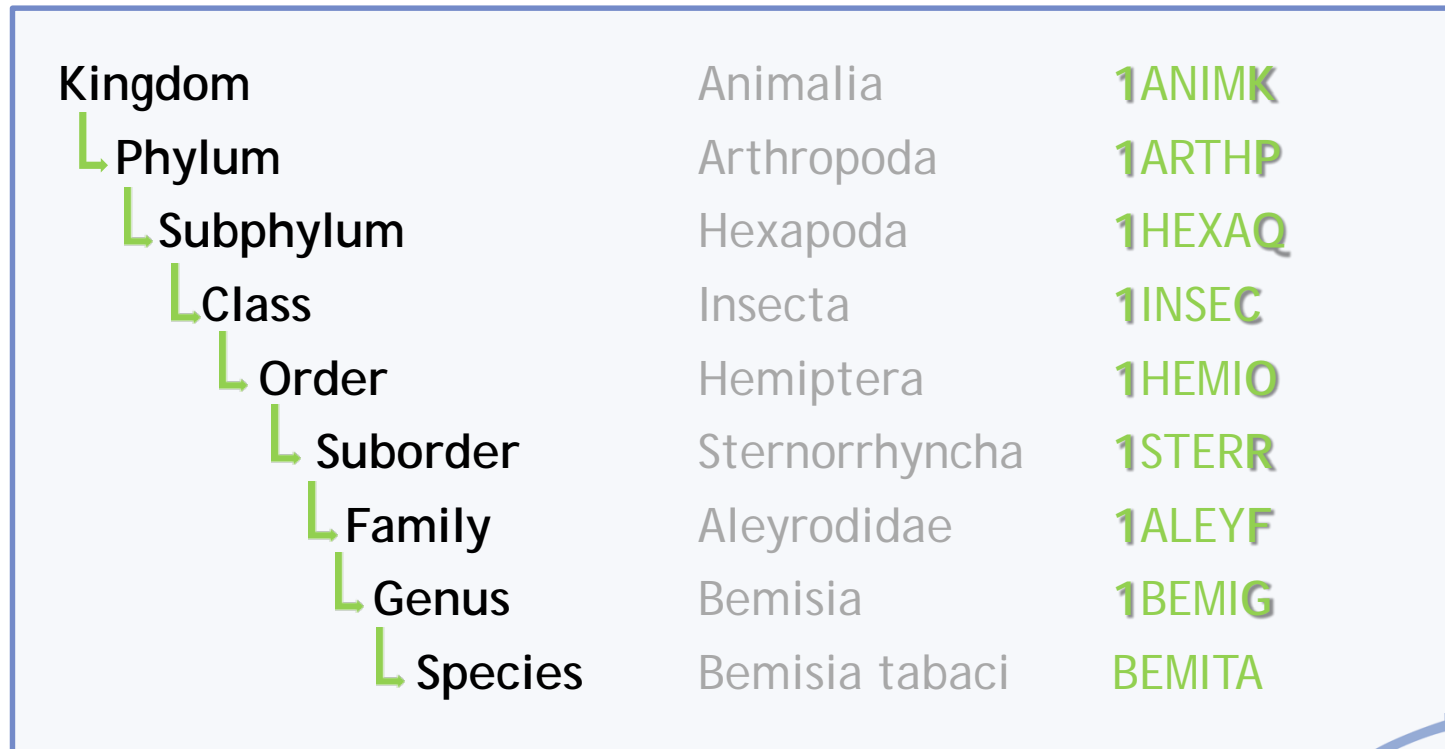
For each organism it contains:

- EPPPO code
- Preferred scientific name
- Synonyms and other scientific names (e.g. anamorph/teleomorph, virus acronyms)
- Common names in different languages
- Elements of taxonomy



EPPO codes (taxonomic)

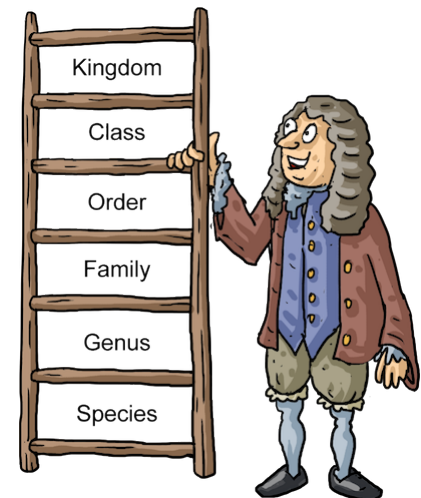
Taxonomic tree: harmonized coding - parent/child relationships



