EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION

Inclusion of non-European species in the EPPO database for year 2017/2018

Final Report
2018-12-15

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Final Report (2018-12-15)

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1.   SHORT DESCRIPTION OF THE ACTION

Since 1997, EPPO has been maintaining in a database a set of five and six letter codes for plants of importance in agriculture and trade, and for plant pests. Codes are available for over 82 000 organisms with over 400 000 common names in more than 84 languages (as of 2018-12-15), in addition to the approved scientific name and synonyms. Codes are not deleted, nor are the meanings changed retrospectively, so they provide a degree of stability for long term databases, even when the name or taxonomic relationships of an organism are changed by new scientific studies. The Codes were originally developed by Bayer in the 1970s and are still used by phytopharmaceutical companies and regulators in the plant protection products area, including the EU. EPPO Codes are increasingly needed for other applications such as electronic phytosanitary certificates, and notifications of non-compliance following inspection of imported consignments. An increasing number of additional Codes are requested by the EU and EU stakeholders to meet these needs, as well as by other EPPO code users (e.g. IPPC, CABI, phytopharmaceutical industry, NPPOs). The Codes are publicly available in the EPPO Global Database, and since 2014, at the explicit request of the EU Commission, Codes have been made an 'open-data' system. Because Codes are free access, there is no possibility for EPPO to charge users of the Codes. An EU contribution was therefore requested to enable the enhancement of the EPPO Code system to meet a number of new needs, both within the EU and globally. As a result, a grant agreement for a one-year period (SANTE/2017/GS/EPPO/S12.768842) was signed between EPPO and the European Commission on the 15th of December 2017.

The main objective of this action is to enhance the EPPO Code System so that it better meets the new EU and global needs. The action also aims to achieve the following more specific objectives:
- Creation of new EPPO Codes
- Enhancement of the EPPO Data Services (https://data.eppo.int/)
- Enhancement of the search and display facilities in the EPPO Global Database
- Development of a better communication between the EPPO Secretariat and the users of the EPPO Codes

More information about the action can be found in the Inception Report (EPPO doc 18-23481).

2.   CREATION OF NEW EPPO CODES

2.1   Methodology followed for the creation of new EPPO Codes

The creation of new Codes goes well beyond the simple creation of a combination of 5-6 letters, and differs between taxonomic and non-taxonomic Codes:
- Taxonomic Codes: the EPPO Secretariat verifies that the taxon does not already exist in the database under another name. The validity of the taxon has to be verified and detailed information should be gathered on its preferred scientific name with author(s), synonyms, common names, and taxonomic position. Consultation of taxonomic publications and websites is always requested. In some cases, taxonomic confusion may render this exercise more complicated than initially thought. It may also lead to changes of content for existing Codes due to recent taxonomic changes reflected in the scientific literature and taxonomic databases (e.g. new preferred name, new taxonomic classification), and to deactivations of Codes.

Consideration of the taxonomic position of one species may also lead to changes to the existing taxonomic tree at higher levels (e.g. genera, family, even up to class) and commonly to reclassification of many genera and species that are already in Global Database.

- Non-taxonomic Codes: as the EPPO harmonized classification and coding of the uses of plant protection products is currently developed by the EPPO Panel on harmonization of data on plant protection products, requests for non-taxonomic Codes are reviewed by the Panel. As the Panel meets only once a year, a fast-track procedure has been elaborated to better meet the needs of the users.

More details about the creation of new Codes can be found in a recent presentation: https://www.eppo.int/MEETINGS/2018_meetings/webinar/02_Roy.pdf

2.2 Tools developed to record the number of Codes created and establishment of a classification on difficulty level encountered

In order to calculate the number of new Codes created within a given period of time, basic statistic and administration tools were already in place in the EPPO database, but additional ones have been developed to answer the particular needs of this project, i.e. to manage long lists of requests and record the level of difficulty encountered. The latter being a specific request of the European Commission.

daterequest	latinname	datebcode	bcode	theemail	thelogin	infosadmin
2018-04-04 14:17	Vitis vinifera x Vitis labrusca	2018-04-05 15-41	VITVL	yinfei.li@bayer.com	Yinfei Li	A new code has been created. Best regards.
2018-03-06 10:11	Diabrotica significata Gahan	2018-03-07 22-07	DIABSI	ms@eppo.int	Suffert	Nouveau code créé
2018-03-06 10:14	Phenacoccus fraxinus Tang	2018-03-07 21-52	PHENFX	ms@eppo.int	Suffert	Un nouveau code créé
2016-09-07 11:39	Tomato spotted wilt tospovirus	2018-02-04 18-08		camille.picard@eppo.int	Camille PICARD	I will study this in more details, as it seems that now tospoviruses have been placed into a new genus called Orthotospovirus...

Existing administration tool to follow requests made via the EPPO Global Database online form:

Todo list

	co...	latinname	com...	epp...	infosadmin	infosprivate	leveldifficu...	dateeppocode
✎	ASR	Acacia brasiliensis	Akasia		No code created for the moment	Not included in World Wide Wattle, Unresolved in The Plant List Trouve...	3	
✎	ASR	Acacia crassicarpa	Akasia	ACAKS			1	2018-04-2
✎	ASR	Acacia leucophloea	Pilang	VCHLE	Recently placed in the genus Vachel...	Maslin et al. (2013) Blumea 58,39–44.	3	2018-04-2
✎	ASR	Acacia procera	Weru	ALBPR	Synonym of Albizia procera (added ...		1	2018-04-2
✎	ASR	Acacia ringspot virus						
✎	ASR	Acacia speciosa	Tekik	ALBLE	No code created. Synonym of Albizi...		1	2018-04-2
✎	ASR	Acer laurinum	Aser	ACRGA	Code existed for Acer garrettii whic...	Taxonomy of this section of Acer is under taxonomic revision. Acer pin...	3	2018-04-2
✎	ASR	Acer niveum	Aser	ACRGA	Synonym of Acer laurinum	Taxonomy of this section of Acer is under taxonomic revision. Acer pin...	3	2018-04-2
✎	ASR	Acremonium maydis						
✎	ASR	Actephila sp.	Katarasa	AKFSS	3 codes Genus/sp./A. excelsa created	Genus under revision (see Heijkoop & van Welzen (2017) Blumea 62, 7...	3	2018-04-2
✎	ASR	Adenanthera tamarindifolia	Raja Bu...		The requested name, with different ...	DONE IN GD AS DESCRIBED IN INFOSADMIN. FOR REVIEW. OK?	3	

New tool developed for the purpose of this action to manage long lists of requests for new Codes

From January to March 2018, internal discussions took place within the EPPO Secretariat (Mr Griessinger, Ms Grousset and Ms Roy) to define the structure and functions of a new system for recording the creation of new Codes. In March 2018, a new online interface (see above) was launched to allow:
- Injecting long lists of names (Excel format) for which new Codes need to be created
- Sharing the work between Ms Grousset and Ms Roy
- Recording newly created Codes and level of difficulty encountered
- Recording comments when a Code could not be created (e.g. synonym or invalid name)
- Exporting results of the work (Excel format)

To describe the level of difficulty encountered, the EPPO Secretariat proposed to use the following classification system ranging from 1 to 3:
1. No difficulty encountered (e.g. scientific name is valid and used in well-known taxonomic sources, genus already exists in the EPPO database, authors, synonyms and common names could easily be retrieved).
2. Some difficulties were encountered (e.g. there is some degree of taxonomic confusion, conflicting opinions, requested name was severely misspelt, authors could not be easily retrieved, genus or upper levels of the taxonomy were not included in the database, large number of synonyms had to be checked to make sure that the species is not already in the database, genera need to be placed in subfamilies).
3. Severe difficulties were encountered (e.g. no consensus among taxonomists about the validity of the scientific name, confusion among synonyms or authors, requested name was so misspelt that its original meaning could not be easily retrieved, requested name is used in trade but could not be associated with a single and valid scientific name, a single request led to the revision of a group of related species such as a whole genus or family, genus or upper levels of the taxonomy were not included in the database leading to extensive research to create these upper levels and their associated Codes, very large number of synonyms to be checked to make sure that the species is not already in the database).
   Note: As the creation of non-taxonomic Codes for the harmonized classification of PPP uses is following a more complex procedure (consultation of experts and different bodies within EPPO), their creation has been considered 'by default' as difficult (rated as 3).

