EPPO CODES

An overview

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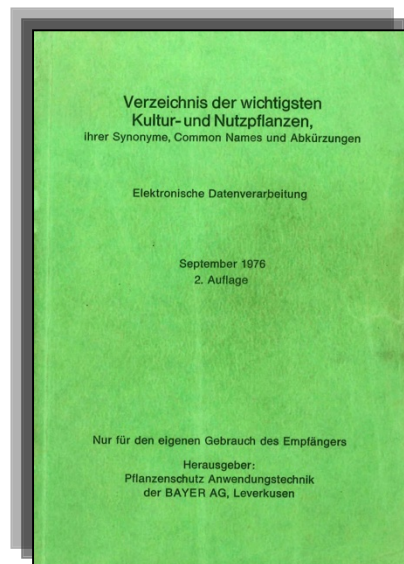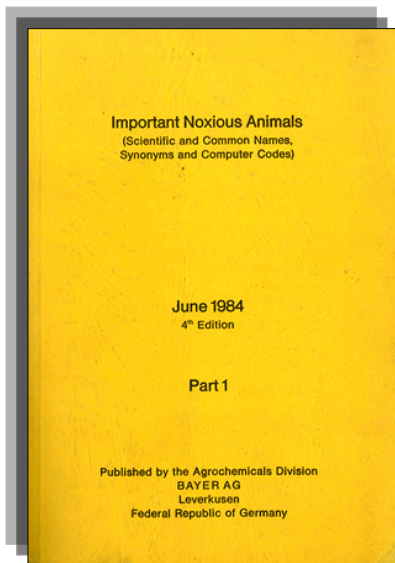
Brief history

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**

Important Noxious Animals (Scientific and Common Names, Synonyms and Computer Codes)	Verzeichnis der wichtigsten Kultur- und Nutzpflanzen, ihrer Synonyme, Common Names und Abkürzungen	
	Elektronische Datenverarbeitung	
June 1984 4th Edition	September 1976 2. Auflage	
Part 1		
Published by the Agrochemicals Division BAYER AG Leverkusen Federal Republic of Germany	Nur für den eigenen Gebrauch des Empfängers Herausgeber: Pflanzenschutz Anwendungstechnik der BAYER AG, Leverkusen	

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02549   BEMIGO EHA       BEMISIA GOLDINGI

02550   BEMIIN EHA       BEMISIA INCONSPICUA
                    E    SWEETPOTATO WHITEFLY
                    E    WHITEFLY, SWEETPOTATO

02551   BEMILO EHA       BEMISIA LONGISPINA

02552   BEMIMA EHA       BEMISIA MANIHOTIS

02553   BEMIMY EHA       BEMISIA MYRICAE
                    E    MYRICA WHITEFLY
                    E    WHITEFLY, MYRICA

02554   BEMINI EHA       BEMISIA NIGERIENSIS

02555   BEMIRH EHA       BEMISIA RHODESIAENSIS

02556   BEMISH EHA       BEMISIA SHINANOENSIS
                    E    MULBERRY WHITEFLY
                    E    WHITEFLY, MULBERRY

02557   BEMISP EHA       BEMISIA SP.
                    S    MOSCA BLANCA

02558   BEMITA EHA       BEMISIA TABACI
                         BEMISIA GOSSYPERDA *S
                    D    BATATENMOTTENSCHILDLAUS
                    D    BAUMWOLLMOTTENSCHILDLAUS
                    D    TABAKMOTTENSCHILDLAUS
                    D    WEISSE FLIEGE
                    E    COTTON WHITEFLY
                    E    SWEETPOTATO WHITEFLY
                    E    TOBACCO WHITEFLY
                    E    WHITEFLY, COTTON
                    E    WHITEFLY, SWEETPOTATO
                    E    WHITEFLY, TOBACCO
                    H    KNIMAT ASH HATABAK
                    P    MOSCA BRANCA DO FEIJAO (BRASIL)
                    S    MOSQUITA BLANCA DEL TABACO (MEXICO)
                    T    BEYAZ SINEK

02559   BEMITU EHA       BEMISIA TUBERCULATA

02560   BEMIVA EHA       BEMISIA VAYSSIERI

02561   BEMXSP ENB       BEMBIX SP.
                    D    GRABWESPENARTEN
                    D    KREISELWESPEN
                    D    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 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*: SOL**SS**