A few general remarks about taxonomy

The database has not been designed as a taxonomic tool

- It does not display all taxonomic levels (only the main ones)
- It does not provide an exhaustive list of all synonyms (tries to focus on names which have been used for some time in the literature to facilitate data retrieval)



Scientific names

Examples of sources used by the EPPO Secretariat

Pests

- Global Biodiversity Information Facility : <http://www.europe.gbif.net/>
- International Code of Zoological Nomenclature: <http://www.iczn.org/iczn/index.jsp>
- Pest specific databases (e.g. Psyll'list, WoRMS, ScaleNet, Tortricid.net)

Fungi

- Index Fungorum: <http://www.speciesfungorum.org/Names/Names.asp>
- Mycobank: <http://www.mycobank.org/DefaultPage.aspx>

Bacteria and phytoplasmas

- List of prokaryotic names with standing in nomenclature
<http://www.bacterio.cict.fr>

Viruses

- International Committee on Taxonomy of Viruses (ICTV)

Plants

- The Plant List: <http://www.theplantlist.org/>
- International Organization for Plant Information: <http://www.bgbm.fu-berlin.de/IOPI/GPC/query.asp>
- International Code of Botanical Nomenclature: <http://www.bgbm.fu-berlin.de/iapt/nomenclature/code/>

Common names in different languages

by language

| lang | Count |
|------------|--------|
| Scientific | 134334 |
| English | 42204 |
| German | 23602 |
| French | 26395 |
| Spanish | 21344 |
| Italian | 10754 |
| Dutch | 6600 |
| Portuguese | 8604 |
| Swedish | 5304 |
| Japanese | 7750 |
| Russian | 9735 |
| Danish | 2702 |
| Norwegian | 2029 |
| Finnish | 2115 |
| Turkish | 3764 |
| Hebrew | 768 |
| Afrikaans | 139 |
| Persian | 58 |
| Polish | 2947 |
| Malay | 15 |
| Hungarian | 162 |

and more ...

Botryotinia fuckeliana (*Botrytis cinerea*)