2.3   Numbers of new Codes created

From 2017-12-16 to 2018-12-15, **6 839 new Codes were created** (see Appendix I and Excel file).

Most of these Codes correspond to exotic tree species (to answer the request from TRACES), to virus species to follow the recent virus taxonomy (International Committee on Taxonomy of Viruses, 2017), and to pests that are included in third countries quarantine lists (based on ca. 40 quarantine lists available on the International Phytosanitary Portal).

In addition, new codes were also created:

- to answer specific requests made by NPPOs (e.g. NPPOs of Italy, Poland, and the United Kingdom);
- to answer the needs of the phytopharmaceutical industry. In 2018, 8 requests were received and only 5 new codes (ANZYSP, FRITOL, KUSCMA, VITVL, 1STEKG) were created. Other requests concerned names that were already coded for (under synonyms). For the creation of these 5 codes, a total amount of 250 euros was received by EPPO. The creation of these codes is therefore not covered by this project.
- to answer the needs of MUCF, and the EPPO harmonized classification of PPP uses (123 non-taxonomic codes were created in 2018);
- to answer the own needs of the EPPO Secretariat (e.g. to index the EPPO Reporting Service articles; to improve lists of host plants of regulated pests; to better cover cerambycid pests using a recent review[1] (Haack, 2017); to cover all biological control agents included in the EPPO Standard PM 6/3(4) List of biological control agents widely used in the EPPO region; to use recent reviews of taxonomic groups to update the content of Global Database).

Note: the creation of new codes represents only part of the time the EPPO Secretariat is spending on the coding system. Significant efforts are also made to follow taxonomic changes (i.e. changes in nomenclature and classification for species already in EPPO Global Database), to add authorities when they are missing, to verify the absence of duplicates, and to add common names in different languages.

3.   ANSWERS TO SPECIFIC REQUESTS: EUROPHYT, TRACES OR PPPAMS

3.1   EUROPHYT

During 2018, only one request (one code for *Pandanus amyrillifolius* = PADAM) has been specifically made by Defra (GB) in the context of an interception for EUROPHYT. The numbers of Codes that need to be created for EUROPHYT (interceptions or outbreaks) are usually rather small. It is possible that other requests sent by NPPOs were also made in that context, but the EPPO Secretariat was not aware of this.

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1   Haack RA (2017) Cerambycid pests in forests and urban trees. In: Wang Q. Cerambycidae of the world: biology and pest management. Boca Raton, FL (US). CRC Press, 352-384.

3.2   TRACES

Individual requests are occasionally made by email by the TRACES team, and as a result the following Codes have been created in 2018.

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Plant names	EPPO Codes
Baillonella toxisperma	MMODJ
Citrus lucida	CIDLC
Citrus pennivesiculata	CIDPE
Couratari	1KUTG
Cylicodiscus gabunensis	QYLGA
Cyrtopodium willmorei	CDYWI
Gomesa leinigii	GMZLE
Grammatophyllum	1GMLG
Grammatophyllum hybrids	GMLHY
Grammatophyllum scriptum	GMLSC
Grammatophyllum sp.	GMLSS
Grammatophyllum speciosum	GMLSP
Grammatophyllum stapeliiflorum	GMLST
Hymenaea oblongifolia	HMYOB
Paraphalaenopsis labukensis	PFNLA
Pachypodium geayi	PQPGE
Pleurothallis marthae	PJZMA
Xanthostemon	1XAHG
Xanthostemon chrysanthus	XAHCH
Xanthostemon sp*.*	XAHSS

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At the end of December 2017, the TRACES team kindly provided the EPPO Secretariat with a list of approximately 2150 species of exotic trees (SILK list) for which new EPPO Codes needed to be considered. Among those, 1475 species were uploaded into the new IT system to manage long lists of requests (others already had an EPPO Code). This list was studied and many new Codes (see Appendix 1 and Excel file) were created to cover these gaps. In addition, some requests led to other actions than the creation of an EPPO Code, such as the addition of synonyms or changes of preferred names. Some requests were considered but did not necessitate any particular action (e.g. requests appearing twice in the list). Only a very small proportion of names (14) remained unresolved and could not be coded for.

In the context of TRACES, the EPPO Secretariat was consulted in March 2018 by the EU Commission about the feasibility of including all plants species that are covered by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES - https://cites.org/eng/disc/species.php). In a preliminary analysis, the EPPO Secretariat found that:
-   the full CITES list contains 29 582 plant species of which 27 986 are not included in the EPPO Global Database (no EPPO Codes)
-   the list of species specifically mentioned in the EU Regulation 338/97 (Council Regulation (EC) No 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein) contains 102 species or genus names of which 63 are not included in the EPPO Global Database

The EPPO Secretariat noted that the Organization has no activities related to the protection of endangered species of wild fauna and flora and recalled that the focus of the EPPO Global Database has always been plant protection/plant health. In its preliminary response to the European Commission, the EPPO Secretariat concluded that it would certainly be feasible to create new Codes for the 63 plant names that are listed by the EU. However, to work on 28 000 wild plant species (most of which are probably not of agricultural importance) was not a decision that could be taken so easily. This inevitably raised the issue of priorities and resources available within the EPPO Secretariat. In addition, covering CITES issues would also represent a major shift in EPPO's field of activities. As a result, Codes were created for all plant species and genera listed in the EU Regulation 338/97.

3.3   PPPAMS

The EPPO Secretariat is in regular contact with the PPPAMS team in the European Commission, DG SANTE and most of the work concerning the development of non-taxonomic Codes is done within the framework of the EPPO Panel on Harmonization of data on plant protection products and the Working Party on Plant Protection Products (see section below). In 2018, no specific request for creating new Codes were made by the PPPAMS team. However, the recommendations made by the European Commission regarding Codes needed for PPPAMS were considered by the Panel to set their priorities (e.g. the development of Codes for Plant Growth Regulator targets were prioritized and identified by the Panel).

4.   MEETINGS RELATED TO EPPO CODES

4.1   'Kick-off' meeting among members of the project team

A 'kick-off' meeting took place among members of the project team on 2018-01-23 to restate the objectives of the action, the important deadlines, and clearly present the time-recording system which will be used by all actors during the whole project. The EPPO Secretariat will use its own time-recording system (SMS). Amendments were made to SMS in January 2018 to allow all project members to allocate their time to the five specific activities of the project.

4.2   EPPO Codes users meeting (3rd EPPO webinar, Paris, 2018-03-05)

In order to facilitate the communication between the EPPO Secretariat and the users of the EPPO Codes, a webinar took place on the 5th of March 2018. Although, this webinar was not specifically organized for the present project, it focussed exclusively on the EPPO Codes. This webinar was open to all interested EPPO code users, and 57 participants joined the meeting by teleconference. The objectives of this meeting were to explain how the Codes are maintained and developed by the EPPO Secretariat, to share experience among users and collect feed-back about possible future improvements of the coding system. The following eight presentations (PDFs are available from the EPPO website) and a live demonstration were made during the webinar:

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Introduction to EPPO	Martin Ward (Director General of EPPO)
EPPO Codes: an overview	Anne-Sophie Roy (EPPO)
EPPO online tools and log-shipping (live demo)	Damien Griessinger (EPPO)
EPPO Codes to describe uses of plant protection products	Valerio Lucchesi (EPPO)
The use of EPPO Codes by the Danish Environmental Protection Agency	Lene Larsen Nielsen (DK)
EPPO Codes in SANTE Systems	Mark Williams (European Commission)
Creation of EPPO Codes in relation to import data	Fabienne Grousset (EPPO)
MUCF and the use of EPPO Codes and common names in EUMUDA	Flora Limache (MUCF)
2BXYZ1OooO1FffF Genus species GggSs.jpg*, a proposal for a name-giving for nature-pictures with EPPO Codes	Jean-François Misonne (BE)

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Several points were presented and discussed during the meeting, such as the creation of large number of Codes, the deactivation of Codes, the use of simple online tools to make batch queries to the database, the use of log-shipping for downloads, and the development of non-taxonomic Codes. As in previous years, the European Commission actively participated in this webinar (5 members of the European Commission remotely joined the teleconference) and Mr Williams explained how EPPO Codes were used in the SANTE IT systems. Participants who joined remotely had the possibility to ask questions which were answered during the webinar. It was concluded that such webinars were useful and should continue to be organized on a yearly basis.

