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SCIENTIFIC OPINION

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Commodity risk assessment of *Prunus cerasus* × *Prunus canescens* hybrid plants from Ukraine

EFSA Panel on Plant Health (PLH) | Antonio Vicent Civera | Paula Baptista | Elisavet Chatzivassiliou | Jaime Cubero | Nik Cunniffe | Eduardo de la Peña | Nicolas Desneux | Anna Filipiak | Paolo Gonthier | Beata Hasiów-Jaroszewska | Hervé Jactel | Blanca B. Landa | Lara Maistrello | David Makowski | Panagiotis Milonas | Nikos T. Papadopoulos | Roel Potting | Hanna Susi | Dirk Jan van der Gaag | Pedro Gómez | Annemarie Justesen Andrea Lucchi | Gregor Urek | Jonathan Yuen | Lucia Zappala | Umberto Bernardo | Giovanni Bubici | Anna Vittoria Carluccio | Michela Chiumenti | Francesco Di Serio | Elena Fanelli | Paraskevi Kariampa | Cristina Marzachì | Agata Kaczmarek | Cristiana Do Vale Correia | Anna Berlin

Correspondence: plants@efsa.europa.eu

The declarations of interest of all scientific experts active in EFSA's work are available at https://ess.efsa.europa.eu/doi/doiweb/doisearch

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 plants of hybrids of *Prunus cerasus* x *Prunus canescens* imported from Ukraine, taking into account the available scientific information, including the technical information provided by Ukraine. All pests that may be associated with the hybrids of *P. cerasus* x *P. canescens* were evaluated against specific criteria for their relevance for this opinion. None of the pests fulfilled all relevant criteria due to the production method and risk mitigation measures carried out by the nursery; therefore, none were selected for further evaluation.

KEYWORDS

cherry, European Union, grey-leaf cherry, pathway risk assessment, plant health, plant pest, quarantine, rootstock, sour cherry

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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,[1] 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.[2] 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,[3] 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 organisations 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 *Prunus cerasus* × *Prunus canescens* from Ukraine taking into account the available scientific information, including the technical dossier provided by the State Service of Ukraine on Food Safety and Consumer Protection (SSUFSCP).

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 *Prunus cerasus* x *Prunus canescens* rootstock from Ukraine following the Guidance on commodity risk assessment for the evaluation of high-risk plant dossiers (EFSA PLH Panel, 2019) and the protocol for commodity risk assessments as presented in the EFSA standard protocols for scientific assessments (EFSA PLH Panel, 2024; Gardi et al., 2024).

The EU quarantine pests that are regulated as a group in the Commission Implementing Regulation (EU) 2019/2072[4] 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, 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 United

[1]Regulation (EU) 2016/2031 of the European Parliament 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.

[2]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.

[3]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.

[4]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.

Kingdom (except Northern Ireland[5])). 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 I 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. pest 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 case a pest is at the same time regulated as an RNQP and as a Protected zone Quarantine pest, in this opinion, it should be evaluated as Quarantine pest.

In its evaluation, the Panel:

- Checked whether the information provided by the applicant (State Service of Ukraine on Food Safety and Consumer Protection – SSUFSCP) in the technical dossier (hereafter referred to as 'the Dossier') was sufficient to conduct a commodity risk assessment.
- Selected the relevant union EU-regulated quarantine pests and protected zone quarantine pests (as specified in Commission Implementing Regulation (EU), hereafter referred to as 'EU quarantine pests') and other relevant pests present in Ukraine and associated with the commodity.
- Assessed whether the applicant country implements the special requirements specified in Annex VII (points 1–101) 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.
- The risk assessment and its conclusions are based on the information provided in the Dossier (specific place and procedure of production). Any difference in the production process (site, procedures) may change the overall risk estimated.

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 proposed by the SSUFSCP.

2 | DATA AND METHODOLOGIES

2.1 | Data provided by the state service of Ukraine on food safety and consumer protection

The Panel considered all the data and information provided by SSUFSCP in January 2024. 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	Technical dossier *Prunus cerasus* × *Prunus canescens*, Gisela 5, Gisela 6.docx
1.1	Pest list and pesticide applied on *Prunus canescens* × *P. cerasus*	Appendix to Technical dossier Prunus.docx
1.2	Annexes with Licence agreement and certificates of growing media and basic growing material.	ANNEX A-1_CDB License Agreement contract 06 122019_Public.pdf ANNEX A-2_Certificates of growing media_Public.pdf ANNEX A-3_Certification of Basic material_Public.pdf

The data and supporting information provided by the SSUFSCP formed the basis of the commodity risk assessment.

