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## Commodity risk assessment of *Malus domestica* plants from Bosnia and Herzegovina

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### Abstract

The European Commission requested the EFSA Panel on Plant Health to prepare and deliver risk assessments for commodities listed in Commission Implementing Regulation (EU) 2018/2019 as 'High-risk plants, plant products and other objects'. This Scientific Opinion covers plant health risks posed by bare root plants of *Malus domestica* grafted on rootstocks of either *Malus domestica* or *Malus sylvestris* imported from Bosnia and Herzegovina (BIH), taking into account the available scientific information, including the technical information provided by Bosnia and Herzegovina. All pests associated with the commodities were evaluated against specific criteria for their relevance for this opinion. One protected zone quarantine pest, *Erwinia amylovora*, fulfilled all relevant criteria and was selected for further evaluation. For *E. amylovora*, special requirements are specified in Commission Implementing Regulation (EU) 2019/2072. Based on the information provided in the Dossier, these specific requirements for *E. amylovora* are not met.

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## 1. Introduction

### 1.1. Background and Terms of Reference as provided by European Commission

#### 1.1.1. Background

The new Plant Health Regulation (EU) 2016/2031<sup>1</sup>, on the protective measures against pests of plants, has been applied from December 2019. Provisions within the above Regulation are in place for the listing of 'high risk plants, plant products and other objects' (Article 42) on the basis of a preliminary assessment, and to be followed by a commodity risk assessment. A list of 'high risk plants, plant products and other objects' has been published in Regulation (EU) 2018/2019<sup>2</sup>. Scientific opinions are therefore needed to support the European Commission and the Member States in the work connected to Article 42 of Regulation (EU) 2016/2031, as stipulated in the terms of reference.

#### 1.1.2. Terms of Reference

In view of the above and in accordance with Article 29 of Regulation (EC) No 178/2002<sup>3</sup>, the Commission asks EFSA to provide scientific opinions in the field of plant health.

In particular, EFSA is expected to prepare and deliver risk assessments for commodities listed in the relevant Implementing Act as "High risk plants, plant products and other objects". Article 42, paragraphs 4 and 5, establishes that a risk assessment is needed as a follow-up to evaluate whether the commodities will remain prohibited, removed from the list and additional measures will be applied or removed from the list without any additional measures. This task is expected to be on-going, with a regular flow of dossiers being sent by the applicant required for the risk assessment.

Therefore, to facilitate the correct handling of the dossiers and the acquisition of the required data for the commodity risk assessment, a format for the submission of the required data for each dossier is needed.

Furthermore, a standard methodology for the performance of "commodity risk assessment" based on the work already done by Member States and other international organizations needs to be set.

In view of the above and in accordance with Article 29 of Regulation (EC) No 178/2002, the Commission asks EFSA to provide scientific opinion in the field of plant health for *Malus domestica* from Bosnia and Herzegovina taking into account the available scientific information, including the technical dossier provided by Bosnia and Herzegovina.

### 1.2. Interpretation of the Terms of Reference

The EFSA Panel on Plant Health (hereafter referred to as 'the Panel') was requested to conduct a commodity risk assessment of *M. domestica* from Bosnia and Herzegovina following the Guidance on commodity risk assessment for the evaluation of high-risk plant dossiers (EFSA PLH Panel, 2019).

The EU quarantine pests that are regulated as a group in the Commission Implementing Regulation (EU) 2019/2072 were considered and evaluated separately at species level.

Annex II of Implementing Regulation (EU) 2019/2072 lists certain pests as non-European populations or isolates or species. These pests are regulated quarantine pests. Consequently, the respective European populations, or isolates, or species are non-regulated pests.

Annex VII of the same Regulation, in certain cases (e.g. point 32) makes reference to the following countries that are excluded from the obligation to comply with specific import requirements for those non-European populations, or isolates, or species: Albania, Andorra, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Canary Islands, Faeroe Islands, Georgia, Iceland, Liechtenstein, Moldova,

<sup>1</sup> Regulation (EU) 2016/2031 of the European Parliament and of the Council of 26 October 2016 on protective measures against pests of plants, amending Regulations (EU) 228/2013, (EU) 652/2014 and (EU) 1143/2014 of the European Parliament and of the Council and repealing Council Directives 69/464/EEC, 74/647/EEC, 93/85/EEC, 98/57/EC, 2000/29/EC, 2006/91/EC and 2007/33/EC. OJ L 317, 23.11.2016, pp. 4–104.

<sup>2</sup> Commission Implementing Regulation (EU) 2018/2019 of 18 December 2018 establishing a provisional list of high risk plants, plant products or other objects, within the meaning of Article 42 of Regulation (EU) 2016/2031 and a list of plants for which phytosanitary certificates are not required for introduction into the Union, within the meaning of Article 73 of that Regulation C/2018/8877. OJ L 323, 19.12.2018, pp. 10–15.

<sup>3</sup> Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. OJ L 31, 1.2.2002, pp. 1–24.

Monaco, Montenegro, North Macedonia, Norway, Russia (only the following parts: Central Federal District (Tsentralny federalny okrug), Northwestern Federal District (Severo Zapadny federalny okrug), Southern Federal District (Yuzhny federalny okrug), North Caucasian Federal District (Severo-Kavkazsky federalny okrug) and Volga Federal District (Privolzhsky federalny okrug), San Marino, Serbia, Switzerland, Türkiye, Ukraine and the United Kingdom (except Northern Ireland<sup>4</sup>). Most of those countries are historically linked to the reference to 'non-European countries' existing in the previous legal framework, Directive 2000/29/EC.

Consequently, for those countries,

- i) any pests identified, which are listed as non-European species in Annex II of Implementing Regulation (EU) 2019/2072 should be investigated as any other non-regulated pest.
- ii) any pest found in a European country that belongs to the same denomination as the pests listed as non-European populations or isolates in Annex II of Implementing Regulation (EU) 2019/2072, should be considered as European populations or isolates and should not be considered in the assessment of those countries.

Pests listed as 'Regulated Non-Quarantine Pest' (RNQP) in Annex IV of the Commission Implementing Regulation (EU) 2019/2072, and deregulated pests (i.e. pests which were listed as quarantine pests in the Council Directive 2000/29/EC and were deregulated by Commission Implementing Regulation (EU) 2019/2072) were not considered for further evaluation.

In its evaluation the Panel:

- Checked whether the information provided by the applicant (Administration Bosnia and Herzegovina for Plant Health Protection, Ministry of Foreign Trade and Economic Relations) in the technical dossier (hereafter referred to as 'the Dossier') was sufficient to conduct a commodity risk assessment. When necessary, additional information was requested.
- Selected the relevant union EU-regulated quarantine pests and protected zone quarantine pests (as specified in Commission Implementing Regulation (EU) 2019/2072<sup>5</sup>, hereafter referred to as 'EU quarantine pests') and other relevant pests present in Bosnia and Herzegovina and associated with the commodity.
- Assessed whether the applicant country implements specific measures for Union quarantine pests for which specific measures are in place for the import of the commodity from the specific country in the relevant legislative texts for emergency measures ([https://ec.europa.eu/food/plant/plant\\_health\\_biosecurity/legislation/emergency\\_measures\\_en](https://ec.europa.eu/food/plant/plant_health_biosecurity/legislation/emergency_measures_en)); the assessment was restricted to whether or not the applicant country applies those measures. The effectiveness of those measures was not assessed.
- Assessed whether the applicant country implements the special requirements specified in Annex VII (points 1–101) and Annex X of the Commission Implementing Regulation (EU) 2019/2072 targeting Union quarantine pests for the commodity in question from the specific country.
- Assessed the effectiveness of the measures described in the dossier for those Union quarantine pests for which no specific measures are in place for the import of the commodity from the specific applicant country and other relevant pests present in applicant country and associated with the commodity.

Risk management decisions are not within EFSA's remit. Therefore, the Panel provided a rating based on expert judgement regarding the likelihood of pest freedom for each relevant pest given the risk mitigation measures claimed to be implemented by the Administration Bosnia and Herzegovina for Plant Health Protection, Ministry of Foreign Trade and Economic Relations.

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<sup>4</sup> In accordance with the Agreement on the withdrawal of the United Kingdom of Great Britain and Northern Ireland from the European Union and the European Atomic Energy Community, and in particular Article 5(4) of the Protocol on Ireland/Northern Ireland in conjunction with Annex 2 to that Protocol, for the purposes of this Annex, references to Member States include the United Kingdom in respect of Northern Ireland.

<sup>5</sup> Commission Implementing Regulation (EU) 2019/2072 of 28 November 2019 establishing uniform conditions for the implementation of Regulation (EU) 2016/2031 of the European Parliament and the Council, as regards protective measures against pests of plants, and repealing Commission Regulation (EC) No 690/2008 and amending Commission Implementing Regulation (EU) 2018/2019, OJ L 319, 10.12.2019, p. 1–279.

## 2. Data and methodologies

### 2.1. Data provided by the Administration Bosnia and Herzegovina for Plant Health Protection, Ministry of Foreign Trade and Economic Relations

The Panel considered all the data and information (hereafter called 'the Dossier') provided by the Ministry of Foreign Trade and Economic Relations, Administration Bosnia and Herzegovina for Plant Health Protection in February 2022, including the additional information provided by the Ministry of Foreign Trade and Economic Relations, Administration Bosnia and Herzegovina for Plant Health Protection in July 2023 after EFSA's request. The Dossier is managed by EFSA.

The structure and overview of the Dossier is shown in Table 1. The number of the relevant section is indicated in the opinion when referring to a specific part of the Dossier.

**Table 1:** Structure and overview of the Dossier

Dossier section	Overview of contents	Filename
1.0	Technical dossier	Dossier_Malus_Bosnia_ARES-241276-Annexe.docx Production_and_control_of_Apple_seedlings_ARES-241276-Lettre.docx
2.0	Pest list	Dossier_Malus_Bosnia_ARES-241276-Annexe.docx
3.0	Additional information provided by Bosnia and Herzegovina in August 2023	Bosnia Malus domestica reply

The data and supporting information provided by the Administration Bosnia and Herzegovina for Plant Health Protection formed the basis of the commodity risk assessment.

### 2.2. Literature searches performed by EFSA

Literature searches in different databases were undertaken by EFSA to complete a list of pests potentially associated with *M. domestica* and *M. sylvestris*. The following searches were combined: (i) a general search to identify pests of *M. domestica* and *M. sylvestris* in different databases and (ii) a tailored search to identify whether these pests are present or not in Bosnia and Herzegovina and the EU. The searches were run between 13 January 2023 and 27 March 2023. No language, date or document type restrictions were applied in the search strategy.

The search strategy and search syntax were adapted to each of the databases listed in Table 2, according to the options and functionalities of the different databases and CABI keyword thesaurus.

As for Web of Science, the literature search was performed using a specific, ad hoc established search string (see Appendix B). The string was run in 'All Databases' with no range limits for time or language filters. This is further explained in Section 2.3.2.

**Table 2:** Databases used by EFSA for the compilation of the pest list associated to *Malus domestica*

Database	Platform/Link
Aphids on World Plants	<a href="https://www.aphidsonworldsplants.info/C_HOSTS_AAIntro.htm">https://www.aphidsonworldsplants.info/C_HOSTS_AAIntro.htm</a>
CABI Crop Protection Compendium	<a href="https://www.cabi.org/cpc/">https://www.cabi.org/cpc/</a>
Database of Insects and their Food Plants	<a href="https://www.brc.ac.BosniaandHerzegovina/dbif/hosts.aspx">https://www.brc.ac.BosniaandHerzegovina/dbif/hosts.aspx</a>
Database of the World's Lepidopteran Hostplants	<a href="https://www.nhm.ac.BosniaandHerzegovina/our-science/data/hostplants/search/index.dsml">https://www.nhm.ac.BosniaandHerzegovina/our-science/data/hostplants/search/index.dsml</a>
EPPO Global Database	<a href="https://gd.eppo.int/">https://gd.eppo.int/</a>
EUROPHYT	<a href="https://webgate.ec.europa.eu/europhyt/">https://webgate.ec.europa.eu/europhyt/</a>
Leaf-miners	<a href="https://www.leafmines.co.BosniaandHerzegovina/html/plants.htm">https://www.leafmines.co.BosniaandHerzegovina/html/plants.htm</a>
Nemaplex	<a href="https://nemaplex.ucdavis.edu/Nemabase2010/PlantNematodeHostStatusDDQuery.aspx">https://nemaplex.ucdavis.edu/Nemabase2010/PlantNematodeHostStatusDDQuery.aspx</a>
Plant Pest Information Network	<a href="https://www.mpi.govt.nz/news-and-resources/resources/registers-and-lists/plant-pest-information-network/">https://www.mpi.govt.nz/news-and-resources/resources/registers-and-lists/plant-pest-information-network/</a>

Database	Platform/Link
Scalenet	<a href="https://scalenet.info/associates/">https://scalenet.info/associates/</a>
Spider Mites Web	<a href="https://www1.montpellier.inra.fr/CBGP/spmweb/advanced.php">https://www1.montpellier.inra.fr/CBGP/spmweb/advanced.php</a>
USDA ARS Fungal Database	<a href="https://nt.ars-grin.gov/fungaldatabases/fungushost/fungushost.cfm">https://nt.ars-grin.gov/fungaldatabases/fungushost/fungushost.cfm</a>
Web of Science: All Databases (Web of Science Core Collection, CABI: CAB Abstracts, BIOSIS Citation Index, Chinese Science Citation Database, Current Contents Connect, Data Citation Index)	Web of Science <a href="https://www.webofknowledge.com">https://www.webofknowledge.com</a>
FSTA, KCI-Korean Journal Database, Russian Science Citation Index, MEDLINE SciELO Citation Index, Zoological Record)	
World Agroforestry	<a href="https://www.worldagroforestry.org/treedb2/speciesprofile.php?Spid=1749">https://www.worldagroforestry.org/treedb2/speciesprofile.php?Spid=1749</a>
GBIF	<a href="https://www.gbif.org/">https://www.gbif.org/</a>
Fauna Europaea	<a href="https://fauna-eu.org/">https://fauna-eu.org/</a>
EFSA List of Non-EU viruses and viroids of <i>Cydonia</i> Mill., <i>Fragaria</i> L., <i>Malus</i> Mill., <i>Prunus</i> L., <i>Pyrus</i> L., <i>Ribes</i> L., <i>Rubus</i> L. and <i>Vitis</i> L..	<a href="https://www.efsa.europa.eu/it/efsajournal/pub/5501">https://www.efsa.europa.eu/it/efsajournal/pub/5501</a>

Additional searches, limited to retrieve documents, were run when developing the opinion. The available scientific information, including previous EFSA opinions on the relevant pests and diseases (see pest data sheets in Appendix A) and the relevant literature and legislation (e.g. Regulation (EU) 2016/2031; Commission Implementing Regulations (EU) 2018/2019; (EU) 2018/2018 and (EU) 2019/2072) were taken into account.

### 2.3. Methodology

When developing the opinion, the Panel followed the EFSA Guidance on commodity risk assessment for the evaluation of high-risk plant dossiers (EFSA PLH Panel, 2019).

In the first step, pests potentially associated with the commodity in the country of origin (EU-quarantine pests and other pests) that may require risk mitigation measures were identified. The EU non-quarantine pests not known to occur in the EU were selected based on evidence of their potential impact in the EU. After the first step, all the relevant pests that may need risk mitigation measures were identified.

In the second step, the proposed risk mitigation measures for each relevant pest were evaluated in terms of efficacy or compliance with EU requirements as explained in Section 1.2.

A conclusion on the likelihood of the commodity being free from each of the relevant pest was determined and uncertainties identified using expert judgements.

#### 2.3.1. Commodity data

Based on the information provided by Bosnia and Herzegovina, the characteristics of the commodity were summarised.

#### 2.3.2. Identification of pests potentially associated with the commodity

To evaluate the pest risk associated with the importation of *M. domestica* from Bosnia and Herzegovina a pest list was compiled. The pest list is a compilation of all identified plant pests associated with *M. domestica*, *M. pumila* and *M. sylvestris* based on (1) information provided in the technical Dossier, (2) additional information provided by Administration Bosnia and Herzegovina for Plant Health Protection, (3) as well as on searches performed by the Panel. The search strategy and search syntax were adapted to each of the databases listed in Table 4, according to the options and functionalities of the different databases and CABI keyword thesaurus.

The scientific name of the host plants (*M. domestica* (synonym *M. pumila*) and *M. sylvestris*) was used when searching in the EPPO Global database and CABI Crop Protection Compendium. The same strategy was applied to the other databases excluding EUROPHYT and Web of Science.

EUROPHYT was consulted by searching for the interceptions associated to commodities imported from Bosnia and Herzegovina, at species level, from 1998 to May 2020 and TRACES for interceptions

from June 2020 to June 2023. For the pests selected for further evaluation a search in the EUROPHYT and/or TRACES was performed for the interceptions from the whole world, at species level.

The search strategy used for Web of Science Databases was designed combining common names for pests and diseases, terms describing symptoms of plant diseases and the scientific and common names of the commodity. All the pests already retrieved using the other databases were removed from the search terms in order to be able to reduce the number of records to be screened.

The established search string is detailed in Appendix A and was run on 3 to 7 July 2023.

