EPPO CODES

A brief introduction

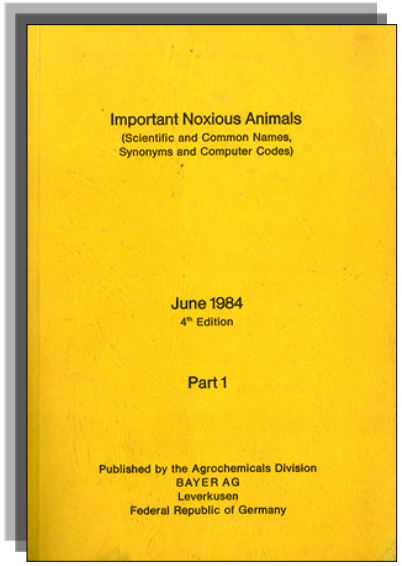
Anne-Sophie Roy (Information Officer) - roy@eppo.int

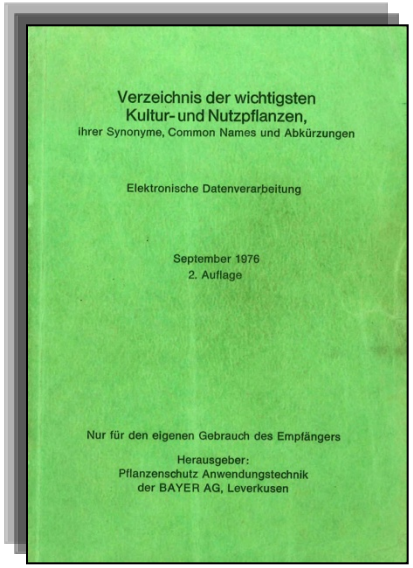
Brief history

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     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.
```

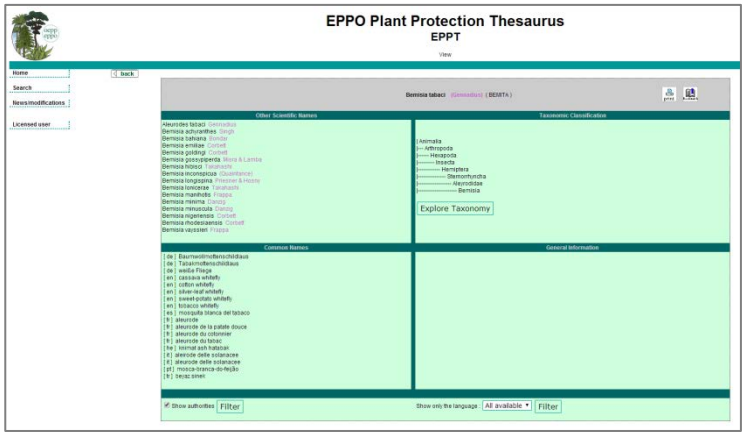
Brief history

Creation of the EPPO Plant Protection Thesaurus

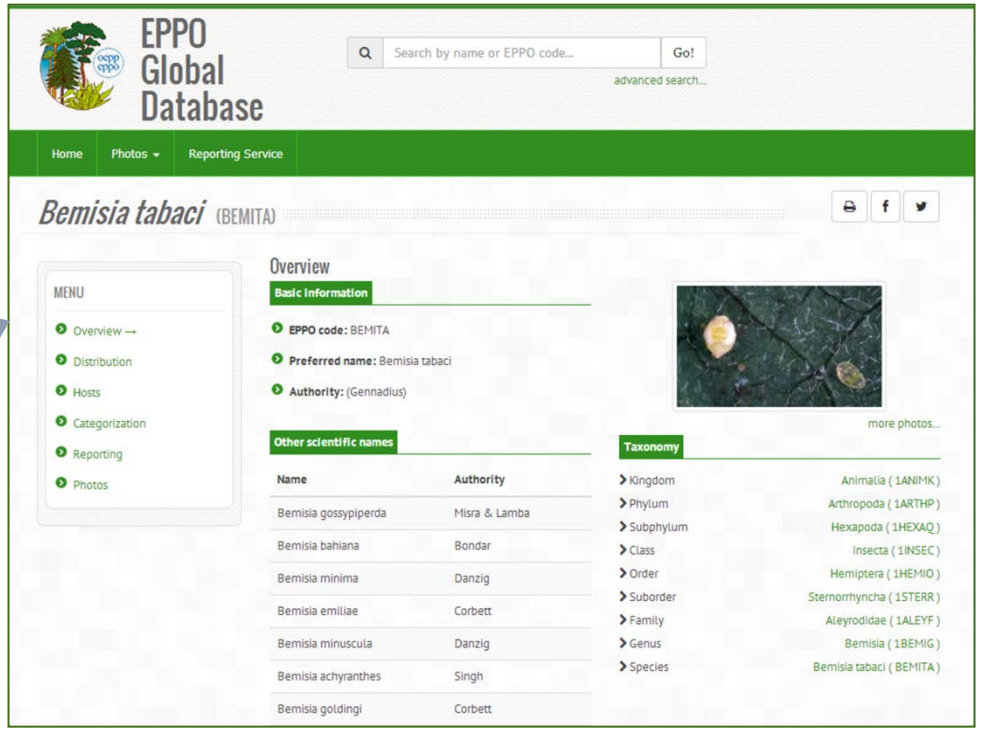
- 1996: BAYER transferred to EPPO the maintenance and development of the BAYER coding system
- 1990s-2000s: EPPO included codes into a ‘Plant Protection thesaurus’ (EPPT: an interface facilitating access to codes and names), developed a hierarchical system to reflect taxonomic links, and created codes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

Brief history

2014: the whole content of EPPT is transferred into a new database (EPPO Global Database)



http://eppt.eppo.org
(EPPT will no longer be maintained)

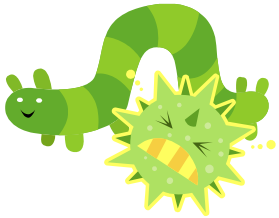


https://gd.eppo.int

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

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

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

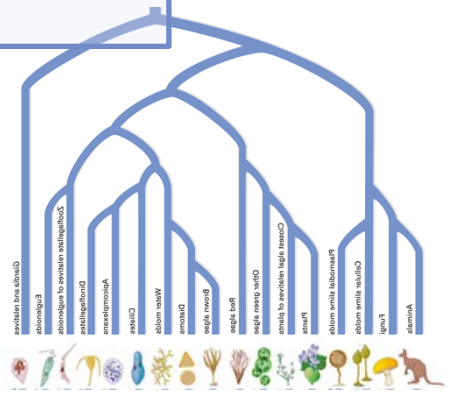
In some instances, often resulting from successive taxonomic changes (e.g. synonymization), codes have to be deactivated (NOT deleted) to avoid duplication of codes

1 biological entity = 1 unique code

EPPO codes

Taxonomic tree: harmonized coding - parent/child relationships

Kingdom	Animalia	1ANIMK
Phylum	Arthropoda	1ARTHP
Subphylum	Hexapoda	1HEXAQ
Class	Insecta	1INSEC
Order	Hemiptera	1HEMIO
Suborder	Sternorrhyncha	1STERR
Family	Aleyrodidae	1ALEYF
Genus	Bemisia	1BEMIG
Species	Bemisia tabaci	BEMITA