[5]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 Windsor Framework in conjunction with Annex 2 to that Framework, for the purposes of this Opinion, references to the United Kingdom do not include Northern Ireland.

2.2 | Literature searches performed by EFSA

Literature searches in different databases (Table 2) were undertaken by EFSA to complete a list of pests potentially associated with *P. cerasus*, *P. canescens* or hybrids of these two species. The following searches were combined: (i) a general search to identify pests of *P. cerasus* or *P. canescens* in different databases and (ii) a tailored search to identify whether these pests are present or not in Ukraine and the EU. The searches were run between 10 April 2024 and 26 June 2024. 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 with *Prunus canescens* or *Prunus cerasus*.

Database	Platform/link
Aphids on World Plants	https://www.aphidsonworldsplants.info/C_HOSTS_AAIntro.htm
CABI Crop Protection Compendium	https://www.cabi.org/cpc/
Database of Insects and their Food Plants	https://www.brc.ac.uk/dbif/hosts.aspx
Database of the World's Lepidopteran Hostplants	https://www.nhm.ac.uk/our-science/data/hostplants/search/index.dsml
EPPO Global Database	https://gd.eppo.int/
EUROPHYT	https://webgate.ec.europa.eu/europhyt/
Leaf-miners	https://leafmines.co.uk/html/plants.htm
Nemaplex	https://nemaplex.ucdavis.edu/Nemabase2010/PlantNematodeHostStatusDDQuery.aspx
Plant Pest Information Network	https://www.mpi.govt.nz/news-and-resources/resources/registers-and-lists/plant-pest-information-network/
Scalenet	https://scalenet.info/associates/
Spider Mites Web	https://www1.montpellier.inra.fr/CBGP/spmweb/
USDA ARS Fungal Database	https://fungi.ars.usda.gov/
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 FSTA, KCI-Korean Journal Database, Russian Science Citation Index, MEDLINE SciELO Citation Index, Zoological Record)	Web of Science https://www.webofknowledge.com
World Agroforestry	https://www.worldagroforestry.org/treedb2/speciesprofile.php?Spid=1749
GBIF	https://www.gbif.org/
Biotanz	https://biotanz.landcareresearch.co.nz/

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.

2.3.1 | Commodity data

Based on the information provided by the SSUFSCP, the characteristics of the commodity are summarised in Section 3 of this Opinion.

2.3.2 | Identification of pests potentially associated with the commodity

To evaluate the pest risk associated with the importation of the rootstocks of *P. cerasus* × *P. canescens from* Ukraine, a pest list was compiled. The pest list is a compilation of all identified plant pests associated with *P. cerasus*, *P. canescens* or hybrids of these two species based on information provided in the Dossier and on searches performed by the Panel. 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.

The scientific names of the host plants (i.e. *P. cerasus* and *P. canescens*) were used when searching in the EPPO Global database and CABI Crop Protection Compendium. The same strategy (including also the common names i.e. sour cherry, myrabolan) was applied to the other databases excluding EUROPHYT and Web of Science.

EUROPHYT was consulted by searching for the interceptions associated with commodities imported from Ukraine, at species level, from 1994 to May 2020 and TRACES for interceptions from May 2020 to August 2024. For the pests selected for further evaluation, a search in 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 29 April 2024 with the date range from 21 February 2024 to 29 June 2024.

The titles and abstracts of the scientific papers retrieved were screened and the pests associated with *P. cerasus*, *P. canescens* or hybrids of these two species 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® file in Appendix B) includes all identified pests that use *P. cerasus* or *P. canescens* as host.

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

As the Panel did not identify any relevant pest for this Opinion, the proposed risk mitigation measures were listed but not further evaluated, and for the same reason, Expert Knowledge Elicitation on pest freedom was not performed.

3 | COMMODITY DATA

3.1 | Description of the commodity

According to the Dossier, the commodities to be imported are plants for planting of hybrids of *Prunus cerasus* and *P. canescens*, which are used as Gisela 5 and Gisela 6 dwarf and semi dwarf cherry rootstock varieties. The cherry rootstocks ready for export are 1- to 2-year-old, non-grafted plants with a height of 15–60 cm without leaves (Figure 1).

FIGURE 1 Plants ready for export (picture provided by SSUFSCP).

3.2 | Description of the production areas

Production of commodity is carried out at an authorised production site in accordance with the phytosanitary regulations of Ukraine.