The titles and abstracts of the scientific papers retrieved were screened and the pests associated with *M. domestica* and *M. sylvestris* were included in the pest list. The pest list was eventually further compiled with other relevant information (e.g. EPPO code per pest, taxonomic information, categorisation, distribution) useful for the selection of the pests relevant for the purposes of this opinion.

The compiled pest list (see Microsoft Excel<sup>®</sup> file in Appendix B) includes all identified pests that use *M. domestica* or *M. sylvestris* as host. According to the Interpretation of Terms of Reference.

The evaluation of the compiled pest list was done in two steps: first, the relevance of the EU-quarantine pests was evaluated (Section 4.1); second, the relevance of any other plant pest was evaluated (Section 4.2).

### 2.3.3. Listing and evaluation of risk mitigation measures

Since the Panel did not identify any relevant pest for this Opinion (see Sections 4.1 and 4.2), the proposed risk mitigation measures were listed without undergoing subsequent evaluation. Likewise, due to the absence of pests an expert knowledge elicitation on pest freedom was not performed.

## 3. Commodity data

### 3.1. Description of the commodity

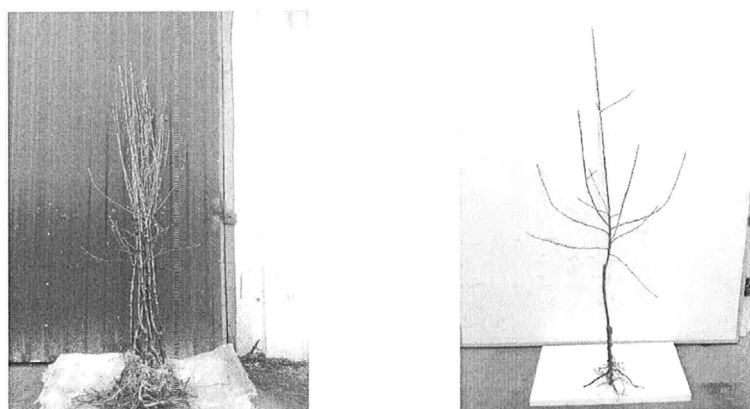
According to the Dossier the commodities considered to be imported into EU from Bosnia and Herzegovina are:

- Single bare root plants, 1 or 2 year old (after grafting and/or budding), of *M. domestica* (Figure 1).
- Bundles of 10 bare root plants, 1 or 2 year old (after grafting and/or budding), of *M. domestica*.

The two commodities can be grafted on rootstocks of *M. domestica* or *M. sylvestris*.

As presented in the Dossier 1 year old plants destined for export must have three well-developed roots with a minimum length of 25 cm, a minimum height of 1 m, the minimum diameter of the lower part of the plant of 10 mm and the cross-sectional area of the scion must be at least 40% of the rootstock cross-sectional area. Two year old plants must have at least 3–4 properly formed primary branches, straight and smooth stem, well-developed root system and the minimum cross-sectional area of the scion is 80%.

Plants are transported in dormant stage without fruits or leaves.



**Figure 1:** Pictures of the commodity as provided by Bosnia and Herzegovina; Left – bundle of 1 year old apple plants (T1) in dormant stage, right – 2 year old apple plant (T3) in dormant stage (see Section 3.3.3 for details). © Administration Bosnia and Herzegovina for Plant Health Protection, Ministry of Foreign Trade and Economic Relations

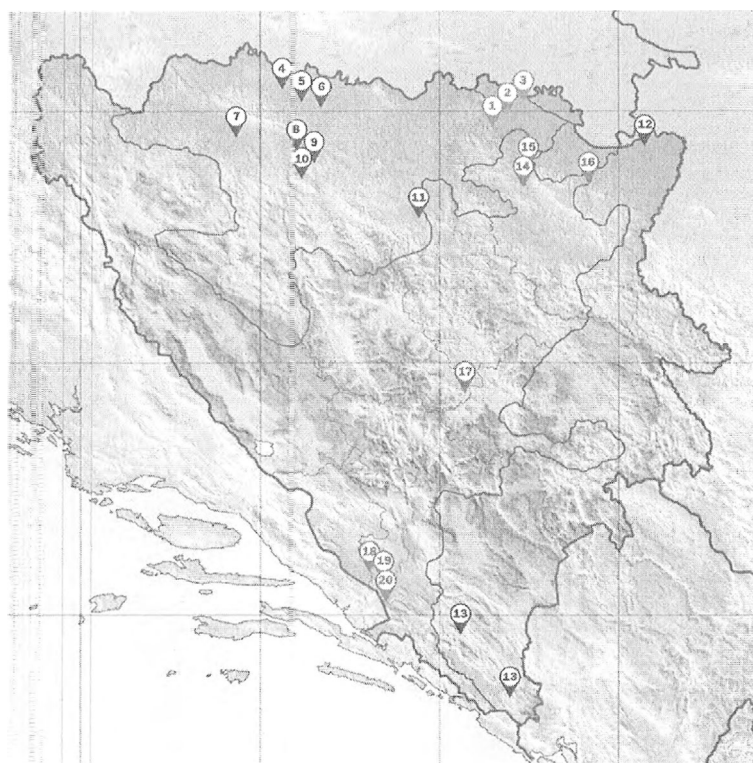


### 3.2. Description of the production areas

According to the Dossier and additional information provided, in Bosnia and Herzegovina there are two main planting material production regions (Figure 2): northern part (Ljēvče polje and Posavina) and southern part of the country (Neretva valley and Popovo polje). There are 46 registered nurseries in Bosnia and Herzegovina (38 in Republika Srpska (RS) and eight in Federation of Bosnia and Herzegovina (FBiH)). Currently, only three registered nurseries have exported to EU and non-EU countries in the last 3 years (all from RS), and 17 potential exporting nurseries have continuous yearly production of planting material.

The three mentioned nurseries (location 1, 2 and 3, Figure 2) are located within a radius of about 20 km, and the dominant crop in the surrounding areas and in the entire region is cereals.

Nurseries that produce apple plants in Bosnia and Herzegovina have a mixed structure of production. Other than apples, the most common species are pear and plum, and other species (cherry, sour cherry, peach, apricot, quince, hazelnut, walnut, chestnut, raspberry, strawberry, blackberry, chokeberry, currant, blueberry) are produced in small quantities. No other information about the plants growing outside and within the nurseries was provided.



**Figure 2:** Map of Bosnia and Herzegovina and location of current and potential exporting nurseries (picture provided by Bosnia and Herzegovina). © Administration Bosnia and Herzegovina for Plant Health Protection, Ministry of Foreign Trade and Economic Relations

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### 3.3. Production and handling processes

#### 3.3.1. Growing conditions

As provided in the submitted Dossier, plants are grown in open fields. Plants are grafted on site or moved indoors for grafting and after are replanted in the field. The growing medium used for the production is soil (according to the ISPM 40, FAO, 2017).

The soil tests are the obligatory prerequisite for establishment of the nursery production in Bosnia and Herzegovina.

### 3.3.2. Source of planting material

According to the Dossier, propagation materials are supplied from the mother plants in Bosnia and Herzegovina as some nurseries have their own mother plants. Additionally, mother plants are supplied from nurseries from the EU.

### 3.3.3. Production cycle

The production cycle as described in the Dossier is as follow:

'The apple planting material considered to be imported in the EU from BIH (1 or 2 year old bare root plants) is ready for selling in late autumn. Production process for planting differs on the following:

- 1) The grafting / budding methods – Whip-and-Tongue Graft is the most used grafting method; T and Chip budding is used equally,
- 2) The grafting site – The grafting on site or grafting indoors and then planting in the field,
- 3) One or two-three years of production: 1 year plants spend 1 or 2 years in the field; kneipping the grafted plants after first year in the field to produce 2-year plants and
- 4) Source of scions and 'rootstocks – imported from EU, region or nursery's own mother plantation.

There are three prevailing technologies of fruit plant production performed in BIH, with the production cycle of one or two seasons (Table 3):

- 1) T1 – 1-year-old budded fruit plants (two seasons in the field during three or two calendar years),
- 2) T2 – 1-year-old grafted fruit plants (1 year in the field) and
- 3) T3 – 2-year-old grafted 'Knip-baum' fruit plants (2 year in the field during three or two calendar years)'.

**Table 3:** An example of the production cycle in Bosnia and Herzegovina as provided in the Dossier

<b>T3 – 2-year-old grafted fruit plants production process (branched 'Knip-baum' plants)</b>		
Year before	August–December	Plot selection, soil analysis, soil precultivation.  Crop rotation is a must (the plots already used for nursery production are not used now).  For each establishment the plot history should be provided -for at least 4 years before the production, and there should not be any orchards in the same plot.
1st growing season	February	Grafting. Storage in cold until planting.
	March–April	Irrigation system installation.  Planting the grafted rootstocks.  Fertigation, pest control and protection.
	May–September	Maintaining of the site and plants (irrigation, soil cultivation, fertigation, pest control and protection); stripping tape removal; tying of plants to bamboo or wire. First official control by authorised institution and inspection (June).
	September/October	Second official control by authorised institution and inspection. Plot selection, soil analysis, soil precultivation (plot for 2nd season)
	October/December	Taking out the plants from soil, classifying and replanting the 1st class of plants on the new plot for the 2nd season.
2nd growing season	January/February	Shortening of plants on 70 cm above ground level.
	April–September	Tying of plants to bamboo or wire.  Maintaining of the site and plants (irrigation, soil cultivation, fertigation, pest control and protection).  1st official control by authorised institution and inspection (June).

### T3 – 2-year-old grafted fruit plants production process (branched 'Knip-baum' plants)

September/October	2nd official control by authorised institution and inspection. Defoliation treatments. Labelling.
October to December	Taking out the young plants from soil, shaking the soil from roots, ranking for storage or delivering, washing, packaging, transportation.

#### 3.3.4. Pest monitoring during production

According to the Dossier regular control of production in nurseries is carried out twice a year based on the Law on Planting Material and Plant Health Law.

The first official supervision of plants, rootstocks and mother trees is performed during the vegetation from mid-June to the end of July.

The second official supervision is performed before the uprooting of plants and rootstocks (autumn–early winter), and for mother trees before removing the scions.

Plant health inspections of propagating material are carried out during the growing season to determine the presence of disease and pests at a time when the symptoms can be observed and recorded.

Additionally, when establishing new nurseries, the inspection of the site is carried out regarding the spatial isolation conditions and soil analysis for the presence of harmful nematodes that may cause economic loss.

All plants are produced only in registered nurseries under official inspections.

The sanitary status of the fruit plants is controlled by the producers, by the authorised institutions, as well as via official inspection controls.

The whole production process is under official control and there are official records of the production surveillance. The procedures and protocols for the commodity – Apple planting material are in line with EPPO Standards PM 4/27 (1) – certification scheme on pathogen-tested material of *Malus*, *Pyrus* and *Cydonia*; PM 3/76 (1) Trees of *Malus*, *Pyrus*, *Cydonia* and *Prunus* spp. – inspection of places of production and PM 3/72 (1) – Elements common to inspection of places of production, area-wide surveillance, inspection of consignments and lot identification.

The authorised person must, on the basis of a visual inspection, check that the propagating material is free from harmful organisms and diseases that affect quality and whether there are signs or symptoms of such organisms and diseases that reduce the use value of propagating material and fruit plants.

The authorised person carefully walks between the rows of plants and looks for the symptoms of harmful organisms and diseases, then records the number of plants on which the symptoms of harmful organisms and diseases have been noticed.

#### 3.3.5. Post-harvest processes and export procedure

The post-harvest and export procedure usually takes place between October and December, when young plants are taken out from the field. Soil is removed from roots by shaking, plants are ranked for storage or delivering, washed and packed.

The planting material during transport and in the store is kept in conditions (rack, refrigeration, etc.) to preserve its quality and protect from damage. Planting material intended for export is packed either individually or in bundles of 10 pieces, and the root of each bundle is protected with plastic film. Seedlings for export are transported in closed trunks.

## 4. Identification of pests potentially associated with the commodity

The search for potential pests associated to *M. domestica* (old name *M. pumila*) and *M. sylvestris* rendered 1,996 species (see Microsoft Excel<sup>®</sup> file in Appendix B).

### 4.1. Selection of relevant EU-quarantine pests associated with the commodity

The EU listing of union quarantine pests and protected zone quarantine pests (Commission Implementing Regulation (EU) 2019/2072) is based on assessments concluding that the pests can enter, establish, spread and have potential impact in the EU.

A total of 56 EU-quarantine species that are reported to use *M. domestica* and/or *M. sylvestris* as host plants were evaluated (Table 4) for their relevance of being included in this opinion.

The relevance of an EU-quarantine pest for this opinion was based on evidence that:

- a) the pest is present in Bosnia and Herzegovina.
- b) *M. domestica* and/or *M. sylvestris* is a host of the pest.
- c) one or more life stages of the pest can be associated with the specified commodity.

Pests that fulfilled all criteria were selected for further evaluation.

Table 4 presents an overview of the evaluation of the 56 EU-quarantine pest species that are reported to use *M. domestica* and/or *M. sylvestris* as a host; they were included in the Dossier submitted by Ministry of Foreign Trade and Economic Relations, Administration of Bosnia and Herzegovina for Plant Health Protection in regards of their relevance for this Opinion.

One species (*Erwinia amylovora*) known to use *M. domestica* as host, associated with the commodity and present in Bosnia and Herzegovina, was selected for further evaluation.

Since special requirements or emergency measures are specified for *M. domestica* with regards to *E. amylovora*, in Appendix X, item 9 of Commission Implementing Regulation (EU) 2019/2072 the evaluation for this pest consisted of checking whether or not the exporting country applies these measures.

**Table 4:** Overview of the evaluation of the 56 EU-quarantine pest species known to use *M. domestica* and/or *M. sylvestris* as a host plant for their relevance for this opinion

No.	Pest name according to EU legislation <sup>(a)</sup>	EPPO code	Group	Pest present in Bosnia and Herzegovina	<i>Malus domestica</i> and/or <i>M. sylvestris</i> confirmed as a host (reference)	Pest can be associated with the commodity <sup>(b)</sup>	Pest relevant for the opinion
1	<i>Acleris minuta</i>	ACLRMI	Insects	No	EPPO, CABI	NA	No
2	<i>Anastrepha ludens</i>	ANSTLU	Insects	No	EPPO, CABI	NA	No
3	<i>Anastrepha serpentina</i> as <i>Anastrepha</i> spp.	ANSTSE	Insects	No	EPPO, CABI	NA	No
4	<i>Anoplophora chinensis</i>	ANOLCN	Insects	No	EPPO, CABI	NA	No
5	<i>Anoplophora glabripennis</i>	ANOLGL	Insects	No	EPPO, CABI	NA	No
6	<i>Anthonomus quadrigibbus</i>	TACYQU	Insects	No	EPPO, CABI	NA	No
7	Apple fruit crinkle viroid	AFCVD0	Viroids	No data	PC, EPPO	NA	No
8	Apple necrotic mosaic virus	APNMV0	Viruses	No	EPPO, CABI, PC	NA	No
9	<i>Apriona cinerea</i>	APRICI	Insects	No	EPPO	NA	No
10	<i>Apriona germari</i>	APRIGE	Insects	No	EPPO	NA	No
11	<i>Bactrocera dorsalis</i>	DACUDO	Insects	No	EPPO, CABI	NA	No
12	<i>Bactrocera jarvisi</i> as <i>Bactrocera</i> spp.	BCTRJA	Insects	No	CABI	NA	No
13	<i>Bactrocera neohumeralis</i> as <i>Bactrocera</i> spp.	BCTRNE	Insects	No Data	CABI	NA	No
14	<i>Bactrocera tryoni</i> as <i>Bactrocera</i> spp.	DACUTR	Insects	No	EPPO, CABI	NA	No
15	<i>Bactrocera zonata</i>	DACUZO	Insects	No	EPPO, CABI	NA	No
16	<i>Botryosphaeria kuwatsukai</i>	PHYOPI	Fungi	No	EPPO	NA	No
17	<i>Carposina sasakii</i>	CARSSA	Insects	No	EPPO, CABI	NA	No
18	<i>Ceratitis quilicii</i> as <i>Ceratitis</i> spp.	CERTQI	Insects	No	EPPO	NA	No
19	<i>Ceratitis rosa</i> as <i>Ceratitis</i> spp.	CERTRO	Insects	No	EPPO, CABI	NA	No
20	Cherry rasp leaf virus	CRLV00	Viruses	No	PC, CABI, EPPO	NA	No
21	<i>Conotrachelus nenuphar</i>	CONHNE	Insects	No	EPPO, CABI	NA	No
22	<i>Cryphonectria parasitica</i>	ENDOPA	Fungi	Yes	CABI	No	No
23	<i>Erwinia amylovora</i>	ERWIAM	Bacteria	Yes	EPPO, CABI, Dossier	Yes	Yes
24	<i>Eurhizococcus brasiliensis</i>	EURHBR	Insects	No Data	CABI	NA	No
25	<i>Grapholita inopinata</i>	CYDIIN	Insects	No	EPPO, CABI	NA	No
26	<i>Grapholita packardii</i>	LASPPA	Insects	No	EPPO, CABI	NA	No
27	<i>Grapholita prunivora</i>	LASPPR	Insects	No	EPPO, CABI	NA	No

