



EPPO CODES

An overview

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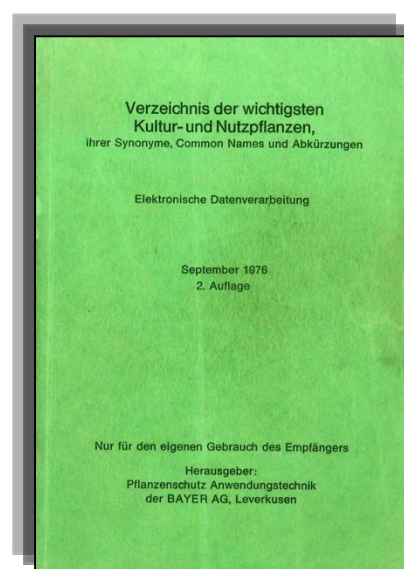
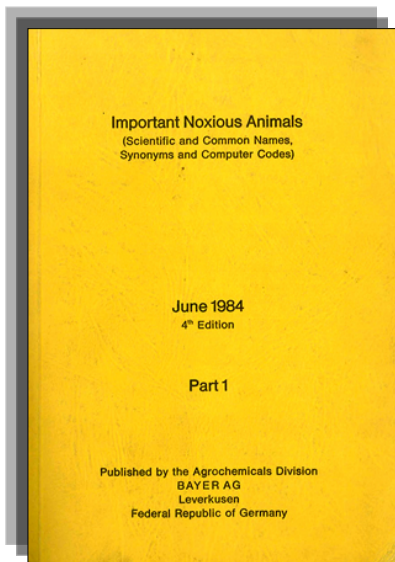


Brief history

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	BEHISIA 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: <https://gd.eppo.int>



EPPO
Global
Database

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Solanum tuberosum (SOLTU)

[Overview](#) | [Basic information](#) | [Notes](#) | [Other scientific names](#) | [Common names](#) | [Taxonomy](#) | [Associated Non-Taxonomic](#)

Overview →

Pests

Pathways

Reporting

Photos

Documents

EPPO code: SOLTU


Preferred name: *Solanum tuberosum*

Authority: Linnaeus

Andean region of South America. Widely cultivated throughout the world for its edible tubers

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

Name	Language
Search...	- select -
картоф	Bulgarian
creïllera	Catalan



Last modification: 1996-10-28

more photos...

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)

-- arable crops (3ARAC)

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

For pests and pathogens:

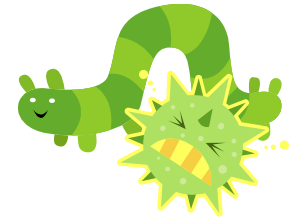
6 letters = 4 (genus) + 2 (species)

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

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 2018

- 42 600 plant species (cultivated, wild, weeds)
- 25 100 animal species (e.g. insects, mites, nematodes, rodents), biocontrol agents
- 9 500 microorganisms species (e.g. bacteria, fungus, viruses and virus-like)
- 450 non-taxonomic codes (e.g. crop groups)

In total more than 77 200 species important for agriculture and plant protection

On average more than 2 000 new codes are created per year

What is the content of the coding system?

For each organism it contains:

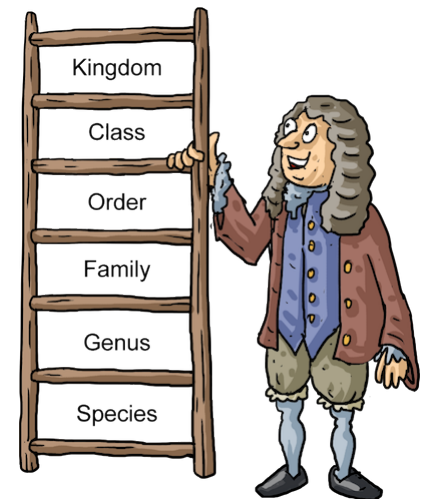
- EPPPO code
- Preferred scientific name
- Synonyms and other scientific names
(e.g. fungal anamorph/teleomorph, virus acronyms)
- Common names in different languages
- Elements of taxonomy



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): <https://talk.ictvonline.org/>

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

lang	Count
Scientific	143231
English	45615
German	28261
French	31975
Spanish	25990
Italian	13903
Dutch	7241
Portuguese	10888
Swedish	6366
Japanese	9004
Russian	14872
Danish	3589
Norwegian	2736
Finnish	2781
Turkish	4042
Hebrew	2350
Afrikaans	200
Persian	58
Polish	4748
Malay	16
Hungarian	3501

and more ...