Clonal micropropagation is carried out in the laboratory of Dolyna-Agro LTD with professional staff and facilities. In vitro propagation of *Prunus* spp. is conducted in aseptic laboratory conditions.

The acclimatisation stage of in vitro plants takes place in tunnels outside for hardening and adjustment to natural field conditions. Over the following weeks/months, the tunnel temperature and humidity are gradually adjusted to be closer to the external environmental conditions.

3.3 | Production and handling processes

3.3.1 | Growing conditions

Media preparation and micropropagation areas have an air-conditioning and filtration system, UV-lamps and laminar-flow benches. All tools, shelves, equipment and containers are sterilised by ozonation technology, ultraviolet light and disinfected with alcohol. The aseptic workspace is buffered and isolated from other areas in the laboratory. In vitro growing conditions are an ambient temperature between 22°C and 27°C, and a relative humidity of usually 40%–50%.

Growing media for dormant bud growth initiation through vegetative phenological phase is a sterilised growing medium. Plants are grown in vitro from vegetative shoots, by propagation, elongation and rooting in sterile conditions provided with a special nutrient medium in closed containers. The in vitro plants are subsequently transferred to the adaptation room, where the plants are grown in trays with a peat substrate.

Plants are grown during the vegetative season within the calendar year, starting from mid-March to mid-late November (time frames may vary slightly depending on the weather conditions of the year).

Acclimatisation proceeds in external tunnels. The plants remain in multiplates, while they grow in the tunnels on prepared sites. Floors in the acclimatisation tunnels are covered with a 30-cm deep gravel bedding and covered with a layer of geotextile.

3.3.2 | Source of planting material

The source of basic (mother) plant material for in vitro propagation comes from the Laboratory Consortium Deutscher Baumschulen GmbH, Germany. It is certified as Gisela 5 and Gisela 6 (Gi1481) dwarf and semi-dwarf cherry rootstocks (Annex A-3).

3.3.3 | Production cycle

Preparation of the sterile nutrient medium takes place in aseptic rooms.

Basic plant material is certified according to ANNEX A-3 of the submitted Dossier and has been subjected to official tests for harmful organisms.

Micropropagation usually results in numerous clonal propagules per unit of initial (stock) plant material.

Production of in vitro plants consists of multiple stages:

1. Multiplication stage

The cultures are checked for fungal/yeast or bacterial contamination and only those free of contamination are utilised. Plants are picked up one by one on sterile paper sheets using one tool set per plant. Callus, deformed or damaged tissue, shoots with signs of necrosis are removed. The shoots are separated, stripped of the lower leaves, leaving two to three leaves on the top of the shoot. Apexes are inserted into agar multiplication media with a size of 1–1.5 cm and with half of the upper part outside (Figures 2 and 3).

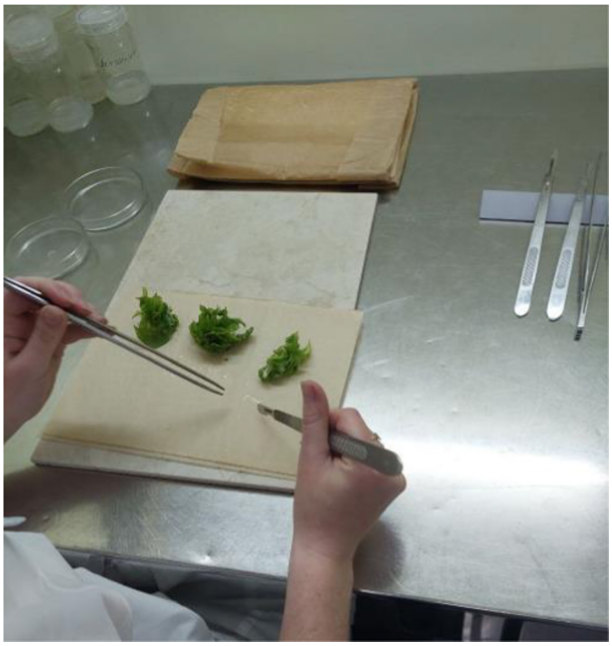

FIGURE 2 Multiplication stage (picture provided by SSUFSCP).