No.	Pest name according to EU legislation <sup>(a)</sup>	EPPO code	Group	Pest present in Bosnia and Herzegovina	<i>Malus domestica</i> and/or <i>M. sylvestris</i> confirmed as a host (reference)	Pest can be associated with the commodity <sup>(b)</sup>	Pest relevant for the opinion
28	<i>Gymnosporangium asiaticum</i> as <i>Gymnosporangium</i> spp.	GYMNAS	Fungi	No	EPPO	NA	No
29	<i>Gymnosporangium clavipes</i> as <i>Gymnosporangium</i> spp.	GYMNCL	Fungi	No	EPPO, CABI	NA	No
30	<i>Gymnosporangium globosum</i> as <i>Gymnosporangium</i> spp.	GYMNGL	Fungi	No	EPPO, CABI	NA	No
31	<i>Gymnosporangium juniperi-virginianae</i> as <i>Gymnosporangium</i> spp.	GYMNJV	Fungi	No	EPPO, CABI	NA	No
32	<i>Gymnosporangium yamadae</i> as <i>Gymnosporangium</i> spp.	GYMNYA	Fungi	No	EPPO, CABI	NA	No
33	<i>Homalodisca vitripennis</i>	HOMLTR	Insects	No	EPPO	NA	No
34	<i>Lopholeucaspis japonica</i>	LOPLJA	Insects	No	EPPO, CABI, Scalenet	NA	No
35	<i>Lycorma delicatula</i>	LYCMDE	Insects	No	EPPO	NA	No
36	<i>Margarodes greeni</i>	MARGGR	Insects	No	EPPO	NA	No
37	<i>Margarodes vitis</i>	MARGVI	Insects	No	EPPO	NA	No
38	<i>Naupactus leucoloma</i>	GRAGLE	Insects	No	EPPO	NA	No
39	<i>Oemona hirta</i>	OEMOHI	Insects	No	EPPO, CABI	NA	No
40	<i>Phyllosticta solitaria</i>	PHYSSL	Fungi	No	EPPO, CABI	NA	No
41	<i>Phymatotrichopsis omnivora</i>	PHMPOM	Fungi	No	EPPO, CABI	NA	No
42	<i>Popillia japonica</i>	POPIJA	Insects	No	EPPO	NA	No
43	<i>Prodiplosis longifila</i>	PRDILO	Insects	No	EPPO	NA	No
44	<i>Rhagoletis pomonella</i>	RHAGPO	Insects	No	EPPO, CABI	NA	No
45	<i>Saperda candida</i>	SAPECN	Insects	No	EPPO	NA	No
46	<i>Scirtothrips aurantii</i>	SCITAU	Insects	No data		NA	No
47	<i>Scirtothrips dorsalis</i>	SCITDO	Insects	No	CABI	NA	No
48	<i>Spodoptera eridania</i>	PRODER	Insects	No	EPPO, CABI	NA	No
49	<i>Spodoptera frugiperda</i>	LAPHFR	Insects	No	EPPO, CABI	NA	No
50	<i>Spodoptera litura</i>	PRODLI	Insects	No	Lepidopteran database, CABI	NA	No
51	Temperate fruit decay-associated virus	TFDAV0	Viruses	No Data	PC	NA	No
52	Tobacco ringspot virus	TRSV00	Viruses	No	EPPO, PC	NA	No

No.	Pest name according to EU legislation <sup>(a)</sup>	EPPO code	Group	Pest present in Bosnia and Herzegovina	<i>Malus domestica</i> and/or <i>M. sylvestris</i> confirmed as a host (reference)	Pest can be associated with the commodity <sup>(b)</sup>	Pest relevant for the opinion
53	Tomato ringspot virus	TORSV0	Viruses	No	PC, CABI	NA	No
54	<i>Trirachys sartus</i>	AELSSA	Insects	No	EPPO, CABI	NA	No
55	<i>Xiphinema americanum sensu stricto</i>	XIPHAA	Nematode	No Data		NA	No
56	<i>Xiphinema rivesi</i> (non-EU populations)	XIPHRI	Nematode	No	CABI	NA	No

(a): Commission Implementing Regulation (EU) 2019/2072.

(b): NA – Not assessed.

## 4.2. Selection of other relevant pests (non-regulated in the EU) associated with the commodity

The information provided by Bosnia and Herzegovina, integrated with the search EFSA performed, was evaluated in order to assess whether there are other potentially relevant pests of *M. domestica* present in the country of export. For these potential pests that are non-regulated in the EU, pest risk assessment information on the probability of entry, establishment, spread and impact is usually lacking. Therefore, these pests were also evaluated to determine their relevance for this opinion based on evidence that:

- a) the pest is present in Bosnia and Herzegovina;
- b) the pest is (i) absent or (ii) has a limited distribution in the EU;
- c) *M. domestica* and/or *M. sylvestris* is a host of the pest;
- d) one or more life stages of the pest can be associated with the specified commodity;
- e) the pest may have an impact in the EU.

Pest species were excluded from further evaluation when at least one of the conditions listed above (a–e) was not met. Details can be found in Appendix B (Microsoft Excel<sup>®</sup> file).

There were no pests that fulfilled the above listed criteria and consequently no pests were selected for further evaluation.

Based on the information collected, 1,942 potential pests (non-EU quarantine) known to be associated with the species commodity were evaluated for their relevance to this Opinion. The species were excluded from further evaluation when at least one of the conditions listed above (a–e) was not met. Details can be found in Appendix B (Microsoft Excel<sup>®</sup> file). None of the evaluated EU non-quarantine pests was selected for further evaluation.

## 4.3. Overview of interceptions

Data on the interception of harmful organisms on plants of *M. domestica* can provide information on some of the organisms that can be present on *M. domestica* despite the current measures taken. According to EUROPHYT, online (accessed on 20 April 2023) and TRACES, online (accessed on 28 July 2023) there were no interceptions of plants for planting of *M. domestica* from Bosnia and Herzegovina destined to the EU Member States due to presence of harmful organisms between the years 1998 and the 2023 (July).

## 5. Risk mitigation measures

Since the Panel did not identify any relevant pest associated with the evaluated commodity, the proposed risk mitigation measures were not further evaluated. However, an overview of the risk mitigation measures, as described in the Dossier, is reported in the following section.

### 5.1. Risk mitigation measures applied in Bosnia and Herzegovina

With the Dossier and additional information provided by Bosnia and Herzegovina, the Panel summarised the risk mitigation measures (see Table 5) that are proposed in the production nurseries.

**Table 5:** Overview of proposed risk mitigation measures for *Malus domestica* plants designated for export to the EU from Bosnia and Herzegovina

No.	Risk mitigation measure (name)	Implementation in Bosnia and Herzegovina
1	Certified material	Apple planting material can be produced only by a legal entity or entrepreneur. Producers keep all records of production and marketing for 5 years. If the propagating material meets the prescribed requirements the certificates on varieties purity and quality and plant health condition followed by Certificate on propagating material production are issued. In the case of planting material, it must be confirmed that the genus or type of material is correct and that the identity and purity are in accordance with the variety. Since it is difficult to determine this visually, the emphasis is on checking of the documentation on the origin of the material for reproduction.



No.	Risk mitigation measure (name)	Implementation in Bosnia and Herzegovina
2	Phytosanitary certificates	<p>The origin, quality and health status of plants and the origin and quantity of reproductive material used for plant production are controlled by field inspection (twice in the vegetation) and control of documentation in the nursery.</p> <p>Planting material may be placed on the market if it meets the requirements in terms of quality, prescribed category, health status (in accordance with the regulations on plant health); packaging and labelling. The producer is obliged to:</p> <ul style="list-style-type: none"> <li>– ensure that the planting material meets the prescribed requirements,</li> <li>– constantly monitor the production of planting material in accordance with the plan,</li> <li>– implement measures to ensure compliance of planting material with the prescribed requirements (especially with regard to maintenance of nursery areas and protection against harmful organisms),</li> <li>– keep records of supervision and implemented measures,</li> <li>– enable official or inspection control, allow sampling and inform the phytosanitary inspector on the occurrence or suspicion of the occurrence of quarantine harmful organisms at the place of production.</li> </ul>
3	Cleaning and disinfection of facilities, tools and machinery	No specific information on this measure is provided in the Dossier
4	Rouging and pruning	No specific information on this measure is provided in the Dossier
5	Pesticide application, biological and mechanical control	Pesticides are applied when needed according to regulations in BiH. Regular agro-technical measures, including the application of pesticides, are mandatory in the nurseries.
6	Surveillance and monitoring	<p>Apple planting material is under permanent surveillance and monitoring in all nurseries. The whole production process is under official control and there are official records of the production surveillance. The procedures and protocols for the commodity – Apple planting material are in line with EPPO Standards PM 4/27 (1) certification scheme on pathogen-tested material of <i>Malus</i>, <i>Pyrus</i> and <i>Cydonia</i>; PM 3/76 (1) Trees of <i>Malus</i>, <i>Pyrus</i>, <i>Cydonia</i> and <i>Prunus</i> spp. – inspection of places of production, and PM 3/72 (1) – Elements common to inspection of places of production, area-wide surveillance, inspection of consignments and lot identification.</p> <p>Two official controls are performed on apple planting material, both by authorised institution and phytosanitary inspection. The first official supervision of plants, rootstocks and mother trees is performed during the vegetation from mid-June to the end of July. The second official supervision is performed before the uprooting of plants and rootstocks (autumn-early winter), and for mother trees before removing the scions from the mother trees. Plant health inspections of propagating material are carried out during the growing season to determine the presence of disease and pests at time when the symptoms can be observed and recorded.</p> <p>The first official inspection checks the documentation on the origin of the material used for the declared production, and the visual inspection and assessment checks the declared quantity with the actual situation in the field, as well as the general condition of the planting material in the field.</p> <p>During the last official control, the quantity of planting material by species, varieties, clones (if necessary), rootstocks and categories that meet the conditions for placing on the market is determined by counting, either the whole quantity or a certain percentage determined by the principle of a representative sample, and these data are entered in the record.</p>

No.	Risk mitigation measure (name)	Implementation in Bosnia and Herzegovina
7	Sampling and laboratory testing	<p>Authorised phytosanitary laboratories perform sampling and laboratory testing for the presence of harmful organisms in accordance with the general need and special monitoring programs. Regular reporting on performed activities is carried out within the time limits prescribed by the annual programmes, and extraordinary reporting in case of detection of the presence of a harmful organism is performed in accordance with the rulebook, after which the Ministry and phytosanitary inspection are notified.</p> <p>Harmful organisms are monitored by:</p> <ul style="list-style-type: none"> <li>– visual inspection of plants during field visits;</li> <li>– using traps;</li> <li>– laboratory observations;</li> <li>– using computer forecasting models.</li> </ul> <p>Alerts on the presence of observed harmful organisms are disseminated through the website of the Department.</p> <p>After finishing the laboratory testing, the laboratory issues a Report on laboratory analysis with a specific unique number and date and submits the Report to the competent inspector or authorised person who signed the Order.</p> <p>For certain harmful organisms, in case of suspicion of their presence, the authorised Laboratory issues an Emergency Report on suspected occurrence and submits the Report to the competent Inspector. A copy of this Report is urgently sent to the Ministry, which is responsible to inform the BIH Administration.</p> <p>After completion of the confirmation test, the Laboratory issues a final Report on confirmation test and submits it to the competent inspector, and additionally a final Report on confirmation test, with photos and a description of methodology, is sent to responsible Ministry.</p> <p>Authorised laboratories also co-operate in the preparation and implementation of surveys of harmful organisms.</p>
8	Root washing	After uprooting
9	Refrigeration and temperature control	After grafting in February plants are placed in cold storage until planting in March–April
10	Pre-consignment inspection	The authorised person must, on the basis of a visual inspection, check that the propagating material of fruit and fruit seedlings is free from harmful organisms and diseases that affect quality, and whether there are signs or symptoms of such organisms and diseases.

## 5.2. Evaluation of the application of specific measures in Bosnia and Herzegovina

Annex X of the Commission Implementing Regulation (EU) 2019/2072 specifies a list of plants, plant products and other objects, originating from third countries, along with the corresponding special requirements for their introduction into the Union's territory or Protected Zones.

According to the above mentioned Annex special measures are required for the import of the commodity from Bosnia and Herzegovina related to *E. amylovora*. As presented in the Dossier, including the supplementary information, the Panel concludes that the exporting country does not fully meet the specific requirements for a certificate regarding *E. amylovora*. At least two inspections are mentioned, and the timing could be interpreted as the 'most appropriate time', though not in full agreement with the timeframes mentioned in the legislation.

Details of the buffer zone were uncertain, and it remains unclear whether it was officially designated, and if it fulfils the minimum size requirement of 50 km<sup>2</sup>. Additionally, information regarding testing for latent infections was lacking.

Given the fact that *E. amylovora* is present in BIH and there are no pest free areas in BIH the Panel assumes that the exported material has to fulfil option (d) of Annex X point 9:

(d) the plants have been produced, or, if moved into a 'buffer zone', kept and maintained for a period of at least 7 months, including the period from 1 April to 31 October of the last complete cycle of vegetation, on a field:

(i) located at least 1 km inside the border of an officially designated 'buffer zone' of at least 50 km<sup>2</sup>, where host plants are subject to an officially approved and supervised control regime established at the latest before the beginning of the complete cycle of vegetation, preceding the last complete cycle of vegetation, with the object of minimising the risk of *E. amylovora* (Burr.) Winsl. et al. being spread from the plants grown there,

(ii) which has been officially approved, as well as the 'buffer zone', before the beginning of the complete cycle of vegetation preceding the last complete cycle of vegetation, for the cultivation of plants under the requirements laid down in this point;

(iii) which, as well as the surrounding zone of a width of at least 500 m, has been found free from *E. amylovora* (Burr.) Winsl. et al. since the beginning of the last complete cycle of vegetation, at official inspection carried out at least: – twice in the field at the most appropriate time, i.e. once in the period from June to August and once from August to November; and – once in the said surrounding zone at the most appropriate time, i.e. from August to November and

(iv) from which plants were officially tested for latent infections in accordance with an appropriate laboratory method on samples officially drawn at the most appropriate period.

In the dossier details on the implementation of the buffer zone are not provided and it remains unclear whether it was officially designated, and if it fulfils the minimum size requirement of 50 km<sup>2</sup> (as required in point d(i)).

In the dossier it is stated that at least two inspections are carried out. It is uncertain if these inspections are carried out at the 'most appropriate time', as specified in point d iii of the legislation. Additionally, information regarding testing for latent infections was lacking (point d iv).

As presented in the Dossier, including the supplementary information, the Panel concludes that the exporting country does not fully meet the specific requirements as specified in Annex X point 9 regarding *E. amylovora*.

## 6. Conclusions

After a thorough analysis of the Dossier on *M. domestica*, the Panel concludes that one pest is identified to be present in Bosnia and Herzegovina and considered to be potentially associated with single or bundled bare root plants of *M. domestica* imported from Bosnia and Herzegovina and relevant for the EU.

The Panel concludes that for *E. amylovora*, the exporting country does not meet the specific requirements for a certificate regarding this pest.

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## Abbreviations

BiH	Bosnia and Herzegovina
CABI	Centre for Agriculture and Bioscience International
EKE	Expert Knowledge Elicitation
EPPO	European and Mediterranean Plant Protection Organization
FAO	Food and Agriculture Organization
FUN	Fungi
INS	Insect
ISPM	International Standards for Phytosanitary Measures
NEM	Nematode
PLH	Plant Health
PRA	Pest Risk Assessment
RNQPs	Regulated Non-Quarantine Pests

## Glossary

Control (of a pest)	Suppression, containment or eradication of a pest population (FAO, 1995, 2023).
Entry (of a pest)	Movement of a pest into an area where it is not yet present, or present but not widely distributed and being officially controlled (FAO, 2023).
Establishment (of a pest)	Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO, 2023).
Impact (of a pest)	The impact of the pest on the crop output and quality and on the environment in the occupied spatial units.
Introduction (of a pest)	The entry of a pest resulting in its establishment (FAO, 2023).
Measures	Control (of a pest) is defined in ISPM 5 (FAO 2023) as 'Suppression, containment or eradication of a pest population' (FAO, 1995). Control measures are measures that have a direct effect on pest abundance. Supporting measures are organisational measures or procedures supporting the choice of appropriate risk mitigation measures that do not directly affect pest abundance.
Pathway	Any means that allows the entry or spread of a pest (FAO, 2023).
Phytosanitary measures	Any legislation, regulation or official procedure having the purpose to prevent the introduction or spread of quarantine pests or to limit the economic impact of regulated non-quarantine pests (FAO, 2023).
Protected zone	A Protected zone is an area recognised at EU level to be free from a harmful organism, which is established in one or more other parts of the Union.
Quarantine pest	A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled (FAO, 2023).
Regulated non-quarantine pest	A non-quarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact and which is therefore regulated within the territory of the importing contracting party (FAO, 2023).
Risk mitigation measure	A measure acting on pest introduction and/or pest spread and/or the magnitude of the biological impact of the pest should the pest be present. A risk mitigation measure may become a phytosanitary measure, action or procedure according to the decision of the risk manager.
Spread (of a pest)	Expansion of the geographical distribution of a pest within an area (FAO, 2023).