4.3   Meeting of the Panel on Harmonization of data on plant protection products (Paris, 2018-03-05/07)

Although the EPPO Panel on harmonization of data on plant protection products was not specifically created for this project, a large part of its work relates to the development of the EPPO Codes, in particular for non-taxonomic entities that are of particular interest to those working in the area of plant protection products (PPPs). The Panel met in Paris at the EPPO headquarters on 2018-03-05/07 to discuss the development of the EPPO Codes that are needed to describe of PPP uses. This meeting was organized back to back with the webinar (see above). The main reasons for developing EPPO Codes for PPP uses include the need for harmonized definitions of declared uses of PPPs to facilitate communication among countries. This is of particular relevance to registration authorities in the framework of the mutual recognition and zonal assessment required in EU Regulation 1107/2009. Data exchange and activities related to extrapolation of data for efficacy evaluation of minor uses would also be facilitated by the development of harmonized Codes. During the Panel, a member of the European Commission (DG SANTE) presented how EPPO Codes are used in PPAMS and which are the main gaps that need to be covered by new Codes.

The Panel discussed in detail a harmonized classification and its associated non-taxonomic Codes which could be used to describe PPP uses. Further improvements were made to the existing classification of Codes for crop groups, including arable crops, fruit crops, vegetable crops and 'herbs, spices and medicinal plants'. New classifications and Codes for ornamental crops, forestry crops and grassland were finalized. A classification and new Codes were also agreed to characterize crop locations and treated objects. All new Codes proposed by the Panel were presented to the EPPO Working Party on Plant Protection Products (The Hague, NL, 2018-05-23/25) and approved. Finally, a classification and new Codes for a number of targets, namely for insects, diseases and weeds, were discussed but these still need to be reviewed by other EPPO Panels (Panel on Efficacy Evaluation of Herbicides and PGRs and the Panel on Efficacy Evaluation Fungicides and Insecticides). For insects and

diseases, although it was recognized that some new non-taxonomic Codes may need to be created, many of these targets are already covered by existing taxonomic Codes. These issues will continue to be discussed by the relevant EPPO Panels in 2019.

4.4 Meeting of the Panel on Efficacy Evaluation of Herbicides and PGRs (Brno, CZ, 2018-03-13/14)

The Panel on harmonization of data on PPPs (see above) recommended that the EPPO Panel on Efficacy Evaluation of Herbicides and plant growth regulators (PGRs) should be consulted on the development of the Codes for weeds and targets for PGRs. The proposal for the target group 'Weeds' was discussed and agreed, as well as a proposal of Codes for PGRs. These new Codes were then presented to and approved by the EPPO Working Party on Plant Protection Products (The Hague, NL, 2018-05-23/25) for approval.

4.5 Meeting of the Working Party on Plant Protection Products (The Hague, NL, 2018-05-23/25)

The new Codes proposed by the Panel on harmonization of data and by the Panel on Efficacy Evaluation of Herbicides and PGRs were presented to the EPPO Working Party on Plant Protection Products and most of them were approved for integration into the EPPO Global Database. The approved Codes covered ornamental crops, forestry crops and grasslands (as crop groups), as well as crop locations, treated objects and targets (weeds and PGRs, so far).

During summer 2018, all agreed non-taxonomic Codes (123 codes) were created and incorporated into the EPPO Global Database.

5. PROGRESS ON HELPDESK FACILITIES AND INFORMATION FOR THE EPPO CODES USERS

5.1 EPPO Codes Monthly Newsletter

A free monthly newsletter summarizing the main changes that are made to the EPPO Codes was launched in March 2018. Any interested person can obtain this newsletter by registering via the EPPO Global Database. As of December 2018, more than 210 users had registered to the mailing list. This newsletter is automatically generated from the database and displays in a simple way several lists of new and deactivated Codes (with links to replacement Codes).

Other modifications that are made to the database, such as changes in preferred scientific names, authors, synonyms, or common names are deliberately not shown to keep the newsletter easy to read. It was also considered that these more detailed modifications can be traced by other means in the core database files (e.g. for users who are downloading the core files via the EPPO Data Services).

As explained above, lists of Codes are automatically generated but the EPPO Secretariat has the possibility to add more text whenever needed and remains responsible for sending the newsletter once considered ready.

The preliminary feed-back that has been received from readers of the newsletter was positive. In addition, readers will be given the opportunity to make comments and suggestions for further improvements to the Newsletter during the 2019 Webinar for EPPO Codes users.

5.2   Guidance documents for users

Guidelines on how to subscribe to the EPPO Codes newsletter

The release of the EPPO Codes Monthly Newsletter was the opportunity for the EPPO Secretariat to reflect on how readers could subscribe to it. As a result, it was decided to create a new online form on the EPPO Global Database to allow any interested person to register to the four different EPPO mailing lists that are currently active (i.e. EPPO Standards, EPPO Reporting Service in English or French, and the EPPO Codes Monthly Newsletter). In order to help users, new guidelines on 'How to subscribe to EPPO Newsletters via the EPPO Global Database?' were published in March 2018 on the EPPO Global Database home page.

https://gd.eppo.int/media/files/newsletters_user-guide.pdf

Guidelines on how to use the online tools (batch queries) in the EPPO Global Database

Following the webinar for EPPO Codes users, the EPPO Secretariat realized that many users were not familiar with the currently available online tools. These tools have been developed to make simple batch queries to the EPPO Global Database (e.g. obtain EPPO Codes for a long list of scientific names in a quick and simple way, obtain the taxonomic position of a long list of organisms). New guidelines on 'How to use the online tools to make batch queries in the EPPO Global Database?' were published in March 2018 on the EPPO Global Database home page.

https://gd.eppo.int/media/files/online_tools_user-guide.pdf

5.3   Visibility of Union funding

In accordance with Article II.8 of the agreement about the visibility of Union funding, the following text with the EU flag was added in early January 2018 to the home page of the EPPO Global Database (https://gd.eppo.int). *European Union funding: For a one-year period (2017-12-16 to 2018-12-15), EPPO has been awarded an EU grant for the further development of the EPPO code system (agreement nb: SANTE/2017/GS/EPPO/S12.768842). The EU Commission is not responsible for any use that may be made of the information from this project subsequently included in the EPPO Global Database.*
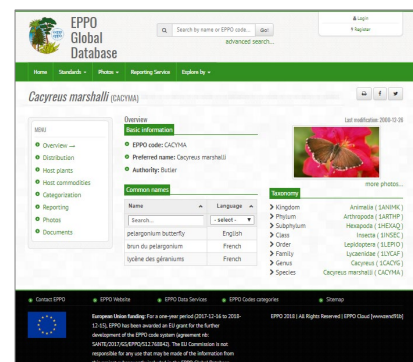
Disclaimer appearing at the bottom of every page in GD

6.   ENHANCEMENT OF THE EPPO DATA SERVICES

The core files of the EPPO Code system can be downloaded in several formats from a dedicated platform (EPPO Data Services: https://data.eppo.int/) to meet the different needs of the users. This platform requires constant IT maintenance and adjustments are regularly made to better serve the users or correct some IT issues. As explained above a detailed demonstration of the 'log-shipping' method was made during the webinar in March 2018. During the period considered, no major changes were made but it is planned to prepare a more comprehensive documentation about the different file formats provided.