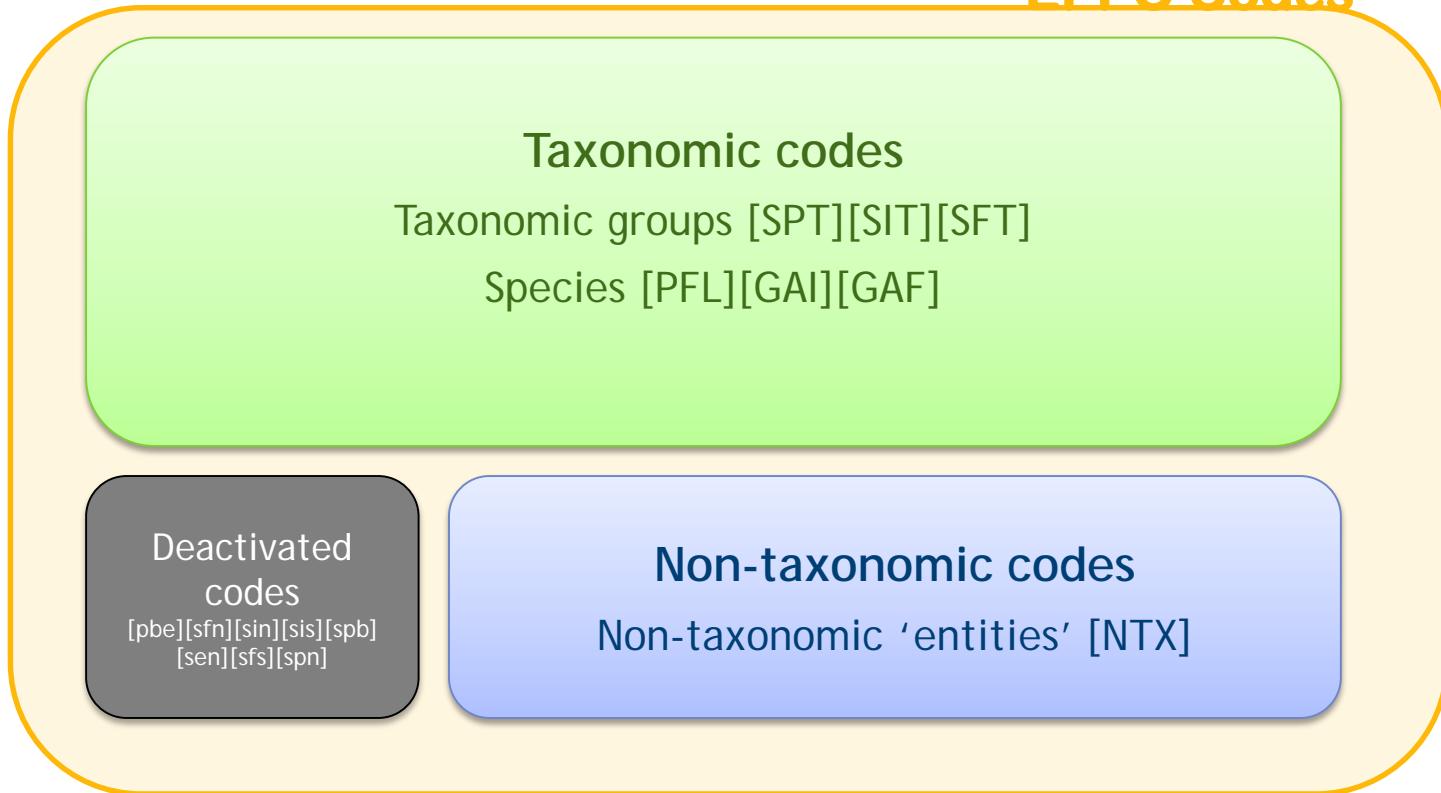
- [de] Graufäule
- [de] Grauschimmel
- [en] Brownish-grey mildew
- [en] Grey mould
- [es] Mancha gris de las hojas
- [es] Moho gris: fresa
- [es] Podredumbre gris
- [fr] Cinérite
- [fr] Grillure des feuilles
- [fr] Maladie de la toile
- [fr] Moisissure commune
- [fr] Moisissure grise
- [fr] Pourriture grise



Codes for non-taxonomic entities

Creation of a new data-type field to separate taxonomic from non-taxonomic codes

EPPO Codes



Example of taxonomic/non-taxonomic codes

Solanum lycopersicum (tomato)

tomato (direct-seeded)

tomato (transplanted)

LYPES

LYPXS

LYPXP



LYPES (active code)

Preferred name: *Solanum lycopersicum*

Synonym: *Lycopersicum esculentum*

Taxonomic code [PFL]

LYPXS (active code)

Preferred name: tomato (direct-seeded)

LYPXP (active code)

Preferred name: tomato (transplanted)

Non-taxonomic codes [NTX]

Creation of new EPPO Codes

Taxonomic codes

EPPO Secretariat manages all requests

Well defined procedure



Non-taxonomic codes

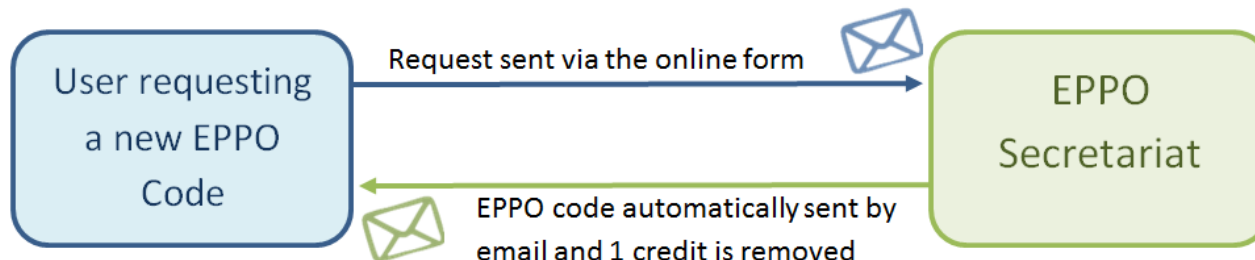
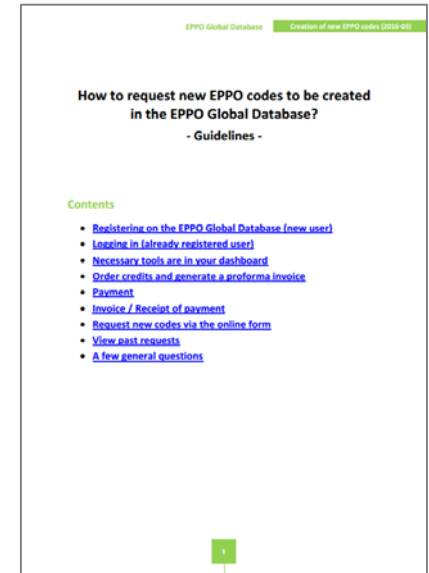
EPPO Panel on harmonization of data on PPPs is involved