## Appendix A – Web of Science All Databases Search String

In the table below the search string used in Web of Science is reported. In total, 412 papers were retrieved. Titles and abstracts were screened, and 17 pests were added to the list of pests (see Appendix B).

Web of Science All databases	<p>TOPIC:</p> <p>#1 ("Malus domestica" OR "M. Domestica" OR "apple tree\$")          #1("Malus sylvestris" OR "M. sylvestris" OR "crab apple tree\$")          #1 ("Malus pumila" OR "M. pumila" OR "apple tree\$")</p> <p>AND</p> <p>TOPIC:</p> <p>AND #2 for Nematodes          (pathogen* OR nematod* OR damag* OR vector OR "root knot" OR "root-knot" OR root tip OR cyst\$ OR "dagger" OR "plant parasitic" OR "root feeding" OR "root\$ feeding" OR "plant \$parasitic" OR "root lesion\$" OR damage\$ OR infestation\$ OR symptom* OR pest\$ OR disease\$ OR infecti*)</p> <p>AND #2 for Bacteria&amp;Phytoplasmas          (pathogen* OR pathogenic bacteria OR mycoplasma* OR bacteri* OR phytoplasma* OR disease\$ OR infecti* OR damag* OR symptom* OR pest\$ OR host plant\$ OR host-plant\$ OR host OR decline\$ OR dieback* OR die back*OR die-back*OR wilt\$ OR wilted OR canker OR witch* OR yellowing OR leafroll OR bacterial gall OR crown gall OR spot OR blast)</p> <p>AND #2 for Fungi          ("pathogen*" OR "fung*" OR "oomycet*" OR "myce*" OR "disease\$" OR "infecti*" OR "damag*" OR "symptom*" OR "pest\$" OR "vector" OR "host plant\$" OR "host-plant\$" OR "host" OR "root lesion\$" OR "decline\$" OR "infestation\$" OR "damage\$" OR "dieback*" OR "die back*" OR "die-back*" OR "blight\$" OR "wilt\$" OR "wilted" OR "canker" OR "scab\$" OR "rot" OR "rots" OR "rotten" OR "damping off" OR "damping-off" OR "smut" OR "mould" OR "mold")</p> <p>AND #2 for Insects&amp;Mites          (insect\$ OR mite\$ OR malaise OR aphid\$ OR curculio OR thrip\$ OR cicad\$ OR miner\$ OR borer\$ OR weevil\$ OR "plant bug\$" OR spittlebug\$ OR moth\$ OR mealybug\$ OR cutworm\$ OR pillbug\$ OR "root feeder\$" OR caterpillar\$ OR "foliar feeder\$" OR "root feeder\$")</p> <p>AND #2 for Viruses&amp;Viroids          (pathogen* OR virus* OR viroid* OR disease\$ OR infecti* OR damag* OR symptom* OR pest \$ OR decline\$ OR infestation\$ OR damage\$ OR virosis OR canker OR blister\$ OR mosaic OR "leaf curl" OR "latent")</p> <p>NOT</p> <p>TOPIC:</p> <p>("diabet*" OR "heavy metal\$" OR "pollut*" OR "weather" OR "propert*" OR "probes" OR "spectr*" OR "antioxidant\$" OR "transformation" OR "musca" OR "RNA" OR "musca domestica" OR "peel" OR "resistance" OR "gene" OR "DNA" OR "secondary plant metabolite\$" OR "metabolite\$" OR "catechin" OR "epicatechin" OR "rutin" OR "phloridzin" OR "chlorogenic acid" OR "caffeic acid" OR "phenolic compounds" OR "quality" OR "appearance" OR "postharvest" OR "antibacterial" OR "abiotic" OR "storage" OR "pollin*" OR "ethylene" OR "thinning" OR "fertil*" OR "mulching" OR "nutrient\$" OR "pruning" OR "human virus" OR "animal disease\$" OR "plant extracts" OR "immunological" OR "purified fraction" OR "traditional medicine" OR "medicine" OR "mammal\$" OR "bird\$" OR "human disease\$")</p> <p>NOT</p> <p>TOPIC:</p> <p>("Abraxas grossulariata" OR "Absidia macrospora" OR "Acanalonia conica" OR "Acanthococcus lagerstroemiae" OR "Acanthopsyche bipars" OR "Acetobacter aceti" OR "Acetobacter pasteurianus" OR "Acherontia atropos" OR "Achlya conspicua" OR "Acleris cristana" OR "Acleris fimbriana" OR "Acleris lipsiana" OR "Acleris minuta" OR "Acleris rhombana" OR "Acleris senescens" OR "Acleris variegana" OR "Acremonium charticola" OR "Acremonium kiliense" OR</p>
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"Acremonium mali" OR "Acremonium sclerotigenum" OR "Acrobasis indigenella" OR "Acrobasis obtusella" OR "Acrobasis tricolorella" OR "Acrocercops malicola" OR "Acrionicta alni" OR "Acrionicta psi" OR "Acrionicta rumicis" OR "Acrionicta tridens" OR "Actias artemis" OR "Actias selene" OR "Aculus schlechtendali" OR "Adalia decempunctata" OR "Adoretus versutus" OR "Adoxophyes orana" OR "Adoxophyes orana fasciata" OR "Aeolothrips collaris" OR "Aglenchus whitus" OR "Aglia tau" OR "Agonum dorsale" OR "Agrilus mali" OR "Agriopsis bajaria" OR "Agriotes sputator" OR "Agrobacterium tumefaciens" OR "Agrotis ipsilon" OR "Agrotis segetum" OR "Allocotaphis quaestionis" OR "Allophytes oxyacanthae" OR "Alnetoidia alneti" OR "Alsophila aescularia" OR "Alternaria alternata" OR "Alternaria alternata f. sp. mali" OR "Alternaria arborescens" OR "Alternaria brassicae" OR "Alternaria dumosa" OR "Alternaria eureka" OR "Alternaria frumenti" OR "Alternaria grossulariae" OR "Alternaria humicola" OR "Alternaria infectoria" OR "Alternaria kordkuyana" OR "Alternaria mali" OR "Alternaria malicola" OR "Alternaria malorum" OR "Alternaria pomicola" OR "Alternaria tenuis" OR "Alternaria tenuissima" OR "Amara aulica" OR "Amaranthus blitum" OR "Amaranthus palmeri" OR "Ambrosiella hartigii" OR "Ampedus cinnabarinus" OR "Amphipyra pyramidea" OR "Amphitetranychus viennensis" OR "Amyeloides transitella" OR "Amylostereum sacratum" OR "Anacamptodes ephyraria" OR "Anarsia lineatella" OR "Anastrepha dissimilis" OR "Anastrepha fraterculus" OR "Anastrepha grandis" OR "Anastrepha ludens" OR "Anastrepha obliqua" OR "Anastrepha serpentina" OR "Anastrepha suspensa" OR "Anatis ocellata" OR "Ancyliis achatana" OR "Ancyliis tineana" OR "Anisandrus dispar" OR "Anomis flava" OR "Anophococcus insignis" OR "Anoplophora chinensis" OR "Anoplophora glabripennis" OR "Antaeotricha leucillana" OR "Antheraea assamensis" OR "Antheraea pernyi" OR "Antheraea polyphemus" OR "Antheraea roylei" OR "Anthocoris confusus" OR "Anthocoris nemoralis" OR "Anthonomus humeralis" OR "Anthonomus pedicularius" OR "Anthonomus piri" OR "Anthonomus pomorum" OR "Anthonomus quadrigibbus" OR "Antrodia serialis" OR "Anuraphis farfarae" OR "Aonidiella aurantii" OR "Apate monachus" OR "Aphanofalx mali" OR "Aphidunguis mali" OR "Aphis aurantii" OR "Aphis citricidus" OR "Aphis craccivora" OR "Aphis eugeniae" OR "Aphis fabae" OR "Aphis gossypii" OR "Aphis odinae" OR "Aphis pomi" OR "Aphis spiraeicola" OR "Aphis spiraeophaga" OR "Aphodius granarius" OR "Aphrodes bicinctus" OR "Aphthona euphorbiae" OR "Aploneura ampelina" OR "Aplosporella mali" OR "Apocheima cinerarium" OR "Apocheima pilosaria" OR "Apodachlya brachynema" OR "Apolypogon lucorum" OR "Aporia crataegi" OR "Aposphaeria fuscomaculans" OR "Apple associated luteovirus" OR "Apple chat fruit agent" OR "Apple chat fruit disease" OR "Apple chlorotic leaf spot virus" OR "Apple dimple fruit viroid" OR "Apple fruit crinkle viroid" OR "Apple geminivirus 1" OR "Apple green crinkle agent" OR "Apple green crinkle associated virus" OR "Apple green crinkle disease" OR "Apple green crinkle-associated virus" OR "Apple hammerhead viroid" OR "Apple hammerhead viroid RNA" OR "Apple hammerhead viroid-like circular RNA" OR "Apple latent spherical virus" OR "Apple luteovirus 1" OR "Apple mosaic virus" OR "Apple necrotic mosaic virus" OR "Apple ringspot agent" OR "Apple ringspot disease" OR "Apple rough skin agent" OR "Apple rubbery wood" OR "Apple rubbery wood agent" OR "Apple rubbery wood phytoplasma" OR "Apple rubbery wood virus 1" OR "Apple rubbery wood virus 2" OR "Apple scar skin viroid" OR "Apple scar skin viroid-C" OR "Apple star crack agent" OR "Apple stem grooving virus" OR "Apple stem pitting virus" OR "Apricot latent virus" OR "Apriona cinerea" OR "Apriona germari" OR "Apriona rugicollis" OR "Apterona crenulella" OR "Apterygida albipennis" OR "Aptus mirmicoides" OR "Archips argyrospila" OR "Archips argyrospilus" OR "Archips breviplicanus" OR "Archips crataeganus" OR "Archips fuscocupreanus" OR "Archips podana" OR "Archips podanus" OR "Archips rosana" OR "Archips subsidiaria" OR "Archips termias" OR "Archips xylosteanus" OR "Arctia caja" OR "Argyresthia bonnetella" OR "Argyresthia conjugella" OR "Argyresthia curvella" OR "Argyresthia ivella" OR "Argyrotaenia citrana" OR "Argyrotaenia ljungiana" OR "Argyrotaenia velutinana" OR "Aristotelia pudibundella" OR "Armiliaria mellea" OR "Armillaria limonea" OR "Armillaria luteobubalina" OR "Armillaria mellea" OR "Armillaria novae-zelandiae" OR "Armillaria tabescens" OR "Armillariella mellea" OR "Armillariella tabescens" OR "Ascochyta mali" OR "Ascochyta malvicola" OR "Ascochyta piricola" OR "Ascochyta pirina" OR "Ascochyta pyricola" OR "Aspergillus awamori" OR "Aspergillus clavatus" OR "Aspergillus elegans" OR "Aspergillus flavus" OR "Aspergillus foetidus" OR "Aspergillus fumigatus" OR "Aspergillus niger" OR "Aspergillus sclerotiorum" OR "Aspergillus terreus" OR "Aspergillus ustus" OR "Aspergillus versicolor" OR "Aspergillus wentii" OR "Aspidiotus nerii" OR "Astala confederata" OR "Asterococcus muratae" OR "Asteromella mali" OR "Asteromella pomi" OR "Asymmetrasca decedens" OR "Athelia bombacina" OR "Athelia rolfsii" OR "Athous haemorrhoidalis" OR "Atractotomus mali" OR "Aulacaspis rosae" OR "Aulacorthum solani" OR "Aurantiporus fissilis" OR "Aureobasidium pullulans" OR "Auricularia mesenterica" OR "Auriculariopsis ampla" OR "Automeris io io" OR "Automeris zephyria" OR "Bacchisa fortunei" OR "Bacillus cereus" OR

"*Bacillus subtilis*" OR "*Bactrocera aquilonis*" OR "*Bactrocera dorsalis*" OR "*Bactrocera jarvisi*" OR "*Bactrocera neohumeralis*" OR "*Bactrocera tryoni*" OR "*Bactrocera zonata*" OR "*Bagrada hilaris*" OR "*Basidioradulum radula*" OR "*Basilarchia archippus*" OR "*Basilarchia arthemis*" OR "*Basilarchia lorquini*" OR "*Batia lunaris*" OR "*Batia unitella*" OR "*Bemisia tabaci*" OR "*Berkeleyomyces basicola*" OR "*Berkleasium moriforme*" OR "*Bionectria ochroleuca*" OR "*Biscogniauxia mandshurica*" OR "*Biscogniauxia marginata*" OR "*Biscogniauxia repanda*" OR "*Bispora antennata*" OR "*Bjerkandera adusta*" OR "*Blackberry chlorotic ringspot virus*" OR "*Blastobasis decolorella*" OR "*Blastodacna atra*" OR "*Blastodacna vinolentella*" OR "*Boeremia exigua* var. *exigua*" OR "*Bohemannia pulverosella*" OR "*Bonagota salubricola*" OR "*Boreostereum radiatum*" OR "*Botryodiplodia juglandicola*" OR "*Botryodiplodia malorum*" OR "*Botryodiplodia theobromae*" OR "*Botryosphaeria berengeriana*" OR "*Botryosphaeria berengeriana* f.sp. *pyricola*" OR "*Botryosphaeria dothidea*" OR "*Botryosphaeria iberica*" OR "*Botryosphaeria kuwatsukai*" OR "*Botryosphaeria lutea*" OR "*Botryosphaeria obtusa*" OR "*Botryosphaeria parva*" OR "*Botryosphaeria prava*" OR "*Botryosphaeria quercuum*" OR "*Botryosphaeria ribis*" OR "*Botryosphaeria ribis* f. *chromogena*" OR "*Botryosphaeria ribis* var. *chromogena*" OR "*Botryosphaeria rosaceae*" OR "*Botryosphaeria sarmentorum*" OR "*Botryosphaeria sinensis*" OR "*Botryosphaeria sinensis*" OR "*Botryosphaeria stevensii*" OR "*Botryotinia fuckeliana*" OR "*Botrytis cinerea*" OR "*Botrytis mali*" OR "*Brachionycha sphinx*" OR "*Brachycaudus cardui*" OR "*Brachycaudus helichrysi*" OR "*Brahmina coriacea*" OR "*Brevipalpus californicus*" OR "*Brevipalpus obovatus*" OR "*Brevipalpus phoenicis*" OR "*Bryobia angustisetis*" OR "*Bryobia giannitsensis*" OR "*Bryobia graminum*" OR "*Bryobia graminum*" OR "*Bryobia macedonica*" OR "*Bryobia piliensis*" OR "*Bryobia praetiosa*" OR "*Bryobia rubrioculus*" OR "*Bryobia ulmophila*" OR "*Bryobia vasiljevi*" OR "*Bucculatrix pomifoliella*" OR "*Burkholderia cepacia*" OR "*Butlerelfia eustacei*" OR "*Byturus tomentosus*" OR "*Cacoecimorpha pronubana*" OR "*Cacopsylla mali*" OR "*Cacopsylla melanoneura*" OR "*Cacopsylla picta*" OR "*Cacopsylla pyrisuga*" OR "*Cactodera chaubattia*" OR "*Cadophora luteo-olivacea*" OR "*Cadophora malorum*" OR "*Cadophora novi-eboraci*" OR "*Cadra cautella*" OR "*Caliroa cerasi*" OR "*Callisto coffeella*" OR "*Callisto denticulella*" OR "*Calliteara horsfieldii*" OR "*Calliteara pudibunda*" OR "*Calonectria kyotensis*" OR "*Calonectria morganii*" OR "*Caloptilia zachrysa*" OR "*Calothyriopsis mali*" OR "*Camarosporium karstenii*" OR "*Camarosporium mali*" OR "*Camarosporium multifforme*" OR "*Campylomma verbasci*" OR "*Candidatus Liberibacter europaeus*" OR "*Candidatus Phytoplasma asteris*" OR "*Candidatus Phytoplasma mali*" OR "*Candidatus Phytoplasma pruni*" OR "*Candidatus Phytoplasma solani*" OR "*Candidula intersecta*" OR "*Cantharis lateralis*" OR "*Cantharis livida*" OR "*Cantharis rustica*" OR "*Capnodium citri*" OR "*Carcina quercana*" OR "*Carnation mottle virus*" OR "*Carnation ringspot virus*" OR "*Carpophilus mutilatus*" OR "*Carposina sasakii*" OR "*Cenangium tuberculiforme*" OR "*Cenopalpus pulcher*" OR "*Cephalosporium carpogenum*" OR "*Cephalosporium roseum*" OR "*Cephalothecium roseum*" OR "*Cerambyx cerdo*" OR "*Cerambyx scopoli*" OR "*Ceratitis capitata*" OR "*Ceratitis malgassa*" OR "*Ceratitis quilicii*" OR "*Ceratitis rosa*" OR "*Ceratostomella mali*" OR "*Cercospora beticola*" OR "*Cercospora hyalina*" OR "*Cercospora mali*" OR "*Cercospora malvarum*" OR "*Cercospora pyri*" OR "*Ceresa alta*" OR "*Ceroplastes ceriferus*" OR "*Ceroplastes eugeniae*" OR "*Ceroplastes floridensis*" OR "*Ceroplastes japonicus*" OR "*Ceroplastes pseudoceriferus*" OR "*Ceroplastes rubens*" OR "*Cerrena unicolor*" OR "*Cerura vinula*" OR "*Chaetocnema aridula*" OR "*Chaetocnema confinis*" OR "*Chaetocnema hortensis*" OR "*Chaetomium funicola*" OR "*Chaetomium globosum*" OR "*Chaetomium trilaterale*" OR "*Chaetosphaeronema coonsii*" OR "*Chalastospora gossypii*" OR "*Cheiomycella chomatospora*" OR "*Cherry leaf roll virus*" OR "*Cherry necrotic rusty mottle virus*" OR "*Cherry rasp leaf virus*" OR "*Chilecomadia valdiviana*" OR "*Chilocorus renipustulatus*" OR "*Chinavia hilaris*" OR "*Chionaspis furfura*" OR "*Chlidaspis asiatica*" OR "*Chloroclysta siterata*" OR "*Chloroclystis rectangulata*" OR "*Chloroclystis v-ata*" OR "*Chondrostereum purpureum*" OR "*Choreutis melophaga*" OR "*Choreutis pariana*" OR "*Choristoneura rosaceana*" OR "*Chrysobothris femorata*" OR "*Chrysobothris mali*" OR "*Chrysomphalus aonidum*" OR "*Chrysomphalus dictyospermi*" OR "*Chrysoperla carnea*" OR "*Chrysoperla harrisii*" OR "*Chymomyza amoena*" OR "*Cicinobolus humuli*" OR "*Cilix glaucata*" OR "*Cirsium arvense*" OR "*Cistella mali*" OR "*Cladosporium carpophilum*" OR "*Cladosporium cladosporioides*" OR "*Cladosporium dendriticum*" OR "*Cladosporium elatum*" OR "*Cladosporium elegantulum*" OR "*Cladosporium fumago*" OR "*Cladosporium herbarum*" OR "*Cladosporium macrocarpum*" OR "*Cladosporium malorum*" OR "*Cladosporium potebniae*" OR "*Cladosporium pseudocladosporioides*" OR "*Cladosporium sphaerospermum*" OR "*Cladosporium stenosporum*" OR "*Cladosporium transchelii* var. *viridi-olivacearum*" OR "*Clarkeulia bourquini*" OR "*Clathrospora diplospora*" OR "*Cleorodes lichenaria*" OR "*Cleopsis consimilana*" OR "*Cleopsis spectrana*" OR "*Climacodon septentrionalis*" OR "*Clitocybe monadelpha*" OR "*Clitocybe tabescens*" OR "*Clonostachys*"