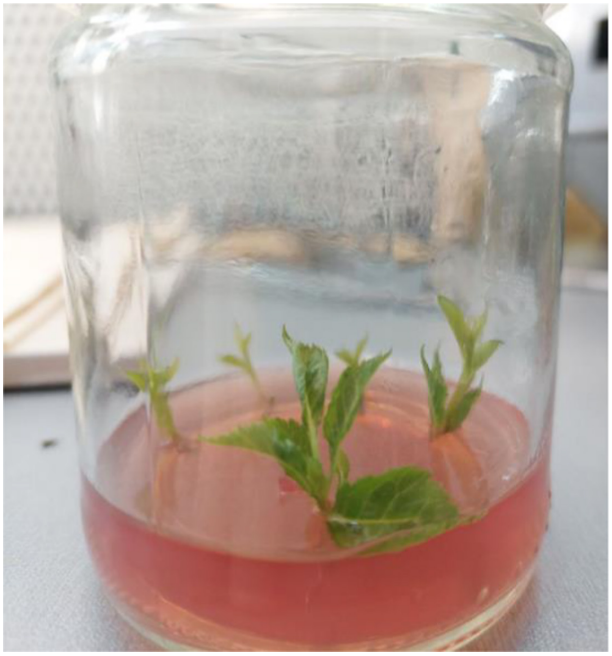

FIGURE 3 Transplanted plants into agar medium (picture provided by SSUFSCP).

2. Elongation stage

Shoot elongation is a prerequisite step of cultivation in order to get high rooting performance. On the third week of cultivation on multiplication medium, 5 mL of liquid elongation media is added into a culture vessel under a laminar flow bench with a sterile glass pipette (Figure 4).

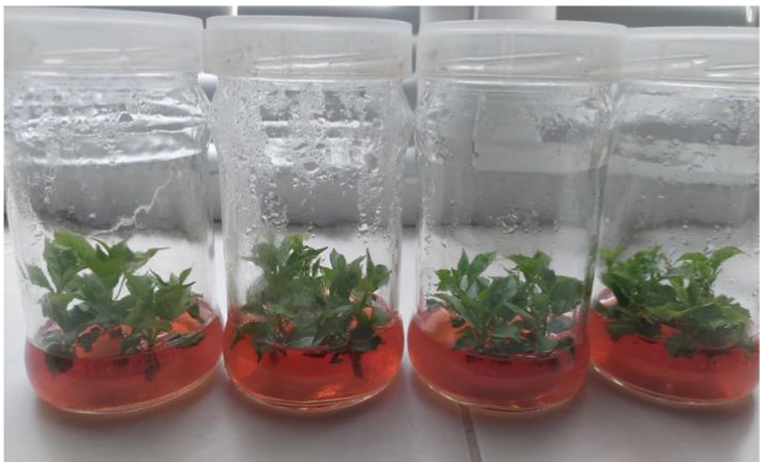

FIGURE 4 Shoot elongation stage (picture provided by SSUFSCP).

3. Rooting stage

The effectiveness of rooting depends on the success of the previous stages, cultivation conditions and correct planting method. Shoots which are at least 1.5–2.5 cm long are separated from the rosette, the callus is removed and shoots are stripped of dead or vitrified leaves. Similar to the multiplication process, the lower leaves are also cut off, leaving at least two to three leaves at the top. Ready for planting, shoots are transferred to agar medium (Figure 5).

FIGURE 5 Roots formed during rooting stage (picture provided by SSUFSCP).

4. In vitro growth conditions

Cultivation in vitro is carried out in special rooms with maintenance of set temperature, humidity and air circulation, equipped for cultivation of plants with racks with lighting. Twice a week the rooms are disinfected by ozonation, wet cleaning and disinfection of racks.

Each growing cycle takes 4–5 weeks, with addition of liquid medium in the third week, and are cultivated for an additional 2 weeks at temperature of 22 ± 1°C and a photoperiod of 16 h.

5. Adaptation stage

In vitro plants are transferred into plant growing rooms after a month growing in rooting media. Plants are replanted by hand in multiplates with peat substrate (FAO, 2017) and put on the shelves with lighting for 6–8 weeks (Figure 6). Growing rooms are kept under controlled conditions with special attention to pest protection and for adaptation to normal growing conditions (light, humidity, temperature, air circulation). The rooms are disinfected by ozonation, wet cleaning and shelves disinfection (ethanol 95%).

FIGURE 6 Replanted plants in peat substrate during the adaptation stage (picture provided by SSUFSCP).

6. Acclimatisation stage

Acclimatisation of in vitro plants to natural field conditions proceeds in tunnels outside the building (Figure 7). To separate the pots from the ground, they are placed on the 30-cm gravel and a geotextile. As the commodity develops more functional roots, photosynthetic activity is increased and plants become autotrophic. After completing this stage, plants are defoliated prior to export.

FIGURE 7 Acclimatisation stage in tunnels (picture provided by SSUFSCP).