Botryotinia fuckeliana (Botrytis cinerea)

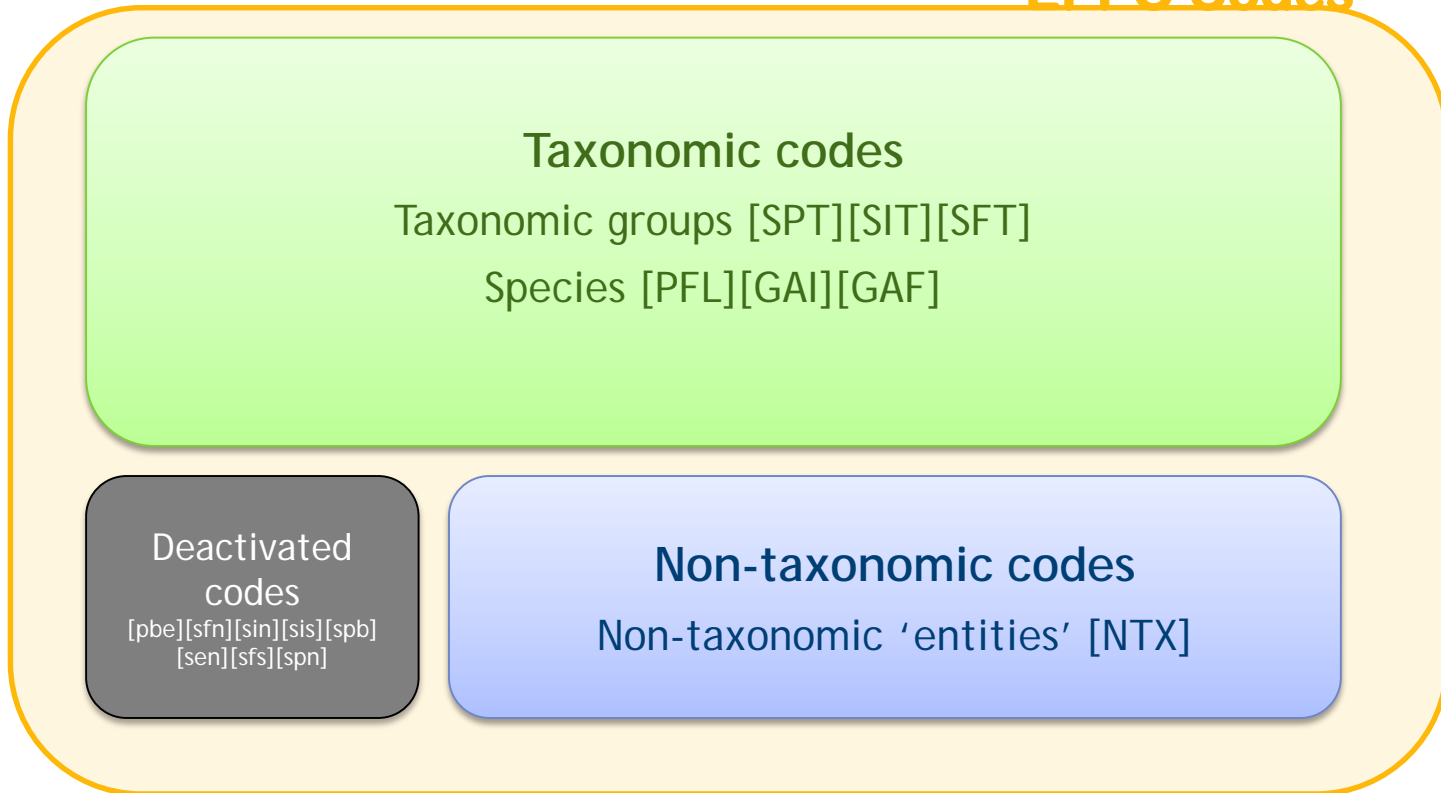
- [de] Graufäule
- [de] Grauschimmel
- [en] Brownish-grey mildew
- [en] Grey mould
- [es] Mancha gris de las hojas
- [es] Moho gris: fresa
- [es] Podredumbre gris
- [fr] Cinérite
- [fr] Grillure des feuilles
- [fr] Maladie de la toile
- [fr] Moisissure commune
- [fr] Moisissure grise
- [fr] Pourriture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