Format name	File type	Documentation
Bayer flat file	TXT	read more
XML Datapacket	XML	read more
XML Access	XML	read more
XML Full	XML	read more
SQLite database	SQLite3	in preparation
SQL queries	TXT	in preparation
LogShipping method	ZIP	read more

Currently available file formats in the EPPO Data Services Platform

7.   ENHANCEMENT OF THE SEARCH AND DISPLAY FACILITIES IN THE EPPO GLOBAL DATABASE

The development of non-taxonomic Codes, and in particular those that are describing plant protection products uses, have required significant changes in the interface to search and display these Codes. Most of these enhancements (e.g. search tool for non-taxonomic Codes, links between taxonomic and non-taxonomic Codes) were made in 2017, but a visualization system to display the EPPO harmonized classification of plant protection product uses is still needed.

7.1   Visualization of the EPPO classification for PPPs uses

Preparatory work to produce a visualization system of the classification has been carried out in 2018 but some major challenges still need to be addressed. In addition, the Panel on Harmonization of data on plant protection products has expressed the wish that changes made to the classification are kept over time for transparency and traceability reasons. For the moment, the EPPO Secretariat is exploring the possibilities to generate PDF extracts of the classification on a yearly basis.
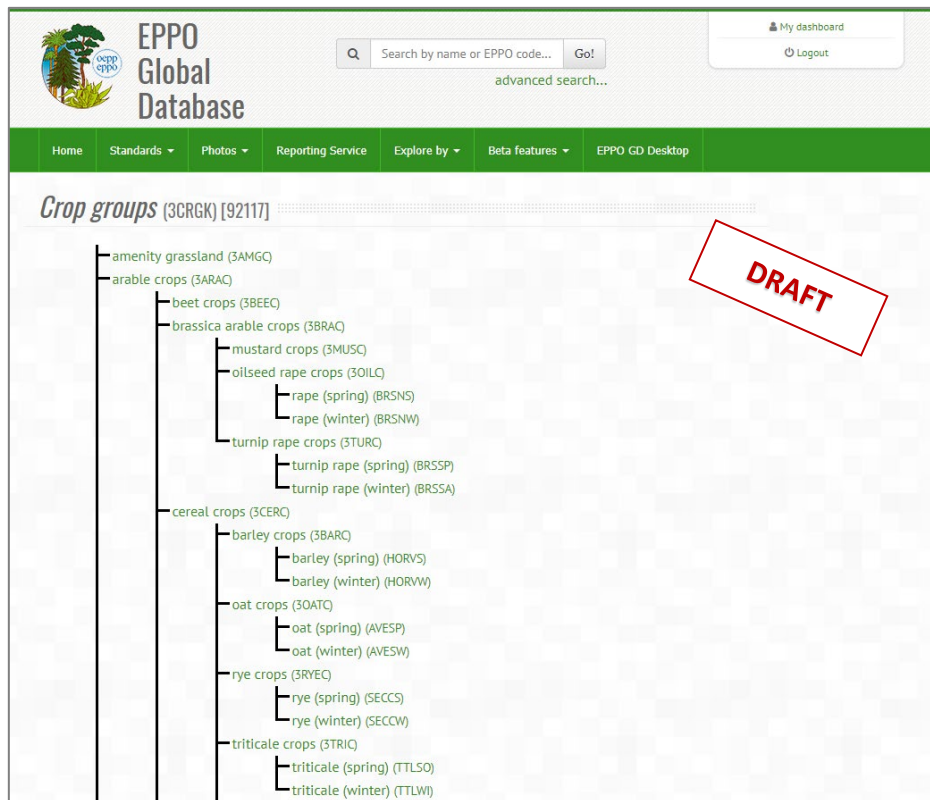
Draft visualization of the crop group classification (under development and not visible to users).

7.2   EPPO GD Desktop

All EPPO Codes are displayed within the EPPO Global Database which is an online database, updated in real-time. As some EPPO member countries have expressed the wish that EPPO's information (including the EPPO Codes) should be available in the absence of any Internet connexion (e.g. when working in the field), an 'off-line' version of the EPPO Global Database called 'EPPO GD Desktop' was launched during summer 2018. It is a piece of software which first needs to be installed on computers. Once installed, no Internet connexion is needed to run it. The EPPO GD Desktop will replace PQR. It is planned to release updates of EPPO GD Desktop on a regular basis.

8.   LESSONS LEARNT AND FUTURE PLANS

The project has helped the EPPO Secretariat to better formalize its activities on EPPO Codes and has provided valuable funding to secure work resources for the creation of Codes. It has also accelerated the production of the EPPO Codes Monthly Newsletter which is not only useful to users but also to the EPPO Secretariat itself, as it provides a clearer view of the main modifications than the information that was previously available to the administrators of the coding system (i.e. daily emails showing all modifications).

This project has also helped the Secretariat in its reflections on how to manage long lists of requests for new Codes. However, it is still rather complicated to assemble a single list of newly created Codes with all requested information (including the level of difficulty) as for the moment, requests are coming

via different sources (emails, GD online forms, and long lists injected in the separate interface that was developed in March 2018). At the end of the project, it would be necessary to evaluate with the European Commission the usefulness of recording the level of difficulty encountered, considering that this aspect is also reflected by the time spent to create new Codes.

By co-financing the work of Ms Grousset and other members of the EPPO Secretariat, an unusually high number of new codes could be created in 2018 (more than 6 000 Codes, whereas in recent years on average 2 000 Codes were created). However, from the EPPO Secretariat's point of view, the number of new Codes created (with a rate of difficulty) reflects only a portion of the efforts that are made and should not be taken as the sole measurement of EPPO's capacity to create 'x' Codes per day. The number of new Codes created only reflects the number of requests which could be positively answered, and not those for which no code could be created, even after a long and thorough investigation. The decision for not creating a code can be due to errors in the scientific name (combination which does not exist, misspelling which renders the name unrecognizable, misspelling of a name that already has a code in the database under its correct spelling) or to the absence of reliable sources to solve taxonomic confusion. According to the experience of the EPPO Secretariat, misspelling of names is often encountered and should not be underestimated in terms of time spent to try the retrieve the correct spelling. In addition, the number of Codes created does not reflect the amount of data that was finally entered in the database such as:
- Synonyms;
- Virus acronyms;
- Authorities;
- Common names;
- Changes in the upper levels of the classification (revision of links between Codes);
- Changes to existing codes (reflecting taxonomic changes)
- General maintenance of the database to correct all detected errors. These errors (in most cases, duplication of codes due to synonymization of names) are the main reasons for deactivating codes (more than 350 codes were deactivated in 2018).

It should also be noted that the time spent on a list depends on its overall level of difficulty. For example, the SILK list of exotic trees happened to be straightforward and mostly problem-free. The time spent on that list cannot be extrapolated to other lists of the same length but on possibly more complex groups of plants or pests. Firstly, more than 600 species of the SILK list already had an EPPO code. Secondly, the Secretariat has had previous experience of dealing with other groups of organisms, such as ornamental plants, that presented a much higher level of difficulty. Reviewing the organisms from third countries quarantine lists that do not have a Code is also comparatively more difficult.

In the immediate future, the EPPO Secretariat will create new Codes for pests and diseases included in the Q-Bank database (diagnostics) that are currently missing in the EPPO Global Database (covering approximately 600 species). These missing Codes mainly correspond to 'look-alike' organisms which are included in Q-Bank and for which sequences were provided for diagnostics.

The EPPO Secretariat will also continue to add Codes for pests on third countries quarantine lists. The objective is to update in EPPO Global Database the quarantine status of pests for individual third countries.

As it also planned to include more host plants for regulated pests, it is likely that more Codes will be needed for plants. This work has already started at the end of December 2018, with the addition of many wild hosts of fruit flies (*Ceratitis* spp. and *Zeugodacus*). Furthermore, the EPPO Secretariat is currently testing the inclusion of bibliographic references to substantiate the 'host' status of plants in the EPPO Global Database.