rosea" OR "Clover yellow mosaic virus" OR "Clytus arietis" OR "Cnephasia communana" OR "Cnephasia pasiuana" OR "Cnestus mutilatus" OR "Coccinella septempunctata" OR "Coccia comari" OR "Coccus hesperidum hesperidum" OR "Cochliobolus cynodontis" OR "Colaspis brunnea" OR "Coleophora anatipennella" OR "Coleophora coracipennella" OR "Coleophora hemerobiella" OR "Coleophora pruniella" OR "Coleophora prunifoliae" OR "Coleophora serratella" OR "Coleophora siccifolia" OR "Coleophora spinella" OR "Coleophora violacea" OR "Collarispora valgourgensis" OR "Colletotrichum acerbum" OR "Colletotrichum acutum" OR "Colletotrichum aenigma" OR "Colletotrichum alienum" OR "Colletotrichum asianum" OR "Colletotrichum clavatum" OR "Colletotrichum fioriniae" OR "Colletotrichum fragariae" OR "Colletotrichum fructi" OR "Colletotrichum fructicola" OR "Colletotrichum fructigenum" OR "Colletotrichum fructus" OR "Colletotrichum gloeosporioides" OR "Colletotrichum godetiae" OR "Colletotrichum kahawae" OR "Colletotrichum kahawae subsp. ciggaro" OR "Colletotrichum karsti" OR "Colletotrichum karstii" OR "Colletotrichum limetticola" OR "Colletotrichum melonis" OR "Colletotrichum noveboracense" OR "Colletotrichum nymphaeae" OR "Colletotrichum paranaense" OR "Colletotrichum rhombiforme" OR "Colletotrichum salicis" OR "Colletotrichum siamense" OR "Colletotrichum theobromicola" OR "Colletotrichum tropicale" OR "Collybia drucei" OR "Colocasia coryli" OR "Colotois pennaria" OR "Comstockaspis pernicioso" OR "Coniella fragariae" OR "Coniella musaiaensis var. hibisci" OR "Coniochaeta fasciculata" OR "Coniochaeta velutina" OR "Coniophora puteana" OR "Coniosporium mali" OR "Coniothecium chomatosporum" OR "Coniothyrium armeniacae" OR "Coniothyrium convolutum" OR "Coniothyrium cydoniae" OR "Coniothyrium fuckelii" OR "Coniothyrium olivaceum" OR "Coniothyrium pirinum" OR "Coniothyrium tirolense" OR "Conistra rubiginosa" OR "Conogethes punctiferalis" OR "Conoplea sphaerica" OR "Conotrachelus nenuphar" OR "Conyza bonariensis" OR "Conyza canadensis" OR "Cordana musae" OR "Coriolopsis gallica" OR "Coriolus hirsutus" OR "Coriolus velutinus" OR "Coriolus versicolor" OR "Coriolus zonatus" OR "Cornu aspersum" OR "Corticium centrifugum" OR "Corticium galactinum" OR "Corticium koleroga" OR "Corticium litschaueri" OR "Corticium salmonicolor" OR "Corticium stevensii" OR "Corticium utriculicum" OR "Coryneum foliicola" OR "Coryneum longistipitatum" OR "Corythucha arcuata" OR "Coslenchus areolatus" OR "Cosmia pyralina" OR "Cosmia trapezina" OR "Cossus cossus" OR "Cotinis nitida" OR "Crepidotus fulvotomentosus" OR "Crisiococcus matsumotoi" OR "Cristulariella moricola" OR "Crocallis elinguarua" OR "Croesia holmiana" OR "Cryptonectria parasitica" OR "Cryptoblabes gnidiella" OR "Cryptocoryneum condensatum" OR "Cryptosporiopsis corticola" OR "Cryptosporiopsis curvispora" OR "Cryptosporiopsis malicorticis" OR "Cryptosporiopsis perennans" OR "Ctenopseustis obliquana" OR "Cucumber mosaic virus" OR "Cucurbitaria acervata" OR "Cuscuta japonica" OR "Cydia janthinana" OR "Cydia lobarzewskii" OR "Cydia molesta" OR "Cydia pomonella" OR "Cydia prunivorana" OR "Cylindrocarpon album" OR "Cylindrocarpon angustum" OR "Cylindrocarpon candidum" OR "Cylindrocarpon decumbens" OR "Cylindrocarpon destructans" OR "Cylindrocarpon didymum" OR "Cylindrocarpon heteronema" OR "Cylindrocarpon heteronemum" OR "Cylindrocarpon liriodendri" OR "Cylindrocarpon macrodidymum" OR "Cylindrocarpon magnusianum" OR "Cylindrocarpon mali" OR "Cylindrocarpon obtusisporum" OR "Cylindrocarpon obtusiusculum" OR "Cylindrocarpon pauciseptatum" OR "Cylindrocladium floridanum" OR "Cylindrocladium scoparium" OR "Cylindrosporium pomi" OR "Cyphella marginata" OR "Cyphellophora sessilis" OR "Cystostereum murrayi" OR "Cytospora ambiens" OR "Cytospora calvillae" OR "Cytospora carphosperma" OR "Cytospora ceratosperma" OR "Cytospora chrysosperma" OR "Cytospora cincta" OR "Cytospora leucosticta" OR "Cytospora leucostoma" OR "Cytospora mali" OR "Cytospora mali-sylvestris" OR "Cytospora melnikii" OR "Cytospora microspora" OR "Cytospora nivea" OR "Cytospora parasitica" OR "Cytospora personata" OR "Cytospora pistaciae" OR "Cytospora rubescens" OR "Cytospora sacculus" OR "Cytospora schulzeri" OR "Dacrymyces minor" OR "Dactylonectria pauciseptata" OR "Daedalea biennis" OR "Daedalea confragosa" OR "Daedalea unicolor" OR "Dafa formosella" OR "Dahlica inconspicua" OR "Daldinia childiae" OR "Daldinia concentrica" OR "Daldinia gelatinosa" OR "Daldinia loculata" OR "Daldinia occidentalis" OR "Daldinia vernicosa" OR "Dapple apple viroid" OR "Dasineura mali" OR "Datana integerrima" OR "Datana major" OR "Datana ministra" OR "Delottococcus aberiae" OR "Deltinea bourquini" OR "Dematophora necatrix" OR "Dendrophoma pulvispyrius" OR "Dendrophora erumpens" OR "Dendrophora versiformis" OR "Dendrothele griseocana" OR "Dendrothele tetracornis" OR "Dendryphiella vinosa" OR "Deraeocoris lutescens" OR "Deraeocoris ruber" OR "Devriesia pseudoamericana" OR "Diabrotica speciosa" OR "Diabrotica undecimpunctata undecimpunctata" OR "Diaplella coniothyrium" OR "Diaporthe actinidiae" OR "Diaporthe ambigua" OR "Diaporthe amygdali" OR "Diaporthe cotoneastri" OR "Diaporthe cynaroidis" OR "Diaporthe eres" OR "Diaporthe foeniculina" OR "Diaporthe infecunda" OR "Diaporthe mali" OR "Diaporthe malorum" OR "Diaporthe nobilis"



OR "Diaporthe oxe" OR "Diaporthe pernicioso" OR "Diaporthe pomigena" OR "Diaporthe serafinae" OR "Diaporthe virgiliae" OR "Diaspidiotus africanus" OR "Diaspidiotus ancyclus" OR "Diaspidiotus forbesi" OR "Diaspidiotus juglansregiae" OR "Diaspidiotus kaussarii" OR "Diaspidiotus marani" OR "Diaspidiotus ostreaeformis" OR "Diaspidiotus perniciosus" OR "Diaspidiotus prunorum" OR "Diaspidiotus pyri" OR "Diatrype stigma" OR "Diatrypella favacea" OR "Dichomeris ligulella" OR "Dichroplus elongatus" OR "Dickeya dadantii" OR "Dicranotropis hamata" OR "Dictyna civica" OR "Didesmococcus unifasciatus" OR "Didymella aliena" OR "Didymella glomerata" OR "Didymella macrostoma" OR "Didymella mali" OR "Didymella pomorum" OR "Didymosphaeria rubi-ulmifolii" OR "Didymosphaeria variabile" OR "Diloba caeruleocephala" OR "Dinemasporium strigosum" OR "Diplazon laetatorius" OR "Diplocarpon coronariae" OR "Diplocarpon mali" OR "Diplocarpon mespili" OR "Diplococcium asperum" OR "Diplodia bulgarica" OR "Diplodia griffoni" OR "Diplodia intermedia" OR "Diplodia malorum" OR "Diplodia maura" OR "Diplodia mutila" OR "Diplodia natalensis" OR "Diplodia pseudodiplodia" OR "Diplodia pseudoseriata" OR "Diplodia sapinea" OR "Diplodia sarmentorum" OR "Diplodia seriata" OR "Dipodascus geotrichum" OR "Diptacus gigantorhynchus" OR "Discosia barrusii" OR "Discostroma corticola" OR "Dissoconium aciculare" OR "Dissoconium eucalypti" OR "Dissoconium mali" OR "Dissoconium proteae" OR "Ditula angustiorana" OR "Ditylenchus myceliophagus" OR "Diurnea fagella" OR "Dothiorella gregaria" OR "Dothiorella iberica" OR "Dothiorella mali" OR "Dothiorella mali var. fructus" OR "Dothiorella sarmentorum" OR "Dromius quadrimaculatus" OR "Drosicha contrahens" OR "Drosicha corpulenta" OR "Drosicha maskelli" OR "Drosicha stebbingii" OR "Drosicha turkestanica" OR "Drosophila immigrans" OR "Drosophila lativittata" OR "Drosophila melanogaster" OR "Drosophila simulans" OR "Drosophila suzukii" OR "Dynaspidiotus abietis" OR "Dynaspidiotus britanicus" OR "Dynaspidiotus britannicus" OR "Dysaphis affinis" OR "Dysaphis anthrisci" OR "Dysaphis anthrisci majkopicia" OR "Dysaphis armeniaca" OR "Dysaphis brachycyclica" OR "Dysaphis brancoi" OR "Dysaphis brancoi ssp. malina" OR "Dysaphis brancoi ssp. rogersoni" OR "Dysaphis bunii" OR "Dysaphis chaerophylli" OR "Dysaphis chaerophyllina" OR "Dysaphis devecta" OR "Dysaphis flava" OR "Dysaphis gallica" OR "Dysaphis malidauci" OR "Dysaphis meridialis" OR "Dysaphis mordvilkoii" OR "Dysaphis orientalis" OR "Dysaphis physocaulis" OR "Dysaphis plantaginea" OR "Dysaphis pyri" OR "Dysaphis radicola" OR "Dysaphis sibirica" OR "Dysaphis zini" OR "Dysmicoccus brevipres" OR "Dysmicoccus debregeasiae" OR "Dysmicoccus wistariae" OR "Ectoedemia atricollis" OR "Ectoedemia spinosella" OR "Ectomyeloides ceratoniae" OR "Ectropis crepuscularia" OR "Edwardsiana crataegi" OR "Edwardsiana rosae" OR "Elegia inconspicua" OR "Elsinoe piri" OR "Elsinoe pyri" OR "Elsinoe pyri" OR "Emex australis" OR "Emex spinosa" OR "Empoasca decipiens" OR "Empoasca fabae" OR "Empoasca vitis" OR "Enarmonia axyridis" OR "Enarmonia formosana" OR "Encoelia rhenana" OR "Endomyces mali" OR "Endomycopsis mali" OR "Ennomos autumnaria" OR "Entoleuca callimorpha" OR "Entomosporium mespili" OR "Eotetranychus ancora" OR "Eotetranychus carpini" OR "Eotetranychus carpini ssp. Carpini" OR "Eotetranychus citus" OR "Eotetranychus frosti" OR "Eotetranychus lewisi" OR "Eotetranychus pruni" OR "Eotetranychus prunicola" OR "Eotetranychus sexmaculatus" OR "Eotetranychus smithi" OR "Eotetranychus uncatatus" OR "Eotetranychus willamettei" OR "Epicallima formosella" OR "Epicoccum granulatum" OR "Epicoccum nigrum" OR "Epidiaspis leperii" OR "Epinotia signatana" OR "Epiphyas postvittana" OR "Epirrita dilutata" OR "Epitrimerus pyri" OR "Epitrix pubescens" OR "Erannis defoliaria" OR "Erigone atra" OR "Eriogaster lanestris" OR "Eriophyes pyri" OR "Eriosoma lanigerum" OR "Eriosoma lanuginosum" OR "Erthesina fullo" OR "Erwinia amylovora" OR "Erysiphe heraclei" OR "Erysiphe malvae" OR "Erythrimum salmonicolor" OR "Eudemis porphyra" OR "Eudocima fullonia" OR "Eulecanium kunoense" OR "Eulecanium nocivum" OR "Eulecanium rugulosum" OR "Eulecanium tiliae" OR "Eulogia ochrifrontella" OR "Eumacaria latiferrugata" OR "Eupithecia insigniata" OR "Euproctis chrysothorax" OR "Eurhizococcus brasiliensis" OR "European mountain ash ringspot-associated virus" OR "Eurytetranychus ulmi" OR "Eurytoma schreineri" OR "Eutetranychus africanus" OR "Eutetranychus orientalis" OR "Eutypa cremea" OR "Eutypa lata" OR "Eutypa lejolaca" OR "Eutypella citricola" OR "Eutypella prunastri" OR "Euwallacea fornicatus sensu lato" OR "Euwallacea fornicatus sensu stricto" OR "Euzophera bigella" OR "Euzophera pinguis" OR "Euzophera semifuneralis" OR "Exapion fuscirostre" OR "Exidia recisa" OR "Exidia thuretiana" OR "Exochomus quadripustulatus" OR "Fabrea maculata" OR "Fagocyba cruenta" OR "Ferrisia virgata" OR "Fibulorhizoctonia psychrophila" OR "Fiebertiella florii" OR "Filago gallica" OR "Filenchus ruatus" OR "Flammulina velutipes" OR "Fomes annosus" OR "Fomes applanatus" OR "Fomes fomentarius" OR "Fomes igniarius" OR "Fomes pinicola" OR "Fomes pomaceus" OR "Fomitopsis pinicola" OR "Forficula auricularia" OR "Formica cunicularia" OR "Formica pratensis" OR "Formica rufibarbis" OR "Frankliniella