Codes for non-taxonomic entities

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

EPPPO Codes



Example of taxonomic/non-taxonomic codes

Solanum lycopersicum (tomato)

tomato (direct-seeded)

tomato (transplanted)

LYPES

LYPXS

LYPXP



LYPES

Preferred name: *Solanum lycopersicum*

Synonym: *Lycopersicum esculentum*

Taxonomic code [PFL]

LYPXS

Preferred name: tomato (direct-seeded)

LYPXP

Preferred name: tomato (transplanted)

Non-taxonomic codes [NTX]

Creation of new EPPO Codes

Taxonomic codes

EPPO Secretariat manages all requests

Online forms/fees



Non-taxonomic codes

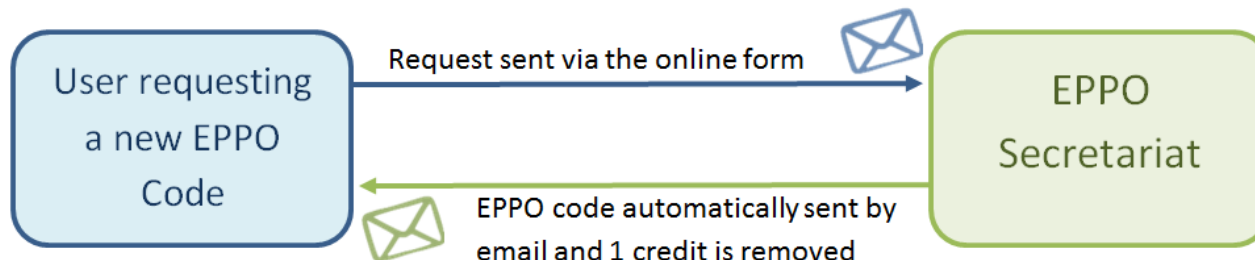
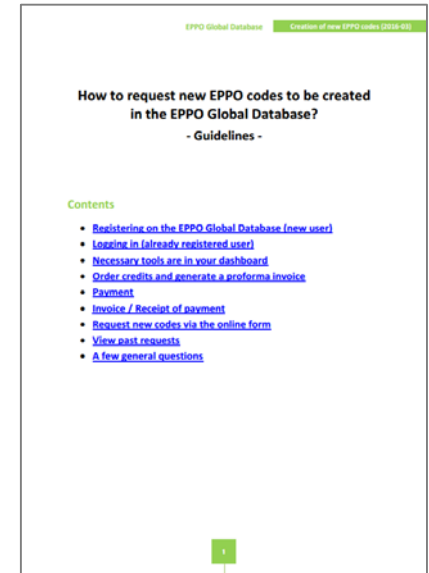
EPPO Panel on harmonization of data on PPPs is involved

Approval procedure



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



EPPO codes can be used in other IT systems

- The whole set of EPPO codes and associated names is 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 - EPPO Data Services

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 or EPPO code..." and a "Go!" button. Below the search bar, there are navigation tabs: Home, Standards, Photos, Reporting Service, Explore by, and Beta features. The main content area is divided into several sections:

- What is EPPO Global Database?**: A brief introduction stating that the database is maintained by the Secretariat of the European and Mediterranean Plant Protection Organization (EPPO) and is still under development.
- Current contents:**: A list of features including:
 - basic information for more than 77 000 species of interest to agriculture, forestry and plant protection: plants (cultivated and wild) and pests (including pathogens).
 - detailed information for more than 1600 pest species that are of regulatory interest (EPPO and EU listed pests, as well as pests regulated in other parts of the world).
 - EPPO datasheets
 - EPPO Standards
 - more than 4500 pictures of pests (including invasive alien plants).
 - articles of the EPPO Reporting Service (since 1991).
- How to cite EPPO Global Database?**: A link to the EPPO (2018) EPPO Global Database (available online).
- How to submit new photos?**: A link to the guidelines on how to submit photos of pests and plants.
- How to request new EPPO codes?**: A link to read the guidelines.
- Latest news:**: A section titled "EPPO Reporting Service no. 2 is available." listing new world distributions and new pictures added.

At the bottom of the page, there is a footer with navigation links: Contact EPPO, EPPO Website, EPPO Data Services (circled in red), EPPO Codes categories, and Sitemap. A red arrow points from the "EPPO Data Services" link in the footer to the pink box on the left.