The increasing use of molecular tools and phylogenetic studies are bringing numerous changes in the classification of organisms, and it is a challenge for the EPPO Secretariat to follow these changes in all disciplines. As an objective for 2019, the EPPO Secretariat would like to better understand the consequences of the 'One Fungus – One Name' approach on the existing classification of fungi currently displayed in the EPPO Global Database. It is envisaged to make contacts with MycoBank and Index Fungorum database managers. If possible, the EPPO Secretariat would also like to analyse the changes that have been made to the classification of important groups of insect pests, such as noctuids, psyllids, true bugs, weevils, and scarabs. A comprehensive review of several fruit fly genera has also become available and will be analysed.

As the creation of new EPPO Codes and the enhancement of the coding system is an ongoing process, EPPO and the European Commission agreed to continue this cooperation during the next 3 years (2019-2021) and another grant agreement SANTE/2018/G5/EPPO/SI2.793173 for the action entitled '**EU support for maintaining the content and enhancing the EPPO Code content and system to meet new EU and global needs**' was signed on 2018-12-10.

The EPPO Secretariat would like to thank the European Commission for this fruitful collaboration.

APPENDIX 1

New EPPO Codes created since the 1st of January 2018

Types of organisms	Level 1	Level 2	Level 3	nb
Plants	3609	816	133	**4558**
Insects and mites	723+29	348+7	174+183	**1245+1290**
Viruses	412	34	0	**446**
Fungi	227	50	45	**322**
Non-taxonomic	0	0	123	**123**
Nematodes	39	6	4	**49**
Others	30	12	9	**45**
Bacteria	13	4	4	21
Gastropoda	5	5	5	15
Chromista	7	1	0	8
Platyhelminthes	5	2	0	7
Total number				**6839**

Types of organisms

Plants ■ Insects and mites ■ Viruses ■ Fungi ■ Non-taxonomic ■ Nematodes ■ Others

Types of organisms and levels of difficulty
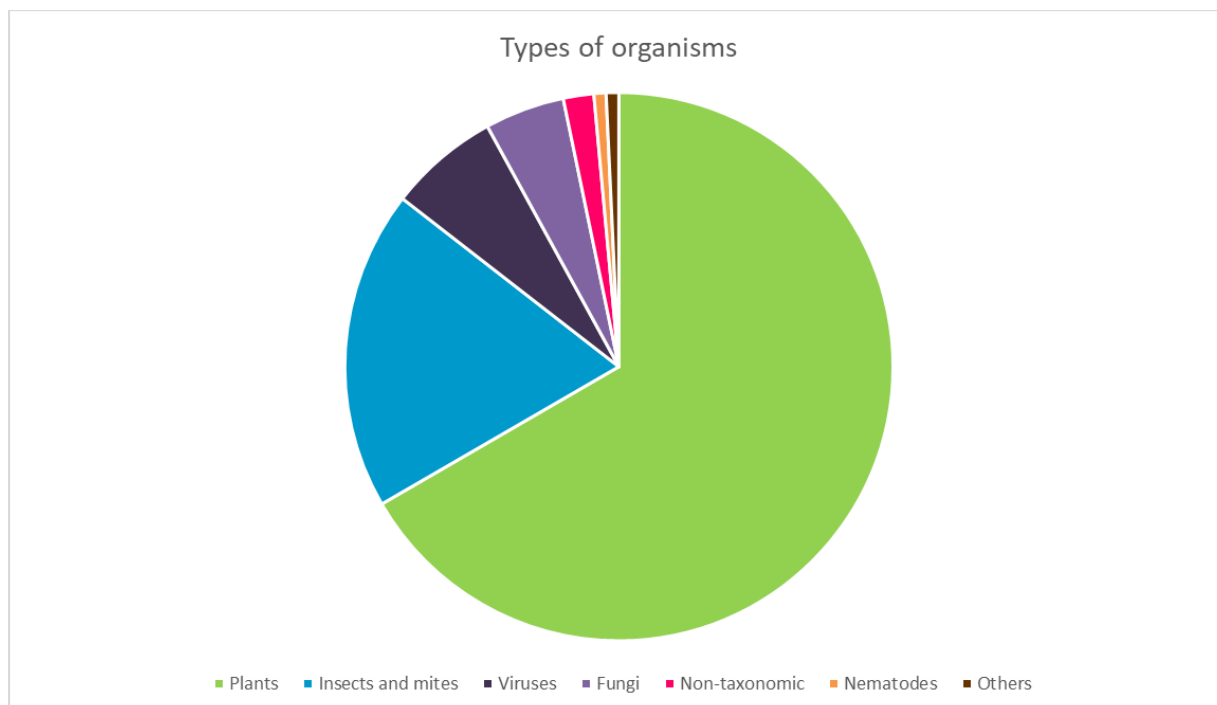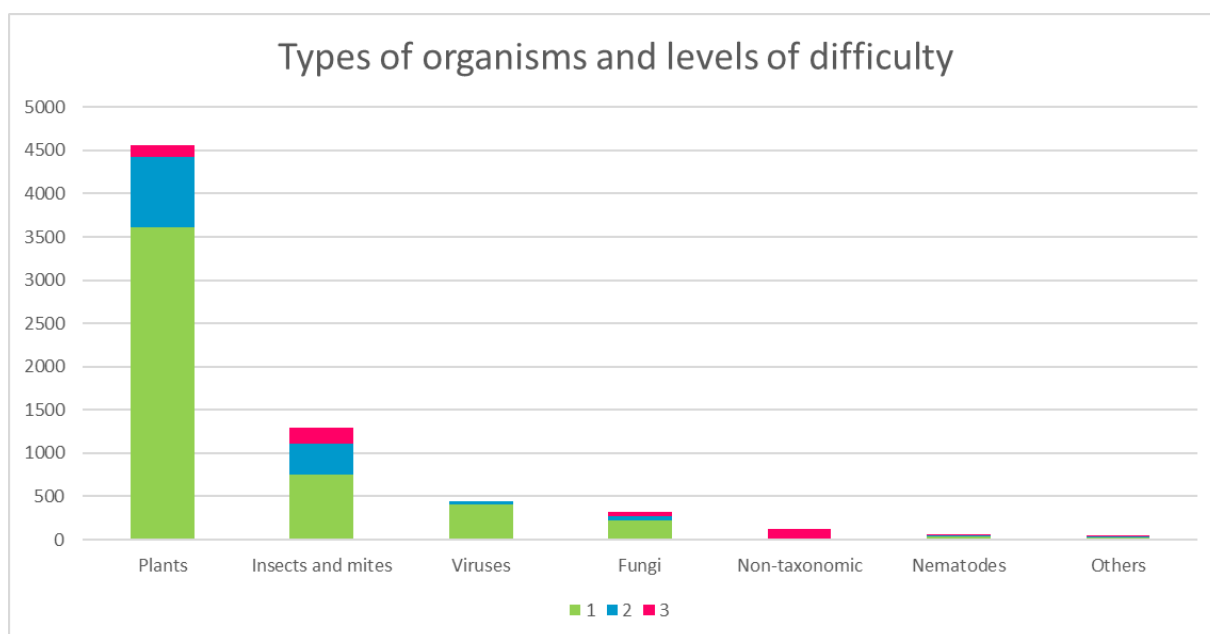
Important note: For practical reasons, only the first new EPPO Codes (Scientific names starting by letter 'A') are presented below. The full list is provided in a separate Excel file (**ListNewCodes_2018.xlsx**).