australis" OR "Frankliniella occidentalis" OR "Fumago graminis" OR "Fumago vagans" OR "Fusarium acuminatum" OR "Fusarium apiogenum" OR "Fusarium avenaceum" OR "Fusarium camptoceras" OR "Fusarium compactum" OR "Fusarium crookwellense" OR "Fusarium culmorum" OR "Fusarium decemcellulare" OR "Fusarium gibbosum" OR "Fusarium graminum" OR "Fusarium incarnatum" OR "Fusarium lateritium" OR "Fusarium lateritium var. fructigenum" OR "Fusarium moniliforme" OR "Fusarium moniliforme var. subglutinans" OR "Fusarium oxysporum" OR "Fusarium oxysporum f. sp. batatas" OR "Fusarium proliferatum" OR "Fusarium pseudograminearum" OR "Fusarium roseum" OR "Fusarium scirpi" OR "Fusarium semitectum" OR "Fusarium solani" OR "Fusarium stilboides" OR "Fusarium tricinctum" OR "Fusicladium alopecuri" OR "Fusicladium asperatum" OR "Fusicladium dendriticum" OR "Fusicladium pomi" OR "Fusicladium pyrorum" OR "Fusicoccum aesculi" OR "Fusicoccum luteum" OR "Fusicoccum microspora" OR "Fusicoccum pyrorum" OR "Galinsoga parviflora" OR "Galinsoga quadriradiata" OR "Ganoderma applanatum" OR "Ganoderma curtisii" OR "Ganoderma lucidum" OR "Gastropacha quercifolia" OR "Geastrumia polystigmatis" OR "Gelechia rhombella" OR "Gelis areator" OR "Geotrichum candidum" OR "Gibberella acuminata" OR "Gibberella avenacea" OR "Gibberella baccata" OR "Gibberella moricola" OR "Gibberella tricincta" OR "Gliocladium viride" OR "Globisporangium heterothallicum" OR "Globisporangium irregulare" OR "Globisporangium paroecandrum" OR "Globisporangium rostratum" OR "Globisporangium sylvaticum" OR "Globisporangium ultimum" OR "Globoderia rostochiensis" OR "Gloeocystidiellum sacratum" OR "Gloeodes pomigena" OR "Gloeopeniophorella sacrata" OR "Gloeophyllum trabeum" OR "Gloeoporus dichrous" OR "Gloeosporium album" OR "Gloeosporium cingulatum" OR "Gloeosporium fructigenum" OR "Gloeosporium malicorticis" OR "Gloeosporium rufomaculans" OR "Glomerella acutata" OR "Glomerella cingulata" OR "Glomerella cingulata var. minor" OR "Glomerella miyabeana" OR "Glomerella rubicola" OR "Glomerella rufomaculans" OR "Glomus constrictum" OR "Glomus deserticola" OR "Glomus etunicatum" OR "Glomus fasciculatum" OR "Glomus geosporum" OR "Glomus mosseae" OR "Glonium parvulum" OR "Gluconobacter oxydans" OR "Glutinium macrosporum" OR "Glyphium corrugatum" OR "Golovinomyces cichoracearum" OR "Gonatobotrys simplex" OR "Grammotera ruficornis" OR "Graphiphora augur" OR "Graphium album" OR "Grapholita funebrana" OR "Grapholita inopinata" OR "Grapholita molesta" OR "Grapholita packardi" OR "Grapholita prunivora" OR "Graphosoma lineatum" OR "Gryllotalpa gryllotalpa" OR "Guepinia spathularia" OR "Guignardia pyricola" OR "Gymnopilus spectabilis" OR "Gymnosporangium asiaticum" OR "Gymnosporangium clavariiforme" OR "Gymnosporangium clavipes" OR "Gymnosporangium confusum" OR "Gymnosporangium cornutum" OR "Gymnosporangium globosum" OR "Gymnosporangium juniperi" OR "Gymnosporangium juniperi-virginianae" OR "Gymnosporangium juniperinum" OR "Gymnosporangium libocedri" OR "Gymnosporangium miyabei" OR "Gymnosporangium nidus-avis" OR "Gymnosporangium tremelloides" OR "Gymnosporangium yamadae" OR "Gypsonoma minutana" OR "Hadrotrichum populi" OR "Haematostereum rugosum" OR "Halyomorpha halys" OR "Halyomorpha mista" OR "Haplosporella ailanthi" OR "Haplosporella malorum" OR "Haptoncus luteolus" OR "Harmonia axyridis" OR "Harmonia quadripunctata" OR "Hedya dimidioalba" OR "Hedya nubiferana" OR "Hedya ochroleucana" OR "Hedya pruniana" OR "Helicobasidium mompa" OR "Helicobasidium purpureum" OR "Helicogloea pellucida" OR "Helicotylenchus dihystra" OR "Heliotropium europaeum" OR "Helminthosporium papulosum" OR "Helminthosporium pyrorum" OR "Hemerobius humulinus" OR "Hemiberlesia lataniae" OR "Hemiberlesia rapax" OR "Hemicycliophora koreana" OR "Hemicycliophora theinemani" OR "Hendersonia cydoniae" OR "Hendersonia lignicola" OR "Hendersonia mali" OR "Hendersonia piricola" OR "Hendersoniella lignicola" OR "Hendersonula toruloidea" OR "Herculia fulvociliialis" OR "Heterobasidium annosum" OR "Heterobasidium annosum sensu lato" OR "Heterobasidium parviporum" OR "Heterocampa guttivitta" OR "Heterocrasa expansalis" OR "Heterodera mediterranea" OR "Heterodera zae" OR "Heteroderes rufangulus" OR "Heteroporus biennis" OR "Heterosporium maculatum" OR "Himacerus apterus" OR "Hirneola auricula-judae" OR "Holcercus arenicolus" OR "Holotrichia longipennis" OR "Homalodisca vitripennis" OR "Homona coffearia" OR "Homona magnanima" OR "Hop stunt viroid" OR "Hoplocampa brevis" OR "Hoplocampa testudinea" OR "Hormodendrum cladosporioides" OR "Houjia pomigena" OR "Houjia yanglingensis" OR "Howardia biclavis" OR "Hyalarcta huebneri" OR "Hyalomyzus eriobotryae" OR "Hyalophora cecropia" OR "Hyalopterus pruni" OR "Hyalopus pruinosus" OR "Hydnum ciliolatum" OR "Hydnum mucidum" OR "Hydnum ochraceum" OR "Hydnum setosum" OR "Hydriris ornatalis" OR "Hymenochaete agglutinans" OR "Hymenochaete corrugata" OR "Hyphantria cunea" OR "Hyphodontia gossypina" OR "Hyphodontia quercina" OR "Hyphodontia spathulata" OR "Hypholoma incertum" OR "Hypholoma sublateritium" OR "Hypocala subsatura" OR "Hypomecis punctinalis" OR "Hypoxylon atropunctatum" OR

"Hypoxylon howeianum" OR "Hypoxylon mediterraneum" OR "Hypoxylon perforatum" OR  
 "Hypoxylon rubiginosum" OR "Hypoxylon serpens" OR "Hysterium pulicare" OR  
 "Hysterographium subrugosum" OR "Hysteropatella prostii" OR "Icerya aegyptiaca" OR  
 "Icerya seychellarum" OR "Illosporium malifoliorum" OR "Ilyonectria liriiodendri" OR  
 "Ilyonectria radicolica" OR "Incurvaria pectinea" OR "Inonotus hispidus" OR "Ipiclides  
 podalirius" OR "Iridopsis larvaria" OR "Irpex lacteus" OR "Irpex tulipiferae" OR "Ischnoderma  
 resinum" OR "Ischyja manlia" OR "Itame coortaria" OR "Itoplectis maculator" OR "Janus  
 compressas" OR "Janus compressus" OR "Jattaea microtheca" OR "Jattaea tumidula" OR  
 "Labedera proxima" OR "Lacanobia oleracea" OR "Lacanobia subjuncta" OR "Lacanobia  
 thalassina" OR "Lachnella alboviolascens" OR "Lachnella anomala" OR "Lambertella corni-  
 maris" OR "Lamoria anella" OR "Laothoe populi" OR "Lasiodiplodia brasiliense" OR  
 "Lasiodiplodia brasiliensis" OR "Lasiodiplodia pseudotheobromae" OR "Lasiodiplodia  
 theobromae" OR "Lasiosphaeria ovina" OR "Lasius niger" OR "Laspeyria flexula" OR "Latoia  
 vivida" OR "Laxitextum bicolor" OR "Leiopus nebulosus" OR "Lenzites betulina" OR "Lenzites  
 sepiaria" OR "Lenzites trabea" OR "Lenzites tricolor var. daedalea" OR "Lenzites vialis" OR  
 "Lepidium draba" OR "Lepidosaphes conchiformis" OR "Lepidosaphes conchyiformis" OR  
 "Lepidosaphes coreana" OR "Lepidosaphes cupressi" OR "Lepidosaphes malicola" OR  
 "Lepidosaphes pistaciae" OR "Lepidosaphes ulmi" OR "Lepidosaphes ussuriensis" OR  
 "Lepidosaphes yamahoii" OR "Lepiota naucina" OR "Leptinotarsa decemlineata" OR  
 "Leptodontidium elatius" OR "Leptodontium elatius" OR "Leptographium alneum" OR  
 "Leptosphaeria concentrica" OR "Leptosphaeria coniothyrium" OR "Leptosphaeria  
 mandshurica" OR "Leptothyrium pomi" OR "Lepus europaeus" OR "Leucoptera malifoliella" OR  
 "Leucoptera scitella" OR "Leucostoma cinctum" OR "Leucostoma personii" OR "Leucostoma  
 persoonii" OR "Lewia infectoria" OR "Libertella blepharis" OR "Limothrips denticornis" OR  
 "Lindingaspis rossi" OR "Lithophane hepatica" OR "Lochmaeus manteo" OR "Lomographa  
 temerata" OR "Longidorus elongatus" OR "Longidorus fangi" OR "Longidorus pisi" OR  
 "Longistigma xizangensis" OR "Loncera japonica" OR "Lophiostoma compressum" OR  
 "Lophiostoma holmiorum" OR "Lophiostoma subcorticale" OR "Lophiostoma vicinum" OR  
 "Lophium mytilinum" OR "Lopholeucaspis japonica" OR "Loxostege sticticalis" OR "Lycia  
 rachelae" OR "Lycia ursaria" OR "Lycorma delicatula" OR "Lygocoris communis" OR "Lygocoris  
 pabulinus" OR "Lymantria dispar" OR "Lymantria mathura" OR "Lymantria monacha" OR  
 "Lymantria obfuscata" OR "Lymantria umbrosa" OR "Lyonetia clerkella" OR "Lyonetia  
 prunifoliella" OR "Lyonetia prunifoliella malinella" OR "Lyonetia speculella" OR  
 "Maconellicoccus hirsutus" OR "Macroductylus subspinosus" OR "Macrophoma kawatsukai" OR  
 "Macropodia cinerea" OR "Macrosiphum chukotense" OR "Macrosiphum euphorbiae" OR  
 "Macrosiphum rosae" OR "Macrothylacia rubi" OR "Magdalis barbicornis" OR "Magdalis  
 ruficornis" OR "Magdalis septendecim" OR "Mahasena yuna" OR "Malacosoma americana"  
 OR "Malacosoma americanum" OR "Malacosoma distria" OR "Malacosoma indicum" OR  
 "Malacosoma neustria" OR "Malacosoma parallela" OR "Malus domestica virus A" OR  
 "Mamestra brassicae" OR "Marasmius pyrinus" OR "Margarodes greeni" OR "Margarodes vitis"  
 OR "Marmara elotella" OR "Marmara pomonella" OR "Marssonina coronariae" OR "Marssonina  
 coronaria" OR "Marssonina mali" OR "Massaria excussa" OR "Massaria pyri" OR "Medicago  
 lupulina" OR "Megaloceroea recticornis" OR "Megalopyge albicollis" OR "Megalopyge  
 mutatus" OR "Melanaspis inopinata" OR "Melanaspis tenebricosa" OR "Melanchra persicariae"  
 OR "Melanconium fuligineum" OR "Melanomma coniothyrium" OR "Melanopsamma improvisa"  
 OR "Melanopsamma pomiformis" OR "Meloidogyne arenaria" OR "Meloidogyne ethiopia" OR  
 "Meloidogyne hapla" OR "Meloidogyne incognita" OR "Meloidogyne javanica" OR "Meloidogyne  
 mali" OR "Meloidogyne nataliei" OR "Melolontha melolontha" OR "Merlinius koreanus" OR  
 "Merulius tremellosus" OR "Mesochorus iwatensis" OR "Mesolecanium nigrofasciatum" OR  
 "Mesosa nebulosa" OR "Metaseiulus occidentalis" OR "Metathrinca rosaria" OR "Metcalfa  
 pruinosa" OR "Meyernychus emeticae" OR "Microcera larvarum" OR "Microcyclospora mali" OR  
 "Microcyclospora malicola" OR "Microcyclospora pomicola" OR "Microcyclospora tardicrescens"  
 OR "Microcyclosporella mali" OR "Microdiplodia microsporella" OR "Microsphaeropsis  
 ochracea" OR "Microsphaeropsis olivacea" OR "Microthyriella rubi" OR "Microtus arvalis" OR  
 "Miresa clarissa" OR "Misumena vatia" OR "Mollisia caespiticia" OR "Molorchus umbellatarum"  
 OR "Monilia cinerea f. americana" OR "Monilia fructigena" OR "Monilia polystroma" OR  
 "Monilia urediniformis" OR "Monilia yunnanensis" OR "Monilinia fructicola" OR "Monilinia  
 fructigena" OR "Monilinia fruticola" OR "Monilinia laxa" OR "Monilinia laxa f.sp. mali" OR  
 "Monilinia mali" OR "Monilinia mumeicola" OR "Monilinia polystroma" OR "Monilinia  
 yunnanensis" OR "Monochaetia mali" OR "Monochaetia unicornis" OR "Monodictys melanopa"  
 OR "Moodna ostrinella" OR "Morchella esculenta" OR "Morganella longispina" OR "Morganella  
 pseudospinigera" OR "Morrisonia confusa" OR "Mucor mucedo" OR "Mucor piriformis" OR

"Mucor pyriformis" OR "Mucor racemosus" OR "Mycena citricolor" OR "mycoplasma-like organisms" OR "Mycosphaerella pomacearum" OR "Mycosphaerella pomi" OR "Mycosphaerella punctiformis" OR "Mycosphaerella pyri" OR "Mycosphaerella sentina" OR "Mycosphaerella tulasnei" OR "Mycothyridium lividum" OR "Myriangium asterinosporum" OR "Myrmecridium schulzeri" OR "Myxosporium corticola" OR "Myxosporium microspermum" OR "Myzus ornatus" OR "Myzus persicae" OR "Naenia typica" OR "Natrassia mangiferae" OR "Naupactus leucoloma" OR "Naupactus xanthographus" OR "Nearctaphis bakeri" OR "Nectria cinnabarina" OR "Nectria coccinea" OR "Nectria coccinea var. faginata" OR "Nectria discophora" OR "Nectria ditissima" OR "Nectria galligena" OR "Nectria haematococca" OR "Nectria ochroleuca" OR "Nectria peziza" OR "Nectria pseudotrichia" OR "Nectria purtonii" OR "Nectria sanguinea" OR "Nectria vulpina" OR "Nemania serpens" OR "Nematocampa resistaria" OR "Nematogonum aurantiacum" OR "Nematoloma fasciculare" OR "Neocosmospora euwallaceae" OR "Neocosmospora metavorans" OR "Neocucurbitaria cava" OR "Neofabraea actinidiae" OR "Neofabraea alba" OR "Neofabraea brasiliensis" OR "Neofabraea corticola" OR "Neofabraea kienholzii" OR "Neofabraea malicorticis" OR "Neofabraea perennans" OR "Neofabraea vagabunda" OR "Neofusicoccum algeriense" OR "Neofusicoccum australe" OR "Neofusicoccum italicum" OR "Neofusicoccum luteum" OR "Neofusicoccum nonquaesitum" OR "Neofusicoccum parvum" OR "Neofusicoccum ribis" OR "Neofusicoccum stellenboschiana" OR "Neofusicoccum viticlavatum" OR "Neonectria candida" OR "Neonectria ditissima" OR "Neonectria galligena" OR "Neonectria macrodidyma" OR "Neonectria radicola" OR "Neonectria ramulariae" OR "Neopheosia fasciata" OR "Neosphaleroptera nubilana" OR "Nigrospora sphaerica" OR "Nipaecoccus viridis" OR "Nippolachnus piri" OR "Nitschkia parasitans" OR "Nola confusalis" OR "Nola cucullatella" OR "Nummularia discincola" OR "Nummularia discreta" OR "Nymphalis polychloros" OR "Nymphalis vaualbum" OR "Nysius vinitor" OR "Obrium cantharinum" OR "Ochroporus ossatus" OR "Ochropsora ariae" OR "Ochropsora sorbi" OR "Ochrospora ariae" OR "Odites malivora" OR "Odites ricinella" OR "Odontia spathulata" OR "Odontota dorsalis" OR "Oedothorax apicatus" OR "Oemona hirta" OR "Oenopia conglobata" OR "Oidium conspersum" OR "Oidium farinosum" OR "Oidium pirinum" OR "Oiketicus kirbyi" OR "Oiketicus platensis" OR "Oiketicus toumeyii" OR "Oligocentria semirufescens" OR "Oligonychus biharensis" OR "Oligonychus litchii" OR "Oligonychus newcomeri" OR "Oligonychus sayedi" OR "Oligonychus yothersi" OR "Omphalotus olearius" OR "Oncopodiella robusta" OR "Oospora mali" OR "Oospora otophila" OR "Oothecium indicum" OR "Operophtera bruceata" OR "Operophtera brumata" OR "Ophiostoma novo-ulmi" OR "Ophiostoma quercus" OR "Ophiostoma roboris" OR "Ophiostoma stenoceras" OR "Opisthograptis luteolata" OR "Oreana unicolorella" OR "Orgyia antiqua" OR "Orgyia leucostigma" OR "Orgyia mixta" OR "Orgyia recens" OR "Oribius destructor" OR "Oribius inimicus" OR "Orientus ishidae" OR "Orthosia cerasi" OR "Orthosia cruda" OR "Orthosia hibisci" OR "Orthosia incerta" OR "Orthotydeus californicus" OR "Orthotylus marginalis" OR "Osmia cornifrons" OR "Ostrinia nubilalis" OR "Ostrinia obumbratalis" OR "Otiorynchus cribricollis" OR "Otiorynchus raucus" OR "Otthia amica" OR "Otthia spiraeae" OR "Oulema gallaeciana" OR "Oulema melanopus" OR "Ovatus crataegarius" OR "Ovatus insitus" OR "Ovatus malisuctus" OR "Oxalis latifolia" OR "Oxalis pes-caprae" OR "Oxya parietina" OR "Oxyporus latemarginatus" OR "Oxyporus populinus" OR "Oxyporus similis" OR "Pachysphinx modesta" OR "Paecilomyces niveus" OR "Palaeolecanium bituberculatum" OR "Palomena prasina" OR "Pammene rhediella" OR "Pandemis cerasana" OR "Pandemis heparana" OR "Pandemis pyrusana" OR "Panellus serotinus" OR "Panellus stipticus" OR "Panonychus citri" OR "Panonychus inca" OR "Panonychus lishanensis" OR "Panonychus ulmi" OR "Pantoea agglomerans" OR "Pantomorus cervinus" OR "Papilio eurymedon" OR "Papilio glaucus" OR "Papilio rutulus" OR "Pappia fissilis" OR "Paraboeremia putaminum" OR "Paraconiothyrium fuscomaculans" OR "Paradevriesia pseudoamericana" OR "Paraphaeosphaeria concentrica" OR "Paraphoma radicina" OR "Parasaissetia nigra" OR "Paratachardina pseudolobata" OR "Paratrichodorus porosus" OR "Paratylenchus microdorus" OR "Paratylenchus nainianus" OR "Paratylenchus variabilis" OR "Parlatoreopsis chinensis" OR "Parlatoreopsis longispina" OR "Parlatoreopsis pyri" OR "Parlatoria cinerea" OR "Parlatoria crypta" OR "Parlatoria desolator" OR "Parlatoria oleae" OR "Parlatoria pergandii" OR "Parlatoria pittospori" OR "Parlatoria proteus" OR "Parlatoria theae" OR "Parlatoria yanyuanensis" OR "Parornix geminatella" OR "Parornix petiolella" OR "Parornix quadripunctella" OR "Parornix scoticella" OR "Parthenolecanium cerasifex" OR "Parthenolecanium corni" OR "Parthenolecanium corni corni" OR "Parthenolecanium glandi" OR "Parthenolecanium persicae" OR "Pasiphila rectangulata" OR "Paspalum urvillei" OR "Patellaria atrata" OR "Peach latent mosaic viroid" OR "Pear blister canker viroid" OR "Pellicularia koleroga" OR "Peltaster cerophilus" OR "Peltaster fructicola" OR "Peltaster gemmifer" OR "Peltosphaeria pustulans" OR "Pempelia heringii" OR "Penicillium