Procedure remains to be defined

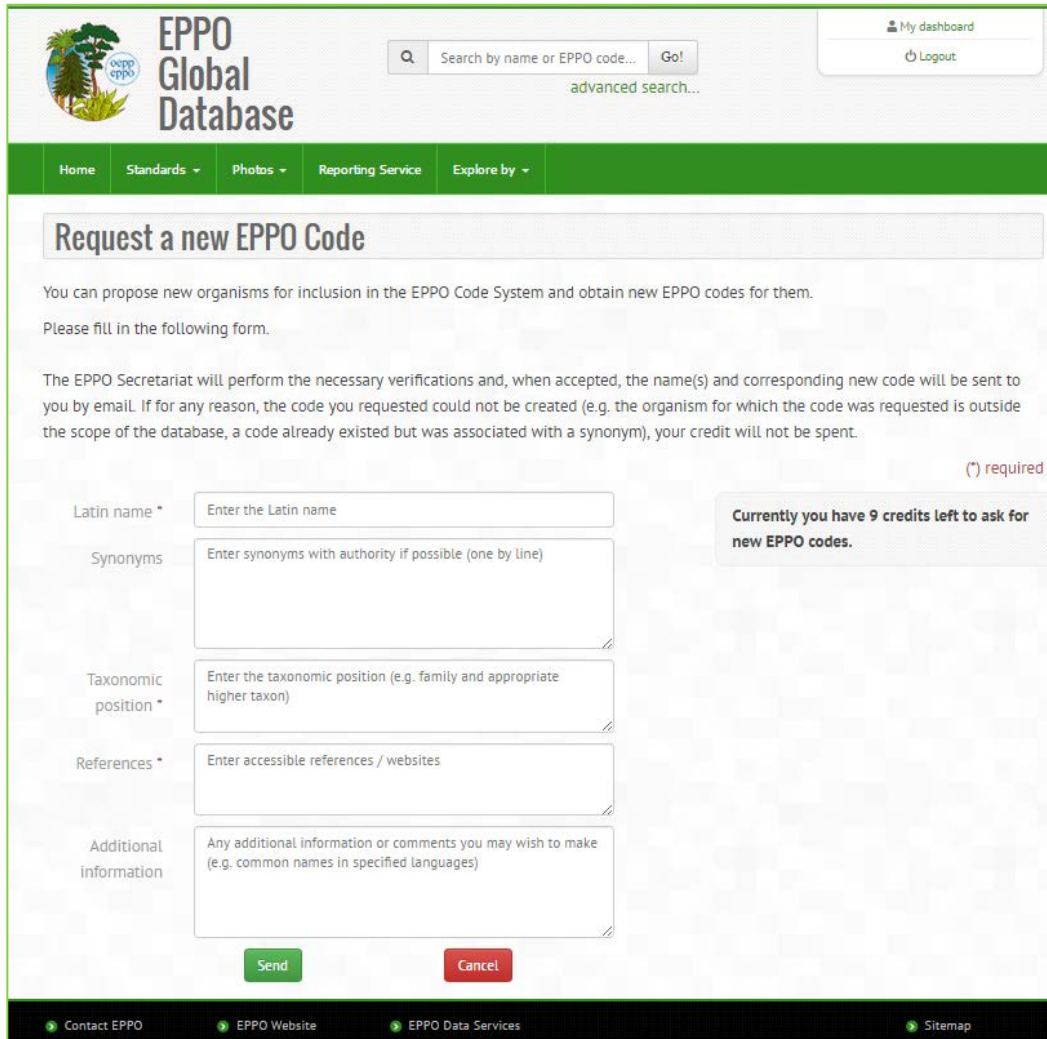


Creation of new EPPO Codes

- ✓ Additional service subject to fees (50 euros per code)
- ✓ All necessary online forms have been created in **EPPO Global Database**
- ✓ Guidance has been added to the website