Latin name	EPPO Codes	Level of difficulty
Abutilon golden mosaic virus	ABGMV0	1
Abutilon mosaic Bolivia virus	ABMBOV	1
Abutilon mosaic Brazil virus	ABMBRV	1
Acacia crassicarpa	ACAKS	1
Acalolepta vastator	ACLPVA	3
Acanthotomicus	1ACTTG	2
Acanthotomicus borneensis	ACTTBO	1
Acanthotomicus sp.	ACTTSP	1
Acanthotomicus spinosus	ACTTPI	1
Acanthus polystachyus	ACUPO	1
Acca	1XCCG	2
Acca sp.	XCCSS	1
Acer campestre subsp. *marsicum*	ACRKM	2
Acer hyrcanum subsp. *intermedium*	ACRHI	2
Acer laurinum	ACRGA	3
Acer monspessulanum subsp. *ibericum*	ACRIB	2
Achyranthes mutica	ACYMU	1
Achyranthes splendens	ACYSP	1

Latin name	EPPO Codes	Level of difficulty
Achyranthes splendens subsp. *atollensis*	ACYAT	2
Acmadenia	1VCMG	2
Acmadenia mundiana	VCMMU	1
Acmadenia sp.	VCMSS	1
Acokanthera schimperi	AKOSC	1
Aconitum anthora subsp. *confertiflorum*	AAOAC	2
Aconitum cochleare	AAOCO	1
Aconitum novoluridum	AAOLU	1
Aconitum orientale	AAOOR	1
Aconitum palmatum	AAOPM	1
Aconitum vitosanum	AAOVT	1
Aconnitum variegatum subsp. *nasutum*	AAOVN	2
Actephila	1AKFG	2
Actephila excelsa	AKFEX	1
Actephila sp.	AKFSS	3
Actinidia chlorotic ringspot-associated emaravirus	ACCRAV	1
Actinidia chrysantha	ATICR	2
Actinidia eriantha	ATIER	2
Actinidia hybrids	ATIHY	2
Actinidia latifolia	ATILA	2
Actinidia macrosperma	ATIMA	2
Actinidia virus A	ACVA00	1
Actinidia virus B	ACVB00	1
Actinidia virus X	AVX000	1
Actinodaphne glabra	AHDGL	1
Actinodaphne glomerata	AHDGO	1
Actinodaphne gracilis	AHDGR	1
Actinodaphne gullavara	AHDGU	3
Actinodaphne macrophylla	AHDMA	1
Actinodaphne moluccana	AHDMO	1
Actinodaphne procera	AHDPR	1
Actinodaphne rumphii	AHDRU	1
Actinodaphne sesquipedalis	AHDSE	2
Actinodaphne sphaerocarpa	AHDSP	1
Acutaspis aliena	ACUTAI	1
Adelges glandulae	ADLGGL	2
Adenanthera forbesii	ADEFO	2
Adenanthera kostermansii	ADEKO	1
Adenanthera malayana	ADEMA	1
Adenia firingalavensis	ADJFI	1
Adenia olaboensis	ADJOL	1
Adenia subsessilifolia	ADJSU	1
Adinandra	1AIYG	2
Adinandra dumosa	AIYDU	2

Latin name	EPPO Codes	Level of difficulty
Adinandra sarosanthera	AIYSA	1
Adinandra sp.	AIYSS	3
Adinauclea	1AUEG	2
Adinauclea fagifolia	AUEFA	1
Adinauclea sp.	AUESS	2
Adonis chrysocyathus	ADOCH	1
Aecidium sp.	AECISP	1
Aegopodium alpestre	AEOAL	1
Aegopsis	1AEGZG	2
Aegopsis bolboceridus	AEGZBO	1
Aegopsis sp.	AEGZSP	1
Aeolesthes induta	AELSIN	1
Aeolothrips collaris	AEOOCO	1
Aeolothrips scabiosatibia	AEOOSC	1
Aeolothrips tenuicornis	AEOOTE	1
Aeonium aureum	AEJAU	1
Aeonium ringspot virus	AERSV0	1
aerial parts (treatment of)	3AERPO	3
Aerva sericea	AERSE	1
Aethionema gileadense	AEHGI	1
Africaleurodes	1AFRIG	2
Africaleurodes citri	AFRICI	2
Africaleurodes sp.	AFRISP	1
Afrina	1AFRNG	2
Afrina sp.	AFRNSP	1
Afrina spermophaga	AFRNSM	1
Afrina sporoboliae	AFRNSB	1
Afrina tumefaciens	AFRNTU	1
Afrina wevelli	AFRNWE	1
Afzelia javanica	AFZJA	1
Afzelia pachyloba	AFZPC	1
Afzelia quanzensis	AFZQU	1
Afzelia rhomboidea	AFZRH	1
Agapanthoideae	1AGAS	2
Agathis borneensis	AGTBO	3
Agathis labillardierei	AGTLB	2
Agathis lenticula	AGTLE	1
Agathis orbicula	AGTOR	1
Agathis robusta subsp. *nesophila*	AGTRN	3
Agathosma apiculata	AGHAP	1
Agave asperrima	AGVAS	1
Agave chrysantha	AGVCR	1
Agave cupreata	AGVCU	1
Agave delamateri	AGVDL	1

Latin name	EPPO Codes	Level of difficulty
Agave deserti	AGVDT	1
Agave gracilipes	AGVGR	1
Agave havardiana	AGVHA	1
Agave longiflora	AGVLO	1
Agave maculata	AGVMC	1
Agave missionum	AGVMI	1
Agave murpheyi	AGVMU	1
Agave palmeri	AGVPL	1
Agave parviflora	AGVPV	1
Agave phillipsiana	AGVPH	1
Agave shawii	AGVSH	1
Agave sileri	AGVSL	1
Agave toumeyana	AGVTO	1
Agave weberi	AGVWE	1
Agave xylonacantha	AGVXY	1
Agavoideae	1AGVS	2
Ageratum latent virus	AGLV00	1
Aglaia argentea	AFAAR	1
Aglaia cucullata	AFACU	1
Aglaia lawii	AFALA	3
Aglaia leptantha	AFALE	1
Aglaia odoratissima	AFAOR	1
Aglaia rubiginosa	AFARU	1
Aglaia silvestris	AFASI	2
Aglaia spectabilis	AFASP	2
Aglaia tomentosa	AFATO	2
Agrilus fleischeri	AGRLFL	1
Agriotes lineatus	AGRILI	1
Agropyron dasyanthum	AGRDS	1
Ailanthus integrifolia	AILIN	1
Ailanthus triphysa	AILTR	1
Aiphanes sp.	AHNSS	1
Ajania pallasiana	AJNPA	1
Alabagrus	1ALBGG	2
Alabagrus sp.	ALBGSP	1
Albizia lebbeck	ALBLE	1
Albizia lebbekoides	ALBLB	2
Albizia procera	ALBPR	1
Alchemilla acutata	ALCAK	1
Alchemilla carniolica	ALCCA	1
Alchemilla hebescens	ALCHB	1
Alchemilla sericoneura	ALCSN	1
Alchemilla tirolensis	ALCTI	1
Alebra	1ALEBG	2

Latin name	EPPO Codes	Level of difficulty
Alebra albostriella	ALEBAL	1
Alebra sp.	ALEBSP	1
Aleuroclava similis	ALCLSI	1
Aleurodicus capiangae	ALEDCP	1
Aleurodicus destructor	ALEDDE	1
Aleuroglyphus beklemishevi	ALEGBE	1
Aleurotrachelus camelliae	ALTRCM	1
Aleurotrachelus dryandrae	ALTRDR	1
Aleurotuba	1ALTUG	2
Aleurotuba sp.	ALTUSP	1
Aleyrodes proletella	ALEUPR	1
Alfalfa dwarf cytorhabdovirus	ADV000	1
Alfalfa enamovirus 1	EAV100	1
Alfalfa leaf curl virus	ALCV00	1
Alfalfa virus S	AVS000	1
algae (unwanted)	3ALGAT	3
Allamanda leaf curl virus	ALLLCV	1
Allamanda leaf mottle distortion virus	ALLMDV	1
Allioideae	1ALLS	2
Allium decaisnei	ALLDS	1
Allium feinbergii	ALLFE	1
Allium kollmannianum	ALLKN	1
Allium libani	ALLLB	1
Allium pseudocalyptratum	ALLPC	1
Allium pseudostamineum	ALLPS	1
Allium qasyunense	ALLQA	1
Allium sinaiticum	ALLSQ	1
Allium virus X	ALVX00	1
Allophylus pervillei	AOLPE	1
Aloe lateritia subsp. *graminicola*	ALFGN	2
Aloe secundiflora	ALFSE	1
Alphacarmovirus	1ACAVG	2
Alphanecrovirus	1ANCVG	2
Alphonsea	1AHUG	2
Alphonsea elliptica	AHUEL	2
Alphonsea javanica	AHUJA	1
Alphonsea johorensis	AHUJO	1
Alphonsea lutea	AHULU	1
Alphonsea sp.	AHUSS	1
Alpinioideae	1AIIS	2
Alseodaphne	1ASXG	2
Alseodaphne bancana	ASXBA	1
Alseodaphne glauciflora	ASXGL	1
Alseodaphne insignis	ASXIN	1