aurantiogriseum" OR "Penicillium biourgeianum" OR "Penicillium brevicompactum" OR  
 "Penicillium candidum" OR "Penicillium carneum" OR "Penicillium chrysogenum" OR  
 "Penicillium commune" OR "Penicillium crustosum" OR "Penicillium cyclopium" OR "Penicillium  
 digitatum" OR "Penicillium expansum" OR "Penicillium frequentans" OR "Penicillium glabrum"  
 OR "Penicillium glaucum" OR "Penicillium griseofulvum" OR "Penicillium islandicum" OR  
 "Penicillium mali-pumilae" OR "Penicillium martensii" OR "Penicillium novae-zelandiae" OR  
 "Penicillium olivinoviride" OR "Penicillium paneum" OR "Penicillium polonicum" OR "Penicillium  
 puberulum" OR "Penicillium ramulosum" OR "Penicillium rugulosum" OR "Penicillium solitum"  
 OR "Penicillium urticae" OR "Penicillium verrucosum" OR "Penicillium viridicatum" OR  
 "Peniophora cinerea" OR "Peniophora lycii" OR "Peniophora violaceolivida" OR "Pennisetum  
 clandestinum" OR "Pentatoma rufipes" OR "Perenniporia fraxinea" OR "Peridroma saucia" OR  
 "Pesotum piceae" OR "Pestalotia breviseta" OR "Pestalotia concentrica" OR "Pestalotia hartigii"  
 OR "Pestalotia mali" OR "Pestalotia malicola" OR "Pestalotia malorum" OR "Pestalotia  
 mangifolia" OR "Pestalotia montellica" OR "Pestalotiopsis japonica" OR "Pestalotiopsis  
 maculans" OR "Pestalotiopsis malicola" OR "Pestalotiopsis steyaertii" OR "Pestalotiopsis  
 versicolor" OR "Petiveria alliacea" OR "Petrobia harti" OR "Petrobia latens" OR "Petunia  
 asteroid mosaic virus" OR "Peyronellaea musae" OR "Pezicula alba" OR "Pezicula corticola" OR  
 "Pezicula corylina" OR "Pezicula malicorticis" OR "Pezicula neocinnamomea" OR "Pezicula  
 polygona" OR "Pezicula pruinosa" OR "Pezicula sepium" OR "Peziza corticola" OR "Peziza  
 regalis" OR "Peziza repanda" OR "Pezizella oenotherae" OR "Phacidiella discolor" OR  
 "Phacidiopycnis malorum" OR "Phacidiopycnis washingtonensis" OR "Phacidium lacerum" OR  
 "Phaedon cochleariae" OR "Phaeoacremonium aleophilum" OR "Phaeoacremonium angustius"  
 OR "Phaeoacremonium australiense" OR "Phaeoacremonium austroafricanum" OR  
 "Phaeoacremonium fraxinopennsylvanicum" OR "Phaeoacremonium geminum" OR  
 "Phaeoacremonium inflatipes" OR "Phaeoacremonium iraniamum" OR "Phaeoacremonium  
 italicum" OR "Phaeoacremonium longicollarum" OR "Phaeoacremonium minimum" OR  
 "Phaeoacremonium mortoniae" OR "Phaeoacremonium parasiticum" OR "Phaeoacremonium  
 proliferatum" OR "Phaeoacremonium prunicola" OR "Phaeoacremonium scolyti" OR  
 "Phaeoacremonium subulatum" OR "Phaeoacremonium viticola" OR "Phaeodothis winteri" OR  
 "Phaeosporis catacrypta" OR "Phaeothecoidiella illinoisensis" OR "Phaeothecoidiella  
 missouriensis" OR "Phalera bucephala" OR "Phalera flavescens" OR "Phanerochaete  
 salmonicolor" OR "Phellinus alni" OR "Phellinus conchatus" OR "Phellinus igniarius" OR  
 "Phellinus pomaceus" OR "Phellinus robustus" OR "Phenacoccus aceris" OR "Phenacoccus  
 graminicola" OR "Phenacoccus madeirensis" OR "Phenacoccus transcaucasicus" OR  
 "Phialophora malorum" OR "Phialophora sessilis" OR "Philodromus albidus" OR "Philodromus  
 cespitum" OR "Phlebia radiata" OR "Phlyctaena vagabunda" OR "Phlyctema vagabunda" OR  
 "Phlyctinus callosus" OR "Pholiota adiposa" OR "Pholiota aurivella" OR "Pholiota squarrosa" OR  
 "Phoma ambigua" OR "Phoma bismarckii" OR "Phoma coonsii" OR "Phoma enteroleuca" OR  
 "Phoma enteroleuca var. enteroleuca" OR "Phoma epicoccina" OR "Phoma fulginea" OR  
 "Phoma glomerata" OR "Phoma herbarum" OR "Phoma jolyana" OR "Phoma macrostoma" OR  
 "Phoma macrostoma var. incolorata" OR "Phoma macrostoma var. macrostoma" OR "Phoma  
 mali" OR "Phoma pomi" OR "Phoma pomorum" OR "Phoma pomorum var. pomorum" OR  
 "Phoma putaminum" OR "Phoma pyrina" OR "Phoma radicina" OR "Phoma rubefaciens" OR  
 "Phoma violacea" OR "Phomopsis ambigua" OR "Phomopsis cotoneastri" OR "Phomopsis  
 fukushii" OR "Phomopsis mali" OR "Phomopsis oblonga" OR "Phomopsis perniciosa" OR  
 "Phomopsis prunorum" OR "Phomopsis theicola" OR "Phomopsis truncicola" OR "Phomopsis  
 velata" OR "Phorodon humuli" OR "Phragmatobia fuliginosa" OR "Phratora laticollis" OR  
 "Phycita roborella" OR "Phyllachora pomigena" OR "Phyllactinia mali" OR "Phyllactinia suffulta"  
 OR "Phyllobius argentatus" OR "Phyllobius oblongus" OR "Phyllobius pyri" OR "Phyllocoptes  
 goniothorax" OR "Phyllonorycter blancardella" OR "Phyllonorycter corylifoliella" OR  
 "Phyllonorycter crataegella" OR "Phyllonorycter cydoniella" OR "Phyllonorycter elmaella" OR  
 "Phyllonorycter ganodes" OR "Phyllonorycter gerasimovi" OR "Phyllonorycter gerasimowi" OR  
 "Phyllonorycter hapalotoxa" OR "Phyllonorycter hostis" OR "Phyllonorycter malella" OR  
 "Phyllonorycter mespilella" OR "Phyllonorycter ringoniella" OR "Phyllosticta angulata" OR  
 "Phyllosticta briardi" OR "Phyllosticta briardii" OR "Phyllosticta clypeata" OR "Phyllosticta  
 limitata" OR "Phyllosticta mali" OR "Phyllosticta persicae" OR "Phyllosticta pirina" OR  
 "Phyllosticta prunicola" OR "Phyllosticta pyrina" OR "Phyllosticta solitaria" OR "Phyllosticta  
 tumanensis" OR "Phyllosticta nidulans" OR "Phyllosticta cruciferae" OR "Phyllosticta nigripes"  
 OR "Phyllosticta undulata" OR "Phyllosticta vittula" OR "Phymatotrichopsis omnivora" OR  
 "Phymatotrichum omnivorum" OR "Physalospora cydoniae" OR "Physalospora malorum" OR  
 "Physalospora mutila" OR "Physalospora obtusa" OR "Physalospora rhodina" OR  
 "Physatocheila dumetorum" OR "Physatocheila smreczynskii" OR "Phytocoris ulmi" OR

"Phytomyza heringiana" OR "Phytophthora amnicola-chlamydospora" OR "Phytophthora arecae" OR "Phytophthora boehmeriae" OR "Phytophthora cactorum" OR "Phytophthora cambivora" OR "Phytophthora capsici" OR "Phytophthora cinnamomi" OR "Phytophthora citricola" OR "Phytophthora citrophthora" OR "Phytophthora cryptogea" OR "Phytophthora drechleri" OR "Phytophthora fragariae" OR "Phytophthora gonapodyides" OR "Phytophthora gregata" OR "Phytophthora hibernalis" OR "Phytophthora lacustris" OR "Phytophthora medicaginis" OR "Phytophthora megasperma" OR "Phytophthora megasperma var. megasperma" OR "Phytophthora nicotianae" OR "Phytophthora palmivora" OR "Phytophthora palmivora var. palmivora" OR "Phytophthora parasitica" OR "Phytophthora plurivora" OR "Phytophthora rosacearum" OR "Phytophthora sansomeana" OR "Phytophthora syringae" OR "Phytoplasma aurantifolia" OR "Phytoplasma mali" OR "Phytoplasma pyri" OR "Phytoptus pyri" OR "Phytopythium vexans" OR "Pilophorus perplexus" OR "Pimpla contemplator" OR "Pithomyces chartarum" OR "Planococcus citri" OR "Planococcus ficus" OR "Planotortrix excessana" OR "Plasmopara viticola" OR "Platynota flavedana" OR "Platynota idaeusalis" OR "Platynota stultana" OR "Plemyria rubiginata" OR "Plenodomus fuscomaculans" OR "Pleochaeta mali" OR "Pleomassaria mali" OR "Pleospora alternariae f. fusca" OR "Pleospora fructicola" OR "Pleospora herbarum" OR "Pleospora herbarum var. citrorum" OR "Pleospora mali" OR "Pleospora scrophulariae" OR "Plesiocoris rugicollis" OR "Pleurophoma cava" OR "Pleurophorus caesus" OR "Pleurotus corticatus" OR "Pleurotus dryinus" OR "Pleurotus ostreatus" OR "Pleurotus ulmarius" OR "Plocamaphis gyirongensis" OR "Poa annua" OR "Pochazia shantungensis" OR "Podospaera clandestina" OR "Podospaera clandestina var. clandestina" OR "Podospaera leucotricha" OR "Podospaera oxyacanthae" OR "Podospaera pannosa" OR "Pogonocherus hispidulus" OR "Pogonocherus hispidus" OR "Polydrusus sericeus" OR "Polygonum aviculare" OR "Polyopeus pomi" OR "Polyopeus purpureus" OR "Polyphylla fullo" OR "Polyporus admirabilis" OR "Polyporus adustus" OR "Polyporus albellus" OR "Polyporus albidus" OR "Polyporus badius" OR "Polyporus biennis" OR "Polyporus caesius" OR "Polyporus ciliatus" OR "Polyporus distortus" OR "Polyporus fissilis" OR "Polyporus galactinus" OR "Polyporus gilvus" OR "Polyporus hirsutus" OR "Polyporus lacteus" OR "Polyporus leptocephalus" OR "Polyporus pubescens" OR "Polyporus resinosus" OR "Polyporus spumeus" OR "Polyporus spumeus var. malicola" OR "Polyporus squamosus" OR "Polyporus sulphureus" OR "Polyporus tulipiferae" OR "Polyporus varius" OR "Polyporus versicolor" OR "Polystictus versicolor" OR "Popillia japonica" OR "Poria ambigua" OR "Poria ferruginosa" OR "Poria pannocincta" OR "Poria spissa" OR "Poria tenuis" OR "Poria tenuis var. pulchella" OR "Poria tenuis var. tenuis" OR "Potebniamyces pyri" OR "Pratylenchus fallax" OR "Pratylenchus hippeastri" OR "Pratylenchus loosi" OR "Pratylenchus manaliensis" OR "Pratylenchus neglectus" OR "Pratylenchus penetrans" OR "Pratylenchus scribneri" OR "Pratylenchus thornei" OR "Pratylenchus vulnus" OR "Pristiphora abbreviata" OR "Pristiphora maesta" OR "Prociophilus caryae ssp. fitchii" OR "Prociophilus crataegicola" OR "Prociophilus kuwanai" OR "Prociophilus oriens" OR "Prociophilus pini" OR "Prociophilus sasakii" OR "Prodiplosis longifila" OR "Proeulia auraria" OR "Proeulia chrysopteris" OR "Propolomyces versicolor" OR "Propylea quatuordecimpunctata" OR "Prosoeuzophera impletella" OR "Prunus necrotic ringspot virus" OR "Psallus ambiguus" OR "Psathyrella candolleana" OR "Pseudaspidoproctus hyphaeniacus" OR "Pseudaulacaspis pentagona" OR "Pseudexentera mali" OR "Pseudocercospora mali" OR "Pseudocercospora pomi" OR "Pseudococcus calceolariae" OR "Pseudococcus comstocki" OR "Pseudococcus longispinus" OR "Pseudococcus maritimus" OR "Pseudococcus scatoterrae" OR "Pseudococcus viburni" OR "Pseudomonas cichorii" OR "Pseudomonas fluorescens" OR "Pseudomonas syringae" OR "Pseudomonas syringae pv. papulans" OR "Pseudomonas syringae pv. syringae" OR "Pseudomonas viridiflava" OR "Pseudoveronaea ellipsoidea" OR "Pseudoveronaea obclavata" OR "Psorosina hammondi" OR "Psylla mali" OR "Psylla melanoneura" OR "Psylliodes chrysocephala" OR "Psyllobora vigintiduopunctata" OR "Pterochloroides persicae" OR "Ptilodon capucina" OR "Ptycholoma lecheana" OR "Ptycholoma lecheanum" OR "Puccinia heterospora" OR "Pulcherricium caeruleum" OR "Pullularia pullulans" OR "Pulvinaria loralaiensis" OR "Pulvinaria regalis" OR "Pulvinaria vitis" OR "Punctularia strigosozonata" OR "Puyllobius pyri" OR "Pycnoporus cinnabarinus" OR "Pycnoporus coccineus" OR "Pyrenochaeta furfuracea" OR "Pyrenochaeta mali" OR "Pyrolachnus pyri" OR "Pyropolyporus fomentarius" OR "Pythium abapressorium" OR "Pythium acanthophoron" OR "Pythium afertile" OR "Pythium arrhenomanes" OR "Pythium debaryanum" OR "Pythium echinulatum" OR "Pythium gracile" OR "Pythium helicandrum" OR "Pythium indigoferae" OR "Pythium intermedium" OR "Pythium irregulare" OR "Pythium mamillatum" OR "Pythium middletonii" OR "Pythium minus" OR "Pythium paroecandrum" OR "Pythium polytylum" OR "Pythium rostratum" OR "Pythium spinosum" OR "Pythium splendens" OR "Pythium torulosum" OR "Pythium ultimum" OR "Pythium ultimum var. ultimum" OR "Pythium vexans"