Genus *Solanum*: **1**SOL**G**

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

DON'T FORGET

EPPO codes: a few general principles
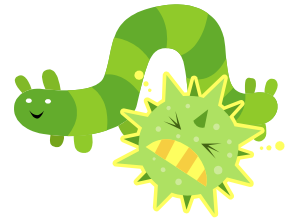
For pests and pathogens:

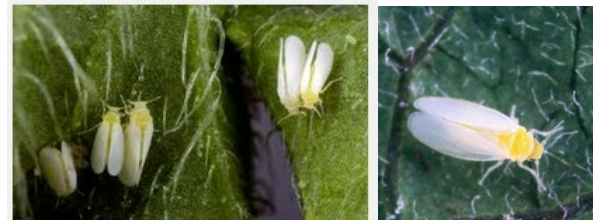**6 letters = 4 (genus) + 2 (species)**

B E M I T A

The species *Bemisia tabaci*: BEMITA

An unspecified species of the genus *Bemisia*: BEMI**SP**

Genus *Bemisia*: **1**BEMI**G**

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

CRIELI

Change of preferred scientific name:
Gnorimoschema absoluta = Tuta absoluta
➡ The code **GNORAB** remains the same

Newly described species:
Phytophthora pinifolia
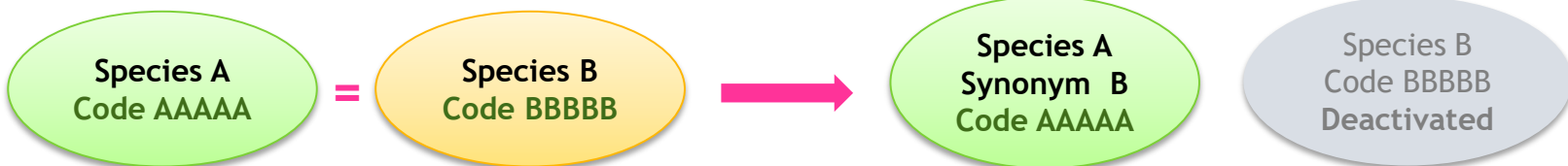➡ A new code **PHYTPF** is created

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

Species A
Code AAAAA

=

Species B
Code BBBBB

➜

Species A
Synonym B
Code AAAAA

Species B
Code BBBBB
Deactivated

A few numbers …

- 46 500 plant species (cultivated, wild, weeds)

- 26 200 animal species (e.g. insects, mites, nematodes, rodents), biocontrol agents

- 10 800 microorganisms species (e.g. bacteria, fungus, viruses and virus-like)

- 570 non-taxonomic codes (e.g. crop groups)

In total more than 83 500 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:

- EPPO code

- Preferred scientific name

- Synonyms and other scientific names
(e.g. fungal anamorph/teleomorph, virus acronyms)

- Common names in different languages

- Elements of taxonomy

EPPO codes (taxonomic)

Taxonomic tree: harmonized coding - parent/child relationships

Kingdom	Animalia	**1**ANIM**K**
↳ **Phylum**	Arthropoda	**1**ARTH**P**
↳ **Subphylum**	Hexapoda	**1**HEXA**Q**
↳ **Class**	Insecta	**1**INSE**C**
↳ **Order**	Hemiptera	**1**HEMI**O**
↳ **Suborder**	Sternorrhyncha	**1**STER**R**
↳ **Family**	Aleyrodidae	**1**ALEY**F**
↳ **Genus**	Bemisia	**1**BEMI**G**
↳ **Species**	Bemisia tabaci	BEMITA

A few general remarks about taxonomy

The database has **<u>not</u>** 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)
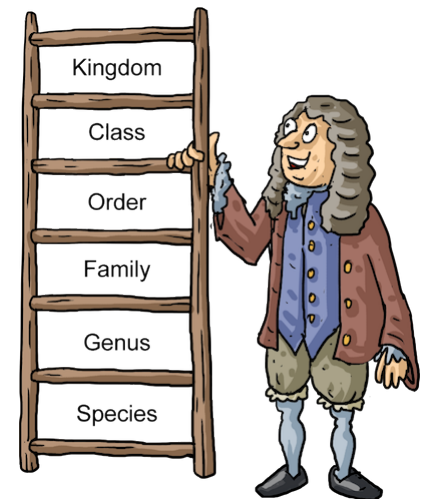
Scientific names

Examples of sources used by the EPPO Secretariat

Pests

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

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

- Plants of the World Online (Kew): http://plantsoftheworldonline.org/
- International Code of Botanical Nomenclature: http://www.bgbm.fu-berlin.de/iapt/nomenclature/code/

and Google !