Latin name	EPPO Codes	Level of difficulty
Alseodaphne intermedia	ASXIT	1
Alseodaphne nigrescens	ASXNI	1
Alseodaphne obovata	ASXOB	3
Alseodaphne semecarpifolia	ASXSE	2
Alseodaphne sp.	ASXSS	2
Alstonia angustiloba	ATNAN	1
Alstonia pneumatophora	ATNPN	1
Alstonia spatulata	ATNSP	1
Alstonia spectabilis	ATNSE	2
Alternanthera crucis	ALRCR	1
Alternanthera philoxeroides	ALRPH	1
Alternaria ethzedia	ALTETZ	1
Alternaria hordeicola	ALTEHO	1
Alternaria steviae	ALTEST	1
Alternaria undulata	ALTEUN	1
Althaea taurinensis	ALGTA	1
Amaryllidoideae	1AMYS	2
Amasya cherry disease associated chrysovirus	ACDACV	1
Amazon lily mild mottle virus	ALIMMV	1
Ambavioideae	1AMBS	2
Amblypelta brevicornis	AMBPBR	1
Ambrosiodmus hagedorni	AMBDHA	1
Ambrosiodmus obliquus	AMBDOB	3
Ambrosiodmus tachygraphus	AMBDTA	1
Amburana	1ABXG	2
Amburana cearensis	ABXCE	2
Amburana sp.	ABXSS	1
Ametastegia tener	AMETTE	1
Amomothrips	1AMOMG	2
Amomothrips associatus	AMOMAS	1
Amomothrips sp.	AMOMSP	1
Ampedus	1AMPDG	2
Ampedus collaris	AMPDCO	1
Ampedus mannerheimi	AMPDMA	1
Ampedus randalli	AMPDRA	3
Ampedus sp.	AMPDSP	1
Ampelocissus barbata	AWSBA	1
Ampelocissus cinnamomea	AWSCI	1
Ampelocissus compositifolia	AWSCO	2
Ampelocissus latifolia	AWSLA	1
Ampelocissus rugosa	AWSRU	1
Ampelocissus sikkimensis	AWSSK	1
Ampelocissus tomentosa	AWSTO	1
Ampelopsis cantoniensis	AMCCA	1

Latin name	EPPO Codes	Level of difficulty
Ampelopsis glandulosa	AMCGD	1
Ampelopsis rubifolia	AMCRU	1
Amphicranus	1AMPCG	2
Amphicranus rasilis	AMPCRA	1
Amphicranus sp.	AMPCSP	1
Amrasca splendens	AMRAZP	1
Amrineus	1AMRIG	2
Amrineus cocofolius	AMRICO	1
Amrineus coconuciferae	AMRICC	1
Amrineus sp.	AMRISP	1
Amsinckia carinata	AMSCR	1
Amsinckia eastwoodiae	AMSEA	1
Amsinckia grandiflora	AMSGR	1
Amsinckia lunaris	AMSLU	1
Amsinckia spectabilis	AMSSP	1
Amsinckia vernicosa	AMSVE	1
Amylostereum areolatum	AMYSAR	1
Anacampseros	1BNAG	2
Anacamptis israelitica	AAPIS	1
Anagrus nigriventris	ANAGNI	1
Anaphalis sinica	ANPSI	1
Anaphothrips occidentalis	ANAPOK	1
Anarta trifolii	ANRTTR	1
Anastrepha interrupta	ANSTIN	1
Anastrepha ocresia	ANSTOC	1
Anaxagorea	1AXGG	2
Anaxagorea luzonensis	AXGLU	1
Anaxagorea sp.	AXGSS	1
Anaxagoreoideae	1AXGS	2
Anchusa pusilla	ANCPU	1
Anchusa thessala	ANCTH	1
Ancistrocactus tobuschii	AJRTO	2
Andrographis yellow vein leaf curl virus	AYVLCV	1
Andryala rothia	ADYRO	1
Anelaphus	1ANELG	2
Anelaphus sp.	ANELSP	1
Anemioideae	1AFMS	2
Anemone caucasica	ANMCU	1
Anemone demissa	ANMDE	1
Anemone elongata	ANMEL	1
Anemone griffithii	ANMGR	1
Anemone obtusiloba	ANMOB	1
Anemone polyanthes	ANMPL	1
Anemone rupestris	ANMRP	1

Latin name	EPPO Codes	Level of difficulty
Anemone tetrasepala	ANMTE	1
Anemone trullifolia	ANMTF	1
Angylocalyx braunii	AYCBR	1
Anisacanthus	1BSUG	2
Anisacanthus linearis	BSULI	1
Anisacanthus puberulus	BSUPU	1
Anisacanthus quadrifidus	BSUQU	1
Anisacanthus quadrifidus var. wrightii	BSUJU	3
Anisacanthus sp.	BSUSS	1
Anisacanthus thurberi	BSUTH	1
Anisoptera	1AIVG	2
Anisoptera costata	AIVCO	1
Anisoptera curtisii	AIVCU	1
Anisoptera grossivenia	AIVGR	1
Anisoptera marginata	AIVMA	1
Anisoptera megistocarpa	AIVME	1
Anisoptera scaphula	AIVSC	1
Anisoptera sp.	AIVSS	1
Anisoptera thurifera	AIVTH	1
Annonoideae	1ANNS	2
annual dicotyledonous weeds	3ANDIT	3
annual grass weeds	3ANGWT	3
annual monocotyledonous weeds	3ANMNT	3
Anoectochilus	1BKCG	2
Anoectochilus sandvicensis	BKCSA	1
Anoectochilus sp.	BKCSS	1
Anomochlooideae	1AOKS	2
Anstenoptilia	1ANSNG	2
Anstenoptilia marmarodactyla	ANSNMA	1
Anstenoptilia sp.	ANSNSP	1
Anthemis maris-mortui	ANTMM	1
Anthemis nabataea	ANTNA	1
Anthemis pauciloba	ANTPC	1
Anthemis scariosa	ANTSR	1
Anthemis scrobicularis	ANTSB	1
Anthemis tenuicarpa	ANTTC	1
Anthemis zoharyana	ANTZO	1
Anthidium florentinum	ANTDFL	1
Anthrenocerus	1ATNCG	2
Anthrenocerus australis	ATNCAU	1
Anthrenocerus sp.	ATNCSP	1
Antiphytum	1BWTG	2
Antiphytum floribundum	BWTFL	1
Antiphytum heliotropioides	BWTHE	1

Latin name	EPPO Codes	Level of difficulty
Antiphytum sp.	BWTSS	1
Antispila uenoi	ANTSUE	1
Anzygina	1ANZYG	2
Anzygina honiloa	ANZYHO	1
[*Anzygina* sp. - paid by the industry]	ANZYSP	1
Apate terebrans	APATTE	1
Aphelandra hartwegiana	APLHA	1
Aphelandra scabra	APLDE	1
Aphelandra schiedeana	APLSC	1
Aphelenchoides tagetae	APLOTA	1
Aphrophora pectoralis	APHRPC	1
Aphyllanthoideae	1AHLS	2
Apiospora camptospora	APIACA	1
Aplectrum	1BPKG	2
Aplectrum hyemale	BPKHY	1
Aplectrum sp.	BPKSS	1
Apoctena	1APCTG	2
Apoctena flavescens	APCTFL	3
Apoctena sp.	APCTSP	1
Apostasia	1BQPG	2
Apostasia odorata	BQPOD	1
Apostasia sp.	BQPSS	1
Apostasioideae	1BQPS	2
Apterothrips	1APTTG	2
Apterothrips apteris	APTTAP	1
Apterothrips secticornis	APTTSE	1
Apterothrips sp.	APTTSP	1
aquatic weeds	3AQUWT	3
Aquilaria beccariana	AQABE	1
Aquilaria filaria	AQAFI	1
Aquilaria microcarpa	AQAMI	1
Aquilegia colchica	AQICO	1
Arabidopsis halleri subsp. *ovirensis*	ARBOV	2
Arabis laxa	ARCLA	1
Araucariales	1ARUO	2
Archips machlopis	ARCHMA	1
Areca palm velarivirus 1	ARPV10	1
Arecoideae	1ARES	2
Arenaria rotundifolia	ARIRO	1
Arethusa	1AUWG	2
Arethusa bulbosa	AUWBU	1
Arethusa sp.	AUWSS	1
Argyrodendron	1AYJG	2
Argyrodendron peralatum	AYJPE	1