OR "Quadraspidiotus ostreaeformis" OR "Quadraspidiotus pyri" OR "Radulum aterrimum" OR "Ramichloridium apiculatum" OR "Ramichloridium luteum" OR "Ramichloridium mali" OR "Ramphus oxyacanthae" OR "Ramphus pulicarius" OR "Ramularia eucalypti" OR "Ramularia macrospora" OR "Ramularia magnusiana" OR "Ramularia mali" OR "Ramularia malicola" OR "Ramularia vizellae" OR "Recurvaria leucateila" OR "Recurvaria nanella" OR "Resseliella oculiperda" OR "Retithrips syriacus" OR "Rhagium bifasciatum" OR "Rhagium mordax" OR "Rhagoletis completa" OR "Rhagoletis pomonella" OR "Rhagoletis tabellaria" OR "Rhagoletis zephyria" OR "Rhizobium radiobacter" OR "Rhizobium rhizogenes" OR "Rhizoctonia solani" OR "Rhizopus nigricans" OR "Rhizopus oryzae" OR "Rhizopus stolonifer" OR "Rhodococcus turanicus" OR "Rhopalosiphum insertum" OR "Rhopalosiphum oxyacanthae" OR "Rhopalosiphum padi" OR "Rhopobota unipunctana" OR "Rhynchites aequatus" OR "Rhynchites auratus" OR "Rhynchites bacchus" OR "Rhynchites pauxillus" OR "Ribautiana debilis" OR "Ricania speculum" OR "Richardia brasiliensis" OR "Roesleria hypogaea" OR "Roesleria subterranea" OR "Roestelia fenzeliana" OR "Rosellinia necatrix" OR "Rosellinia radiciperda" OR "Rotylenchulus reniformis" OR "Rotylenchus montanus" OR "Rubus ellipticus" OR "Russellaspis pustulans pustulans" OR "Rutstroemia rhenana" OR "Saissetia oleae oleae" OR "Salicicola kermanensis" OR "Saperda candida" OR "Saperda scalaris" OR "Sarcinella heterospora" OR "Sarcodontia crocea" OR "Sarcodontia setosa" OR "Sarocladium kiliense" OR "Sarocladium liquanensis" OR "Sarocladium mali" OR "Saturnia pavonia" OR "Saturnia pyri" OR "Schistocerca gregaria" OR "Schizoneurella indica" OR "Schizophyllum alneum" OR "Schizophyllum commune" OR "Schizotetranychus schizopus" OR "Schizotetranychus smirnovi" OR "Schizothyrium jamaicense" OR "Schizothyrium perexiguum" OR "Schizothyrium pomi" OR "Schizura concinna" OR "Schizura leptinoides" OR "Schizura unicornis" OR "Scirtothrips dorsalis" OR "Sclerophoma endogenospora" OR "Sclerophoma mali" OR "Scleroramularia abundans" OR "Scleroramularia henaniensis" OR "Scleroramularia pomigena" OR "Scleroramularia shaanxiensis" OR "Scleroramularia shaaxiensis" OR "Sclerotinia fructicola" OR "Sclerotinia fructigena" OR "Sclerotinia fruticola" OR "Sclerotinia kenjiana" OR "Sclerotinia laxa" OR "Sclerotinia mali" OR "Sclerotinia sclerotiorum" OR "Sclerotium delphinii" OR "Sclerotium rolfsii" OR "Sclerotium rolfsii var. delphinii" OR "Scolicosporium pedicellatum" OR "Scolytus amygdali" OR "Scolytus mali" OR "Scolytus rugulosus" OR "Scutellospora pellucida" OR "Scutylenchus baluchiensis" OR "Scytinostroma galactinum" OR "Scytinostroma protrusum subsp. protrusum" OR "Seimatosporium fusisporum" OR "Seimatosporium lichenicola" OR "Senecio vulgaris" OR "Septobasidium pseudopedicellatum" OR "Septocylindrium aderholdii" OR "Septocylindrium radicola" OR "Septoria piricola" OR "Septoria pyri" OR "Septoria pyricola" OR "Sesia bembeciformis" OR "Setaria viridis" OR "Sibine trimacula" OR "Siphoninus phillyreae" OR "Smerinthus ocellata" OR "Solanum carolinense" OR "Sophonia orientalis" OR "Spencermartinsia plurivora" OR "Sphaeria bisphaerica" OR "Sphaeria microtheca" OR "Sphaerolecanium prunastri" OR "Sphaeropsis mali" OR "Sphaeropsis malorum" OR "Sphaeropsis pyriputrescens" OR "Sphaeropsis sapinea" OR "Sphaerotheca pannosa" OR "Sphaerotheca pomorum" OR "Sphinx perelegans" OR "Sphrageidus similis" OR "Spilocaea pomi" OR "Spilococcus pacificus" OR "Spilonota ocellana" OR "Spilosoma lubricipeda" OR "Spilosoma luteum" OR "Spodoptera eridania" OR "Spodoptera frugiperda" OR "Spodoptera littoralis" OR "Spodoptera litura" OR "Spodoptera praefica" OR "Sporidesmium majora pennsylvaniensis" OR "Sporidesmium asperum" OR "Sporidesmium fructigenum" OR "Sporobolomyces pararoseus" OR "Sporobolomyces roseus" OR "Sporocadus mali" OR "Sporonema oxycocci" OR "Sporotrichum malorum" OR "Spulerina astaurota" OR "Stagonospora bififormis" OR "Stagonospora prominula" OR "Stauropus fagi" OR "Stegonsporium megasporium" OR "Stellaria media" OR "Stemphylium botryosum" OR "Stemphylium chrysanthemicola" OR "Stemphylium congestum" OR "Stemphylium congestum var. minor" OR "Stemphylium globuliferum" OR "Stemphylium graminis" OR "Stemphylium ilicis" OR "Stemphylium simmonsii" OR "Stemphylium vesicarium" OR "Stenocorus meridianus" OR "Stenoptilia bipunctidactyla" OR "Stenotus binotatus" OR "Stephanitis pyri" OR "Sterium albobadium" OR "Sterium complicatum" OR "Sterium erumpens" OR "Sterium gausapatum" OR "Sterium hirsutum" OR "Sterium murrayi" OR "Sterium purpureum" OR "Sterium versiforme" OR "Stigmella desperatella" OR "Stigmella incognitella" OR "Stigmella magdalanae" OR "Stigmella malella" OR "Stigmella oxyacanthella" OR "Stigmella pomella" OR "Stigmella pomivorella" OR "Stigmella pulverosella" OR "Stigmella sorbi" OR "Stigmata carpophila" OR "Stigmata negundinis" OR "Stigmata pallida" OR "Stilbella aciculosa" OR "Stilbella flavescens" OR "Strasseria carpophila" OR "Strasseria geniculata" OR "Strelitziana mali" OR "Strickeria kochii" OR "Strickeria obducens" OR "Suturaspis archangelskyae" OR "Swammerdamia pyrella" OR "Synanthedon hector" OR "Synanthedon myopaeformis" OR "Synanthedon scitula" OR "Syndemis musculana" OR "Takahashia japonica" OR "Tanymecus

dilaticollis" OR "Tanymecus palliatus" OR "Taphrina bullata" OR "Tapinoma nigerrimum" OR "Taraxacum officinale complex" OR "Teichospora cruentula" OR "Teichospora seminuda" OR "Teichospora zabriskieana" OR "Temnostethus pusillus" OR "Temperate fruit decay associated virus" OR "Tetranychus arabicus" OR "Tetranychus canadensis" OR "Tetranychus cinnabarinus" OR "Tetranychus desertorum" OR "Tetranychus frater" OR "Tetranychus kanzawai" OR "Tetranychus lambi" OR "Tetranychus ludeni" OR "Tetranychus mcdanieli" OR "Tetranychus mexicanus" OR "Tetranychus neocaledonicus" OR "Tetranychus pacificus" OR "Tetranychus schoenei" OR "Tetranychus turkestanii" OR "Tetranychus urticae" OR "Tetranychus viennensis" OR "Tetrops praeustus" OR "Tettigonia viridissima" OR "Thaumatotibia leucotreta" OR "Thelonectria lucida" OR "Thrips angusticeps" OR "Thrips flavus" OR "Thrips hawaiiensis" OR "Thrips imaginis" OR "Thrips major" OR "Thrips obscuratus" OR "Thrips tabaci" OR "Thyridopteryx ephemeraeformis" OR "Tilletiopsis pallescens" OR "Timocratica albella" OR "Tischeria malifoliella" OR "Tobacco mosaic virus" OR "Tobacco necrosis virus" OR "Tobacco ringspot virus" OR "Tomato black ring virus" OR "Tomato bushy stunt virus" OR "Tomato ringspot virus" OR "Torula herbarum" OR "Torymus druparum" OR "Trachycera advenella" OR "Trametes gallica" OR "Trametes gallica var. trogii" OR "Trametes hirsuta" OR "Trametes malicola" OR "Trametes ochracea" OR "Trametes pubescens" OR "Trametes versicolor" OR "Trametes zonata" OR "Trematosphaeria communis" OR "Trichiura crataegi" OR "Trichoderma harzianum" OR "Trichoderma koningii" OR "Trichoderma viride" OR "Trichodorus viruliferus" OR "Trichoferus campestris" OR "Trichosea ludifica" OR "Trichoseptoria fructigena" OR "Trichothecium roseum" OR "Tripospermum acerinum" OR "Tripospermum camelopardus" OR "Tripospermum myrti" OR "Trirachys holosericeus" OR "Trirachys sartus" OR "Tropinota hirta" OR "Truncatella angustata" OR "Truncatella laurocerasi" OR "Trybliidiella rufula" OR "Trypetoptera punctulata" OR "Trypodendron domesticum" OR "Trypodendron signatum" OR "Tubercularia vulgaris" OR "Tulare apple mosaic virus" OR "Tylenchus areolatus" OR "Tylenchus neozelandicus" OR "Tylenchus ruatus" OR "Tylenchus whitus" OR "Tympanis alnea" OR "Tympanis conspersa" OR "Tympanis malicola" OR "Typhlocyba pomaria" OR "Typhlocyba quercus" OR "Typhlodromus khosrovensis" OR "Tyromyces caesius" OR "Tyromyces fissiliformis" OR "Ulocladium consortiale" OR "Ulotricha egregalis" OR "Urophorus humeralis" OR "Uwebraunia commune" OR "Uwebraunia dekkeri" OR "Valsa ambiens" OR "Valsa americana" OR "Valsa amphibola" OR "Valsa ceratosperma" OR "Valsa cincta" OR "Valsa leucostoma" OR "Valsa mali" OR "Valsa mali var. mali" OR "Valsa mali var. pyri" OR "Valsa malicola" OR "Valsa melastoma" OR "Valsa nivea" OR "Valsa papyriferae" OR "Valsa persoonii" OR "Valsaria insitiva" OR "Valsella melastoma" OR "Valsella papyriferae" OR "Venturia asperata" OR "Venturia inaequalis" OR "Venturia pyrina" OR "Verticillium albo-atrum" OR "Verticillium dahliae" OR "Vibidia duodecimguttata" OR "Vitula serratilineella" OR "Vryburgia viator" OR "Wallemia sebi" OR "Watabura nishiyae" OR "Xanthochrous hispidus" OR "Xestia c-nigrum" OR "Xestia ditrapezium" OR "Xiphinema americanum" OR "Xiphinema diversicaudatum" OR "Xiphinema index" OR "Xiphinema pachtaicum" OR "Xiphinema rivesi" OR "Xylaria corniformis" OR "Xylaria curta" OR "Xylaria longiana" OR "Xylaria mali" OR "Xylaria polymorpha" OR "Xyleborinus attenuatus" OR "Xyleborinus saxesenii" OR "Xyleborus dispar" OR "Xylena nupera" OR "Xylena vetusta" OR "Xylobolus subpileatus" OR "Xylochora nigropunctata" OR "Xylosandrus crassiusculus" OR "Xylosandrus germanus" OR "Xylotrechus chinensis" OR "Xylotrechus namanganensis" OR "Xysticus kochii" OR "Yponomeuta malinellus" OR "Yponomeuta padella" OR "Ypsolopha horridella" OR "Ypsolopha scabrella" OR "Zamopsycha commentella" OR "Zasmidium angulare" OR "Zetiasplozna thuemenii" OR "Zeuzera coffeae" OR "Zeuzera pyrina" OR "Zygina flammigera" OR "Zygina schneideri" OR "Zygophiala cryptogama" OR "Zygophiala cylindrica" OR "Zygophiala emperora" OR "Zygophiala jamaicensis" OR "Zygophiala qianensis" OR "Zygophiala tardicrescens" OR "Zygophiala wisconsinensis" OR "Aspidiotus hederarum" OR "Hemiberlesia latania" OR "Icerya purchasi" OR "Kilifa acuminata" OR "Lepidosaphes beckii" OR "Lepidosaphes gloverii" OR "Lepidosaphes pallidula" OR "Maconellicoccus hirsutus" OR "Mycetaspis personata" OR "Russellaspis pustulans" OR "Coccophagus scutellaris" OR "Aphytis lingnanensis" OR "Aphytis mytilaspidis" OR "Aphytis chrysomphali" OR "Leptomastix flava" OR "Pteroptrix aegyptica" OR "Neoplattycerus kenticus" OR "Leptomastidea abnormis" OR "Metaphycus asterolecanii" OR "Edwardsiana quettensis" OR "Tydeus shabestariensis" OR "Typhlodromus pyri" OR "Typhlodromus cotoneastri" OR "Caleptrymerus baileyi" OR "Candida famata" OR "Cerambyx dux" OR "Molothrognathus kurdistanensis" OR "Carabus graecus morio" OR "Carabus coriaceus" OR "Calathus cinctus" OR "Calathus syriacus" OR "Laemostenus kirschenhoferi" OR "Zabrus kraatzi" OR "Amara aenea" OR "Amara apricaria" OR "Amara convexiuscula" OR "Amara crenata" OR "Amara cursitans" OR "Amara eurynota" OR "Amara ovata" OR "Amara proxima" OR "Odontocarus asiaticus" OR "Dixus eremita" OR "Dixus obscurus" OR "Acinopus



laevigatus" OR "Ophonus battus" OR "Semiophonus signaticornis" OR "Pseudoophonus griseus" OR "Pseudoophonus rufipes" OR "Harpalus hospes armenus" OR "Harpalus albanicus" OR "Harpalus caspius" OR "Harpalus distinguendus" OR "Harpalus oblitus" OR "Harpalus serripes" OR "Harpalus smaragdinus" OR "Brachinus ejaculans" OR "Brachinus explodens" OR "Thrips meridionalis" OR "Riptortus pedestris" OR "Ooencyrtus nezarae" OR "Gryon japonicum" OR "Orgyia gonostigma" OR "Stigmaeus marandensis" OR "Eupalopsellus prasadi" OR "Stigmaeus saboorii" OR "Eustigmaeus setiferus" OR "Metaphidippus aeneolus" OR "Eris marginata" OR "Tutelina similis" OR "Salticus scenicus" OR "Spirembolus mundus" OR "Pityohyphantes rubrofasciatus" OR "Cheiracanthium inclusum" OR "Philodromus spectabilis" OR "Philodromus rufus" OR "Philodromus speciosus" OR "Apollophanes margareta" OR "Tibellus oblongus" OR "Theridion lawrencei" OR "Theridion differens" OR "Theridion californicum" OR "Theridion cmurarium" OR "Theridion neomaxicanum" OR "Dipoena nigra" OR "Dctyna peragrata" OR "Xysticus loculpes" OR "Tetragnatha laboriosa" OR "Araneus diadematus" OR "Araniella displicata" OR "Metepeira grandiosa" OR "Anyphaena pacificata" OR "Leuronychus parvulus" OR "Oxyopes scalaris" OR "Haplocampa testudinea" OR "Staphylinidae" OR "Phytoseius kassasini" OR "Bucculatrix malivorella" OR "Aphytis maculicornis" OR "da leggere" OR "Argyrotaenia spheropa" OR "Typhlodromus sub-solidus" OR "Parascolothrips priesneri" OR "Aeolesthes sarta" OR "Renocis brittaini" OR "Renocis commixtus" OR "Coenorhinus pauxillus" OR "Lygus lineolaris" OR "Heterocordylus malinus" OR "Lygidea mendax" OR "Agistemus fleschneri" OR "Amblyseius fallaci" OR "Typhlodromus caudiglans" OR "Blepharidopterus provancheri" OR "Hyponomeuta malinella")

## **Appendix B – Excel file with the pest list of *Malus domestica***

Appendix B can be found in the online version of this output (in the 'Supporting information' section).