What is the content of the database?

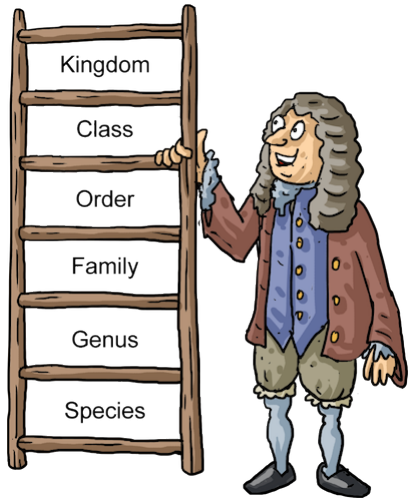
For each organism it contains:

- EPPO code
- Preferred scientific name
- Synonyms and other scientific names (e.g. 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

- CABI publications (ANI-CD, Plant Protection Database (abstracts), Crop Protection Compendium)
- Global Biodiversity Information Facility : http://www.europe.gbif.net/
- International Code of Zoological Nomenclature: http://www.iczn.org/iczn/index.jsp
- Google!

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 (1998-2007) by JP Euzéby, http://www.bacterio.cict.fr

Viruses

- International Committee on Taxonomy of Viruses (ICTV)

Plants

- The Plant List (Kew and other partners): 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	120455
English	37550
German	18949
French	19194
Spanish	15049
Italian	7682
Dutch	5857
Portuguese	5444
Swedish	3899
Japanese	5419
Russian	4486
Danish	1397
Norwegian	1003
Finnish	943
Turkish	255
Hebrew	132
Afrikaans	91
Persian	58
Polish	799

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

A few numbers …

June 2015

- 39 000 plant species (cultivated, wild, weeds)
- 24 600 animal species (e.g. insects, mites, nematodes, rodents), biocontrol agents
- 9 200 microorganisms species (e.g. bacteria, fungus, viruses and virus-like)
- 300 non-taxonomic codes (e.g. crop groups)

In total more than 72 800 species important for agriculture and plant protection

More than 2 000 new codes are created per year

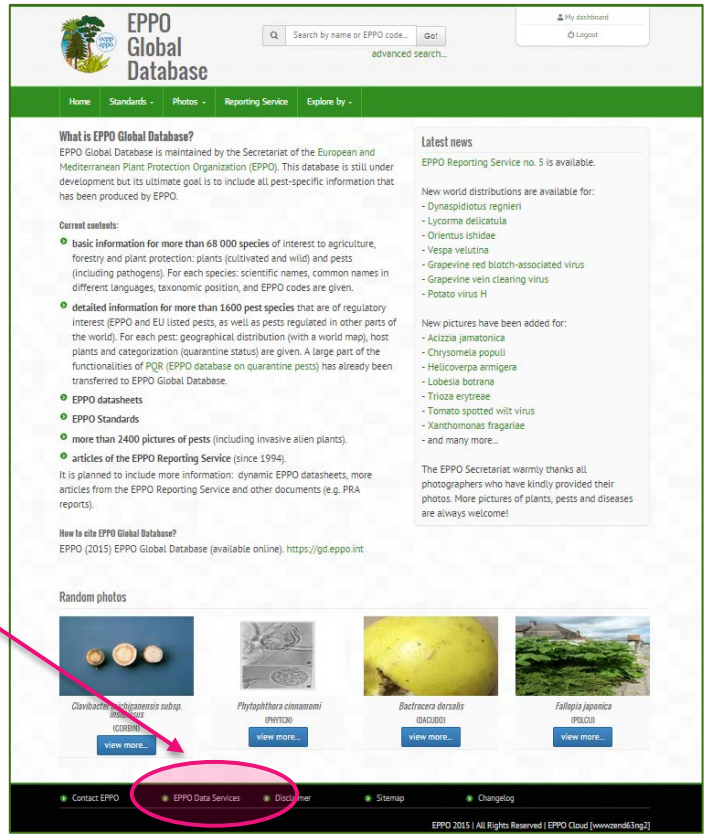
EPPO codes can be used in other IT systems

- 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



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)
- 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