Tools to request new codes



The screenshot shows the EPPO Global Database website. At the top left is the EPPO logo and the text 'EPPO Global Database'. To the right is a search bar with the text 'Search by name or EPPO code...' and a 'Go!' button. Below the search bar is a link for 'advanced search...'. In the top right corner, there are links for 'My dashboard' and 'Logout'. A green navigation bar contains links for 'Home', 'Standards', 'Photos', 'Reporting Service', and 'Explore by'. The main content area is titled 'Request a new EPPO Code'. Below the title, there is a paragraph explaining that users can propose new organisms for inclusion and obtain new EPPO codes. It asks users to fill in the following form. A second paragraph explains that the EPPO Secretariat will perform verifications and, when accepted, the name(s) and corresponding new code will be sent to the user by email. It also notes that if a code cannot be created for various reasons, the user's credit will not be spent. A note indicates that fields with an asterisk (*) are required. The form consists of five input fields: 'Latin name *', 'Synonyms', 'Taxonomic position *', 'References *', and 'Additional information'. A green 'Send' button and a red 'Cancel' button are at the bottom of the form. A grey box on the right side of the form states: 'Currently you have 9 credits left to ask for new EPPO codes.' At the bottom of the page, there are links for 'Contact EPPO', 'EPPO Website', 'EPPO Data Services', and 'Sitemap'.

EPPO Global Database

Search by name or EPPO code... Go!
advanced search...

My dashboard
Logout

Home Standards Photos Reporting Service Explore by

Request a new EPPO Code

You can propose new organisms for inclusion in the EPPO Code System and obtain new EPPO codes for them.
Please fill in the following form.

The EPPO Secretariat will perform the necessary verifications and, when accepted, the name(s) and corresponding new code will be sent to you by email. If for any reason, the code you requested could not be created (e.g. the organism for which the code was requested is outside the scope of the database, a code already existed but was associated with a synonym), your credit will not be spent.

(*) required

Latin name *

Synonyms

Taxonomic position *

References *

Additional information

Send Cancel

Currently you have 9 credits left to ask for new EPPO codes.

Contact EPPO EPPO Website EPPO Data Services Sitemap

Online form to transfer the request to the EPPO Secretariat

Secured online payment

The screenshot shows the Eppo Global Database website. At the top, there is a search bar with the text 'Search by name or Eppo code...' and a 'Go!' button. Below the search bar is a navigation menu with links for 'Home', 'Standards', 'Photos', 'Reporting Service', and 'Explore by'. The main content area is titled 'Buy credits / view invoices'. Under this title, there is a 'Buy credits' section with a dropdown menu showing 'Quantity 5 codes - 250 Eur' and a 'Continue...' button. To the right of this section, a message states 'Currently, you have 9 credits for ask for new Eppo Codes.' Below the 'Buy credits' section, there is a table titled 'Orders awaiting payment' with columns for 'Ref', 'Date of order', 'Detail', and 'Total eur'. The table contains four rows of orders, each with buttons for 'Download proforma invoice', 'Pay online...', and 'Cancel this order'. At the bottom of the page, there is a footer with links for 'Contact Eppo', 'Eppo Website', 'Eppo Data Services', and 'Sitemap'.

Buy credits (batches of codes: 1, 5, 10 ...)

Online payment (free for NPPOs)

Invoice management

The screenshot shows a 'PROFORMA INVOICE' from the European and Mediterranean Plant Protection Organization (Eppo/OEPP). The invoice is addressed to 'Eppo / OEPP, Anne-Sophie Ray, ray@epppo.int'. It includes the following information: Customer: 0002, Ref: ECS-0028, Date of invoice: 2016-03-14, and Mode of payment: (waiting payment). The invoice table shows a total of 50 EUR for 1 New codes. Below the table, there is a section for 'Bank account details for transfer (Eppo accepts Euros only)' with the beneficiary 'Eppo/OEPP' and IBAN 'FR11 2004 2004 4300 0000 4193 545'. The footer of the invoice states 'All bank charges being at your expense. Please quote the reference (ECS-0028) on the invoice.' and 'As Eppo is an international organization, we do not charge customers VAT'.