Latin name	EPPO Codes	Level of difficulty
Argyrodendron polyandrum	AYJPO	1
Argyrodendron sp.	AYJSS	1
Argyrodendron trifoliolatum	AYJTR	3
Ariocarpus trigonus	AWCTR	2
Ariophantidae	1ARIPF	2
Aristeoideae	1ARIS	2
Aristobia	1ARIBG	2
Aristobia horridula	ARIBHO	1
Aristobia sp.	ARIBSP	1
Aristolochia constricta	ARPCN	1
Aristolochia contorta	ARPCO	1
Aristolochia indica	ARPID	1
Aristolochia lutea	ARPLU	1
Aristolochia maxima	ARPMX	1
Aristolochia navicularis	ARPNA	1
Aristolochia odoratissima	ARPOD	1
Aristolochioideae	1ARPS	2
Arixyleborus	1ARXYG	2
Arixyleborus canaliculatus	ARXYCA	1
Arixyleborus granifer	ARXYGR	1
Arixyleborus granulifer	ARXYGF	1
Arixyleborus hirsutulus	ARXYHI	1
Arixyleborus imitator	ARXYIM	1
Arixyleborus mediosectus	ARXYME	1
Arixyleborus rugosipes	ARXYRU	1
Arixyleborus sp.	ARXYSP	1
Armillaria luteobubalina	ARMLLU	1
Arorathrips spiniceps	AROTSN	1
Arracacha virus V	AVV000	1
Artabotrys monteiroae	BTBMO	1
Artemisia virus A	ARTVA0	1
Arthropogon	1AVPG	2
Arthropogon sp.	AVPSS	1
Arthuriomyces	1ARTUG	2
Arthuriomyces sp.	ARTUSP	1
Artocarpus altissimus	ABFAT	1
Artocarpus fretessii	ABFFR	1
Artocarpus glaucus	ABFGL	1
Artocarpus horridus	ABFHO	1
Artocarpus kemando	ABFKE	1
Artocarpus limpato	ABFLI	3
Artocarpus maingayi	ABFMA	1
Artocarpus nitidus	ABFNI	1
Artocarpus ovatus	ABFOV	2

Latin name	EPPO Codes	Level of difficulty
Artocarpus scortechinii	ABFSC	1
Artocarpus subrotundifolius	ABFSU	1
Artocarpus teysmannii	ABFTE	1
Arum apulum	ABGAP	1
Asaroideae	1ASUS	2
Asarum heterotropoides	ASUHE	1
Asarum himalaicum	ASUHI	1
Ascochyta corticola	ASCOCO	1
Ascochyta cycadina	ASCOCC	1
Ascochyta hyalospora	ASCOHY	1
Ascochyta ligulariae	ASCOLI	1
Asemochrysus	1ASMCG	2
Asemochrysus rugulosus	ASMCRU	1
Asemochrysus sp.	ASMCSP	1
Asiacornococcus	1ASICG	2
Asiacornococcus kaki	ASICKA	2
Asiacornococcus sp.	ASICSP	1
Asimina angustifolia	ASIAN	1
Asimina parviflora	ASIPA	1
Asimina pygmaea	ASIPY	1
Asimina tetramera	ASITE	1
Asiraca	1ASIRG	2
Asiraca clavicornis	ASIRCL	2
Asiraca sp.	ASIRSP	1
Asparagoideae	1ASGS	2
Asparagus brachyphyllus	ASPBR	1
Asperisporium pongamiae	ASPRPO	1
Asperula graveolens	ASEGR	1
Asperula libanotica	ASELI	1
Asperula setosa	ASEST	1
Asperula setulosa	ASESE	1
Asphodeline brevicaulis	APNBR	1
Asphodeloideae	1ASPS	2
Asphondylia ilicicola	ASPHIL	1
Asphondylia nepetae	ASPHNE	1
Aspidocarya	1AWUG	2
Aspidocarya sp.	AWUSS	1
Aspidocarya uvifera	AWUUV	1
Aspidosperma album	ASOAL	3
Aspidosperma desmanthum	ASODE	3
Aspidosperma olivaceum	ASOOL	2
Aspidosperma polyneuron	ASOPO	2
Asplenioideae	1ASNS	2
Asplenium haussknechtii	ASLHK	1

Latin name	EPPO Codes	Level of difficulty
Assara	1ASSAG	2
Assara albicostalis	ASSAAL	2
Assara sp.	ASSASP	1
Astela hemichrysa	ASFHE	1
Astelia neocaledonica	ASFNC	1
Asterodiaspis quercicola	ASTDQU	1
Asterolecanium litseae	ASTLLI	1
Asterolecanium ungulatum	ASTLUN	1
Asteromella pongamiae	ASTZPO	3
Asteromella sp.	ASTZSP	1
Astragalus corniculatus	ASAKN	1
Astragalus aduncus	ASABD	1
Astragalus albicaulis	ASAAK	1
Astragalus bombycinus	ASABM	1
Astragalus buchtormensis	ASABU	1
Astragalus concavus	ASACV	1
Astragalus glaucus	ASAGC	1
Astragalus hauarensis	ASAHU	1
Astragalus lanatus	ASALN	1
Astragalus palaestinus	ASAPZ	1
Astragalus schimperi	ASAZH	1
Astragalus trachoniticus	ASATC	1
Astragalus utriger	ASAUT	1
Astronium fraxinifolium	ASVFR	3
Astronium lecointei	ASVLE	1
Astylus antis	ASTYAN	1
Asystasia mosaic Madagascar virus	AMMGV0	1
Atheloca	1ATHKG	2
Atheloca sp.	ATHKSP	1
Atheloca subrufella	ATHKSU	1
Atherosperma muticum	AOPMU	1
Athyrioideae	1ATUS	2
Atractylodes mild mottle virus	AMMV00	1
Atractylodes mottle virus	ATRMOV	1
Atraphaxis salicornioides	ATPSA	1
Atriplex cana	ATXCN	1
Atriplex lindleyi	ATXLN	1
Atriplex verrucifera	ATXVR	1
Aulosepalum sp.	AUPSS	1
Australothrips	1AUSAG	2
Australothrips aliceae	AUSAAL	1
Australothrips bicolor	AUSABI	3
Australothrips sp.	AUSASP	1
Austrostipa	1XUSG	2

Latin name	EPPO Codes	Level of difficulty
Austrostipa sp.	XUSSS	1
Autoba	1AUTBG	2
Autoba abrupta	AUTBAB	3
Autoba brachygonia	AUTBBR	1
Autoba sp.	AUTBSP	1
Autoba versicolor	AUTBVE	1
Automeris illustris	AUTMIL	1
Autranella	1AUXG	2
Autranella congolensis	AUXCO	1
Autranella sp.	AUXSS	1
Avicennia alba	AVIAL	3
Avicennia marina	AVIMA	1
Avicennia rumphiana	AVIRU	1
Axinopalpis	1AXING	2
Axinopalpis gracilis	AXINGR	2
Axinopalpis sp.	AXINSP	1
Axonopus compressus streak virus	ACSV00	1
Azadirachta	1AZJG	2
Azadirachta excelsa	AZJEX	2
Azadirachta sp.	AZJSS	1
Azolloideae	1AZOS	2

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