EPPO Data Services: <https://data.eppo.int/> (create your free account first)

The screenshot displays the EPPO Data Services dashboard. At the top, there is a navigation bar with 'EPPO Data Services', 'Home', 'Go to EPPO Global Database', 'Dashboard', 'Online tools', and 'Logout'. Below the navigation bar, the breadcrumb 'Home / My dashboard' is visible. The main heading is 'Dashboard'. The dashboard is divided into several sections:

- Downloads:** A table listing recent downloads with columns for Date, File, Size, and actions (download, read more).
- Online tools:** A section with a 'Go to online Tools' button.
- Notifications:** A section with a 'Modify...' button and a message about email notifications.
- Your account:** A section with a 'Modify...' button and account statistics.
- Tokens API:** A section with an 'Ask for a new token' button and a table of API tokens.

Date	File	Size	download	read more
2018-03-01 03:30:20	XML Access	12,14M	download	read more
2018-03-01 03:31:10	XML Full	8,70M	download	read more
2018-03-01 03:30:38	XML Datapacket	11,41M	download	read more
2018-03-01 03:31:33	Bayer (flat file)	8,95M	download	read more
2018-03-01 03:31:58	SQLite database	10,95M	download	in preparation
2018-03-01 03:31:48	SQL queries	9,39M	download	in preparation
2018-03-01 03:00:31	LogShipping method	23,00M	download	read more

Token API	Description
c1a480c8b387436a508bd2cbf66564dc	Token for documentation tests and online tools

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)



Achievements in 2017

- With the help of Ms Grousset: +2500 codes for ornamental plant species have been created (for ePhyto – the FAO/IPPC electronic phytosanitary certification system)
- All newly accepted codes for the harmonized classification of plant protection products uses have been transferred into GD (mainly crop groups)
- A grant agreement has been signed with the EU Commission for the development of the EPPO code system



Achievements in 2017

- Webservices have been further developed to help users to query the database rapidly
- New IT tools have been created for the EPPO database administrators (e.g. to add batches of verified common names in various languages)



Plans for 2018

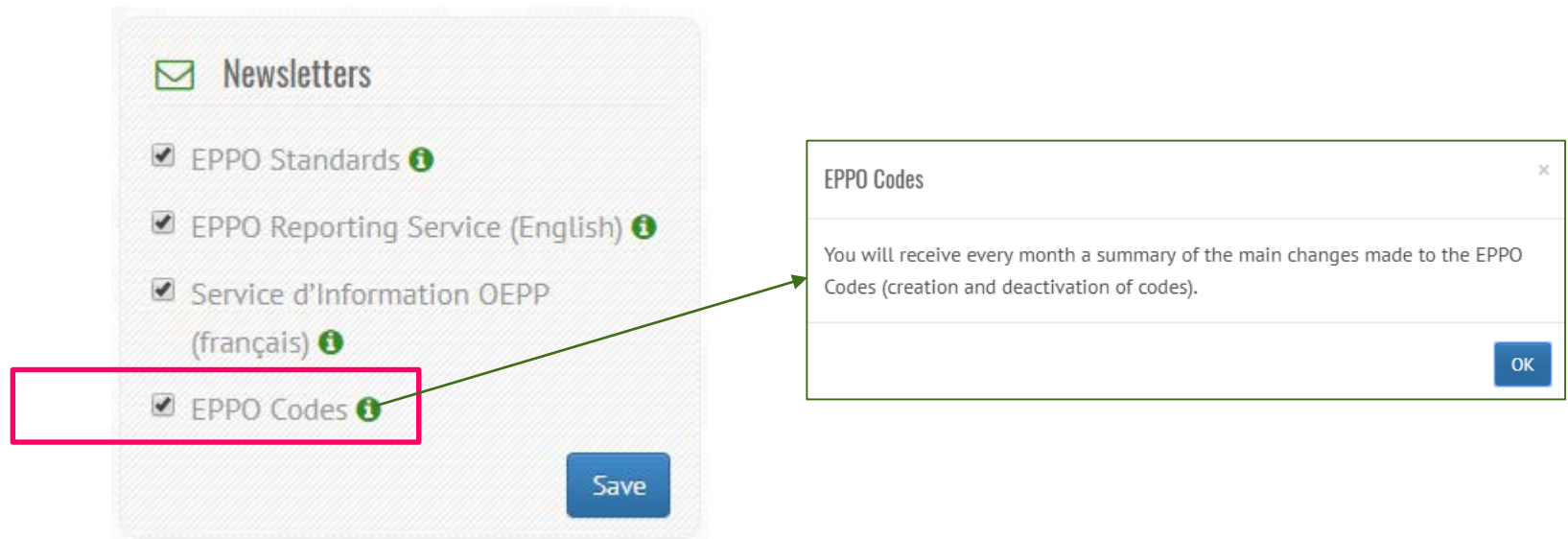
- With the help of Ms Grousset: continue to populate the database with more codes
- Continue to develop the harmonized classification of PPPs uses with the EPPO Panel
- Release the EPPO Codes monthly newsletter summarizing the main changes made to the EPPO Codes: new codes / deactivated codes



EPPO Codes monthly newsletter

How to register?