EPPO Secretariat can follow new requests

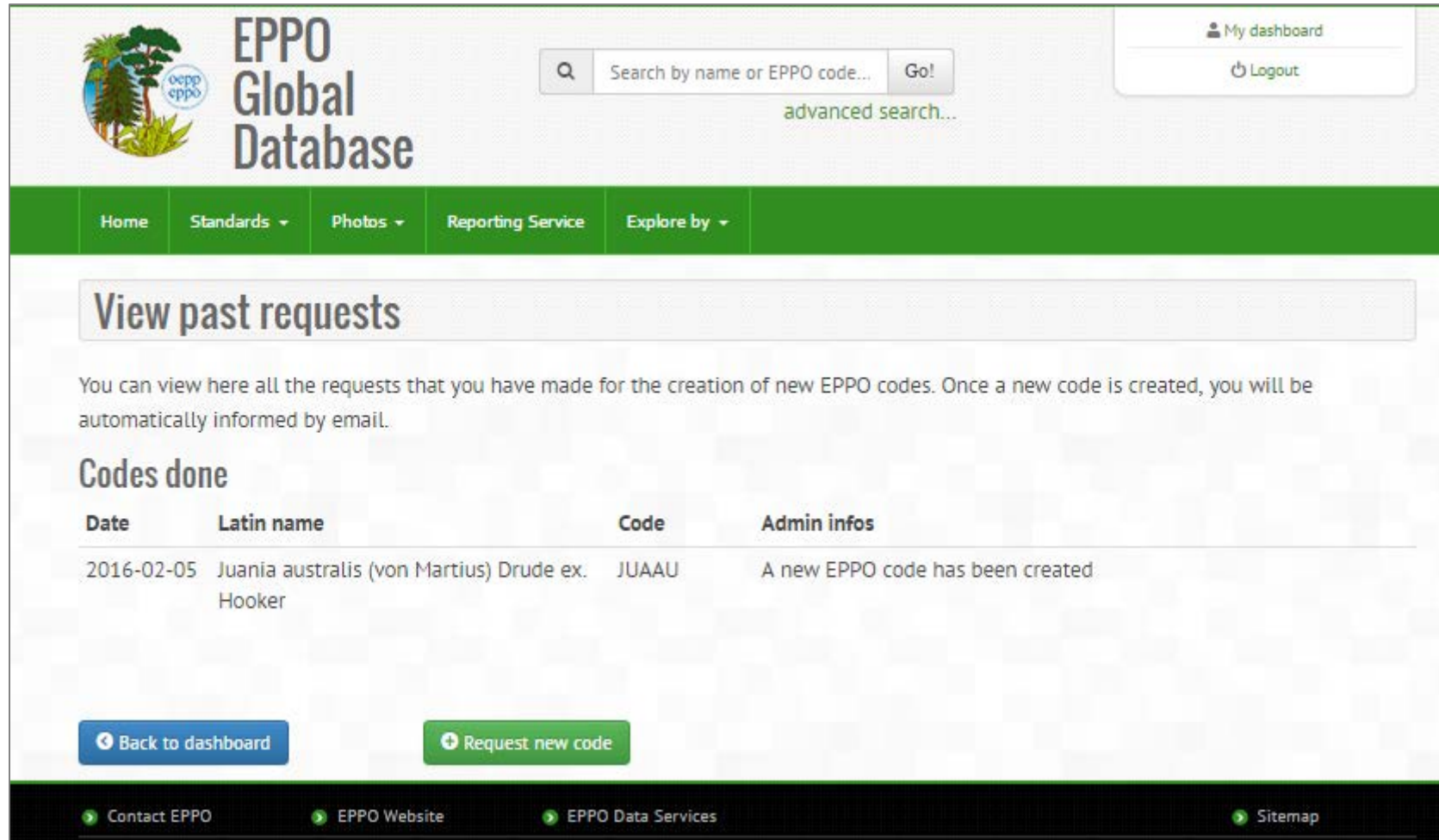
| History (last 30) | | | | | | |
|---------------------|--|---------------------|---------|-----------------------------------|-------------------------|---|
| daterequest ↕ | latinname ↕ | datebcode ↕ | bcode ↕ | theemail ↕ | thelogin ↕ | infosadmin ↕ |
| 2016-12-12 10:52 | Woodsholea maritima | 2016-12-23 11-55 | WOODMA | konstantinos.kritsas@syngenta.com | Konstantinos Kritsas | New code has been created. |
| 2016-12-16 14:39 | Tehama bonifatella | 2016-12-23 11-00 | CRAMBO | konstantinos.kritsas@syngenta.com | Konstantinos Kritsas | The pest was already in the database under an old name (Crambus bonifatellus). Currently preferred Latin name and common name have been added |
| 2016-12-22 09:31 | Anisoplia austriaca | 2016-12-23 10-33 | | konstantinos.kritsas@syngenta.com | Konstantinos Kritsas | Common names have been added for this pest |
| 2016-11-25 11:32 | Antheraea pernyi nucleopolyhedrovirus | 2016-11-26 20-12 | ANENPV | konstantinos.kritsas@syngenta.com | Konstantinos Kritsas | A new code has been created. |
| 2016-11-23 17:26 | Oikopleura dioica | 2016-11-26 19-11 | OIKODI | konstantinos.kritsas@syngenta.com | Konstantinos Kritsas | A new code has been created |
| 2016-11-23 15:52 | Tegolophus australis | 2016-11-26 18-32 | TEGLAU | konstantinos.kritsas@syngenta.com | Konstantinos Kritsas | A new code has been created |
| 2016-11-23 18:28 | Bactracera correcta | 2016-11-26 18-08 | BCTRCO | yinfei.li@bayer.com | Yinfei Li | The code already existed |