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

EPPO Codes

Taxonomic codes

Taxonomic groups: plants, animals, microorganisms
[SPT][SIT][SFT]

Species: plants, animals, microorganisms
[PFL][GAI][GAF]

Deactivated codes
[pbe][sfn][sin][sis][spb]
[sen][sfs][spn]

Non-taxonomic codes

Non-taxonomic 'entities' [NTX]

Example of taxonomic/non-taxonomic codes

Solanum lycopersicum (tomato) LYPES

tomato (direct-seeded) **LYPXS**

tomato (transplanted) **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 is available in EPPO Global Database
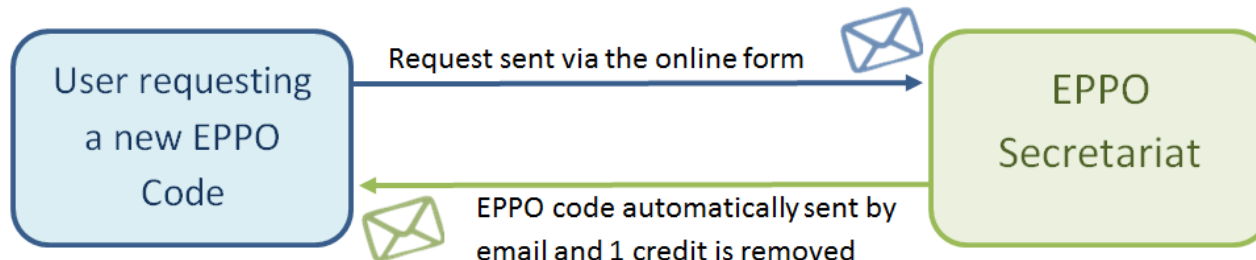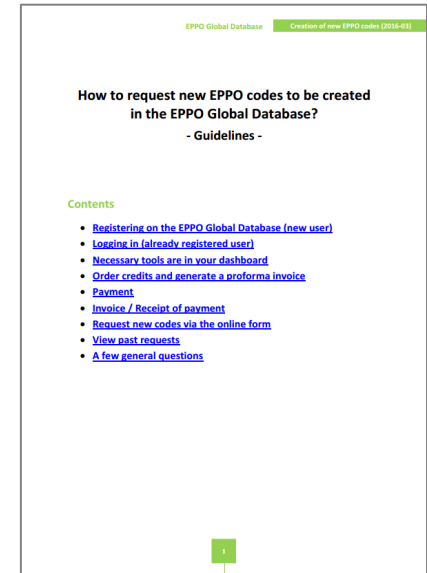
EPPO codes can be used in other IT systems

- 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

EPPO Data Services: https://data.eppo.int/

To access the files:

1. Create your free account in **EPPO Data Services**

2. Go to your dashboard

3. Several files formats are available

EPPO Data Services   Home   Go to EPPO Global Database   🏠 Dashboard   Online tools   Logout

Home / My dashboard

Dashboard

⬇ Downloads

Date	File	Size		
2019-02-12 03:30:26	XML Access	13,02M	download	read more
2019-02-12 03:31:23	XML Full	9,52M	download	read more
2019-02-12 03:30:47	XML Datapacket	12,25M	download	read more
2019-02-12 03:31:53	Bayer (flat file)	9,60M	download	read more
2019-02-12 03:32:24	SQLite database	11,91M	download	in preparation
2019-02-12 03:32:11	SQL queries	10,22M	download	in preparation
2019-02-12 03:00:18	LogShipping method	14,68M	download	read more
2019-02-12 03:32:24	Replaced codes	38,03K	download	in preparation

🔔 Online tools

Go to online Tools

🔔 Notifications   🔧 Modify...

By default, all notifications informing you that your requests for new code have been treated will be sent to this email: roy@eppo.int

👤 Your account   🔧 Modify...

- **Company:** EPPO
- **API calls today:** 0
- **API calls total:** 0

▦ Tokens API   + Ask for a new token

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)

Conclusions

EPPO 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