- 1) Create your free account in the EPPO Global Database
- 2) Login
- 3) In your dashboard, choose the EPPO Codes Newsletter



The image shows a screenshot of the EPPO dashboard's newsletter settings. On the left, a panel titled "Newsletters" contains a list of subscription options, each with a checked checkbox and an information icon (i). The options are: "EPPO Standards", "EPPO Reporting Service (English)", "Service d'Information OEPP (français)", and "EPPO Codes". The "EPPO Codes" option is highlighted with a red rectangular box. A green arrow points from this box to a confirmation dialog box on the right. The dialog box has a title bar "EPPO Codes" with a close button (x). The main text of the dialog reads: "You will receive every month a summary of the main changes made to the EPPO Codes (creation and deactivation of codes)." At the bottom right of the dialog is a blue "OK" button.

Newsletters

- EPPO Standards *i*
- EPPO Reporting Service (English) *i*
- Service d'Information OEPP (français) *i*
- EPPO Codes *i*

EPPO Codes ×

You will receive every month a summary of the main changes made to the EPPO Codes (creation and deactivation of codes).

OK

Save

EPPO Codes monthly newsletter

- **Free newsletter addressed to EPPO Codes users – sent by email**
- **Summary of the main modifications made during a monthly period**
 - list of newly created codes
 - list of deactivated codes with their replacement codes (if appropriate)
- **Lists are automatically generated from the database**
- For clarity, other modifications (changes in preferred scientific names, authors, synonyms, common names) are not shown but these modifications can be traced in the core database files (e.g. for users who are downloading EPPO Codes files via the EPPO Data Services)

EPPO Codes monthly newsletter

EPPO Codes Monthly Newsletter: 2018-02

This free newsletter is addressed to all EPPO Codes users. Its objective is to summarize the main modifications that have been made to the database during a monthly period (the month covered is indicated in the title) and provide users with an easy and transparent way of tracing major changes. The Newsletter contains a list of newly created codes and a list of deactivated codes with their replacement codes. These lists are automatically generated from the database. Other modifications concerning data that is related to already existing codes, such as changes in preferred scientific names, authors of scientific names, synonyms, common names are not shown to keep the Newsletter easy to read. However, these modifications can be traced in the core database files (e.g. for users who are downloading EPPO Codes files via the EPPO Data Services). More general information about the EPPO Codes can be found on the [EPPO website](#).

Summary

New codes	141
Deactivated	9

New codes

Microorganism

Code	Pref name
CYTOPA	Cytospora parasitica
DIPDSC	Diplodia scrobiculata
PHYPAE	Phytoplasma americanum
XANTFF	Xanthomonas fuscans subsp. fuscans

Animal

Code	Pref name
ATHKSP	Atheloca sp.
ATHKSU	Atheloca subrufella
MELGIZ	Meloidogyne izaicoensis
NOORB	Noorda blitealis

and more

EPPO Codes monthly newsletter

Deactivated codes

Microorganism

Code	Pref name	Comment
PHYHAM	Phytoplasma americanum	Deactivated because PHYHAM had been used in the past for Physopella ampelopsidis (against the rules) Replaced by PHYPAE

Plant

Code	Pref name	Comment
CZSRU	Cytisus ratisbonensis	Replaced by CCJRA
ERADF	Eragrostis diffusa	Synonym of Eragrostis pectinacea Replaced by ERAPE
IBECR	Iberis crenata	Synonym of Iberis amara Replaced by IBEAM
IBEPT	Iberis pruitii	Synonym of Iberis carnosa Replaced by IBETE
RESIL	Reseda jacquinii subsp. litigiosa	
SILNS	Silene nutans subsp. smithiana	Replaced by SILNU
THLRI	Thlaspi rivale	Synonym of Noccaea brevistyla Replaced by THLBS

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