Secretariat
manages all
requests and
users are
informed by
automatic
emails



Users can follow their requests



The screenshot shows the EPPO Global Database website interface. At the top left is the EPPO logo, a circular emblem with a tree and the text 'eppo eppo'. To its right is the text 'EPPO Global Database'. A search bar is located in the top right, containing the text 'Search by name or EPPO code...' and a 'Go!' button. Below the search bar is a link for 'advanced search...'. In the top right corner, there are two buttons: 'My dashboard' and 'Logout'. A green navigation bar contains the following items: 'Home', 'Standards', 'Photos', 'Reporting Service', and 'Explore by'. The main content area features a section titled 'View past requests' with a sub-header 'Codes done'. Below this is a table with the following data:

| Date | Latin name | Code | Admin infos |
|------------|---|-------|----------------------------------|
| 2016-02-05 | Juania australis (von Martius) Drude ex. Hooker | JUAAU | A new EPPO code has been created |

At the bottom of the main content area, there are two buttons: 'Back to dashboard' and 'Request new code'. The footer contains four links: 'Contact EPPO', 'EPPO Website', 'EPPO Data Services', and 'Sitemap'.

EPPO codes can be used in other IT systems

- The whole set of EPPO codes and associated names is now freely available under the terms of an open data licence.
- Web services are being developed to facilitate downloading of EPPO codes (so that they can be used in other IT systems).

Downloads

The open data licence, computer files (in different formats) and explanations are available from a dedicated platform: the EPPO Data Services

<https://data.eppo.int>

The screenshot shows the EPPO Global Database website. At the top, there is a search bar with the text "Search by name of EPPO code..." and a "Go!" button. Below the search bar is a navigation menu with links for "Home", "Standards", "Photos", "Reporting Service", and "Explore by". The main content area is divided into several sections: "What is EPPO Global Database?", "Current contents", "Latest news", and "Random photos". The "Current contents" section lists various types of information available, such as basic information for over 68,000 species, detailed information for over 1,600 pest species, EPPO datasheets, EPPO Standards, and more than 2,400 pictures of pests. The "Latest news" section mentions the availability of EPPO Reporting Service no. 5 and lists new world distributions and pictures added. The "Random photos" section displays four images of pests with their names and EPPO codes: *Clavibacter michiganensis* subsp. *rosea* (CDBR) (CDBR), *Phytophthora cinnamomi* (PHYCN) (PHYCN), *Bactrocera dorsalis* (BACDO) (BACDO), and *Fallotia japonica* (FOLJC) (FOLJC). At the bottom of the page, there is a footer with links for "Contact EPPO", "EPPO Data Services", "Disclaimer", "Sitemap", and "ChangeLog". A pink arrow points from the "Downloads" section of the slide to the "EPPO Data Services" link in the footer.

Who is using the EPPO codes?

- Phytopharmaceutical industry (e.g. Bayer, Dupont, Dow, Syngenta)
- National Plant Protection Organizations (NPPOs)
- Research Institutes (CIRAD)
- International Organizations (IPPC, CABI, EU Commission)
- EPPO (in all its databases)



Current and future developments

- With the help of a consultant: coding more than 2000 ornamental plant species for ePhyto (electronic phytosanitary certificate, IPPC)
- Transfer of the harmonized classification of plant protection products uses
- Further develop webservice
- Facilitate data entry for the EPPO Secretariat (e.g. addition of large batches of verified common names in various languages)



Conclusions

EPP0 codes are a harmonized set of codes for plant and pest names which can be used to:

- Avoid typing errors during data entry and ensure consistency of data over time
- Provide an efficient way of dealing with taxonomic changes and different languages in databases
- Ensure consistent searches within databases
- Facilitate data exchange between databases



Thank you for your attention



EPPO codes: a few general principles

A code once given may not be deleted or used again for other purposes

In some instances, often resulting from successive taxonomic changes (e.g. synonymization), codes have to be deactivated (NOT deleted) to avoid duplication of codes

1 biological entity = 1 unique code



Deactivation of codes

- Main reason for deactivation is usually synonymization, but it can also be considered that a scientific name is no longer valid
- Code (and associated names) is not deleted but remains in the system. However, it is not immediately visible
- Deactivated codes can be viewed using the 'Advanced search criteria'

View deactivated codes

EPPO Global Database

Search: [advanced search...](#)

Login Register

Home Standards Photos Reporting Service Explore by

Search results - 82 record(s) found

| EPPOCode | Name | Type | Language | Preferred |
|----------|---|-----------------------|------------|-----------|
| 1ECHG | Echinochloa | plant taxonomic group | Scientific | ♥ |
| ECHKA | Echinochloa callopus | plant | Scientific | ♥ |
| ECHCL | Echinochloa callopus | plant | Scientific | ♥ |
| ECHCO | Echinochloa colonum | plant | Scientific | ♥ |
| ECHCG | Echinochloa crus-galli | plant | Scientific | ♥ |
| ECHCU | Echinochloa crus-galli var. amurensis <small>Deactivated code</small> | plant | Scientific | ♥ |
| ECHCA | Echinochloa crus-galli var. austro-japonensis <small>Deactivated code</small> | plant | Scientific | ♥ |
| ECHCB | Echinochloa crus-galli var. breviseta <small>Deactivated code</small> | plant | Scientific | ♥ |

ADVANCED SEARCH CRITERIA

Search for:

Search mode:

Type of organism:

Language:

Show deactivated codes

Deactivated codes

The screenshot shows the EPPO Global Database interface. At the top left is the EPPO logo and the text "EPPO Global Database". To the right is a search bar with the text "Search by name or EPPO code..." and a "Go!" button. Below the search bar is a link for "advanced search...". On the right side of the top navigation bar are "Login" and "Register" buttons. The main navigation bar includes "Home", "Standards", "Photos", "Reporting Service", and "Explore by". The main content area displays the title "*Echinochloa crus-galli* var. *austro-japonensis* (ECHCA)" with social media icons for print, Facebook, and Twitter. Below the title is a "MENU" box with a link to "Overview". The "Overview" section shows a red notification box: "This code has been deactivated and replaced by ECHCG". A red box highlights this message with the text "replacement code is given". Below this is the "Basic information" section, which lists: "EPPO code: ECHCA", "Preferred name: Echinochloa crus-galli var. austro-japonensis", and "Authority: Ohwi". The "Notes" section contains the text "Synonym of Echinochloa crus-galli", which is highlighted by a red box with the text "reason is given". The "Last modification" date is 2015-09-14.

EPPO Global Database

Search by name or EPPO code... Go!
advanced search...

Login
Register

Home Standards Photos Reporting Service Explore by

Echinochloa crus-galli var. *austro-japonensis* (ECHCA)

Overview Last modification: 2015-09-14

MENU
Overview →

This code has been deactivated and replaced by ECHCG
replacement code is given

Basic information

- EPPO code: ECHCA
- Preferred name: Echinochloa crus-galli var. austro-japonensis
- Authority: Ohwi

Notes
Synonym of Echinochloa crus-galli
reason is given