After the completion of all the above stages, the plants are ready for shipment, so the plant containers are moved to an area designated for sorting, final quality control and further packaging.

3.3.4 | Pest monitoring during production

Throughout the whole propagation process and each production stage, laboratory staff visually examines all media and plant material for microbial infection and pest infestation on a systematically basis. Rejected plant material and growing media identified and controlled by technologists are autoclaved for 1 h to prevent their further use as part of the quarantine system. General sanitary practices are implemented to ensure phytosanitary management of plant material. All nurseries producing plants of *Prunus* spp. conduct the following compulsory phytosanitary measures:

a. visual evaluation to identify regulated harmful organisms and in the case of detection of pests, the national plant protection organisation (SSUFSCP) is informed;
b. application of a complex of preventive and curative measures to control pests, diseases and weeds; and
c. implementation of regulations for storage, transportation and use of plant protection products.

Plants of *Prunus* spp. intended for export are examined, samples are taken for phytosanitary procedures and a phytosanitary certificate is issued.

3.3.5 | Post-harvest processes and export procedure

After the natural acclimatisation process is finished and defoliation (Figure 8) is complete, each plant is labelled with name of genus, variety, planting date and name of the responsible person. All plants are sorted into two classes. The first class is well-developed plants with well-developed root system. Before export, phytosanitary inspection service monitors the place of loading and controls the selection of samples of plants for a phytosanitary certificate. The commodity is wrapped in plastic sheets and placed into cardboard boxes. Each box has a label with name of variety and category of commodity, quantity, date of packing and the number of the phytosanitary certificate. After packing, boxes for export are immediately loaded onto trucks. Commodities are transported under conditions suitable for the buyer's request and the sales agreement. Generally, transportation is carried out in refrigerated trucks. The humidity of the loaded truck must be between 85% and 95%, and the temperature between 2°C and 4°C. The shipping season is from October to March.

FIGURE 8 Plants after defoliation (picture provided by SSUFSCP).

4 | IDENTIFICATION OF PESTS POTENTIALLY ASSOCIATED WITH THE COMMODITY

The search for potential pests associated with *P. cerasus*, *P. canescens* or hybrids between these two species rendered 658 species (see Microsoft Excel® 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.

Thirty-one EU-quarantine species that are reported to use *P. cerasus*, *P. canescens* or hybrids between these two species as a host plant were evaluated (Table 3) 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 Ukraine;
b. *Prunus cerasus* or *P. canescens* or their hybrids are hosts of the pest;
c. one or more life stages of the pest can be associated with the specified commodity.

None of the pests were retained for further evaluation because none fulfilled all the relevant criteria.

TABLE 3 Overview of the evaluation of the 31 EU-quarantine pest species known to use *P. cerasus* or *P. canescens* as host plants for their relevance for this opinion.

N.	Pest name according to EU legislation[a]	EPPO code	Group	Present in Ukraine	Host	*Prunus cerasus* or *P. canescens* host (reference)	Pest can be associated with the commodity	Pest relevant for the opinion
1	*Aleurocanthus spiniferus*	ALECSN	Insects	No	*P. cerasus*	EPPO	Not evaluated	No
2	*Ilarvirus APLPV* (American plum line pattern virus)	APLPV0	Viruses	No	*P. cerasus*	CABI, EPPO	Not evaluated	No
3	*Anoplophora chinensis*	ANOLCN	Insects	No	*P. cerasus*	EPPO	Not evaluated	No
4	*Anthonomus quadrigibbus*	TACYQU	Insects	No	*P. canescens*, *P. cerasus*	EPPO, CABI	Not evaluated	No
5	*Apiosporina morbosa*	DIBOMO	Fungi	No	*P. canescens*, *P. cerasus*	EPPO, USDA ARS Fungal Database	Not evaluated	No
6	*Apriona cinerea*	APRICI	Insects	No	*P. canescens*, *P. cerasus*	EPPO	Not evaluated	No
7	*Aromia bungii*	AROMBU	Insects	No	*P. canescens*, *P. cerasus*	EPPO, CABI	Not evaluated	No
8	*Bactrocera dorsalis*	DACUDO	Insects	No	*P. cerasus*	EPPO	Not evaluated	No
9	*Candidatus Phytoplasma pruni*	PHYPPN	Phytoplasma	No	*P. cerasus*	EPPO, CABI	Not evaluated	No
10	*Carposina sasakii*	CARSSA	Insects	No	*P. canescens*, *P. cerasus*	EPPO	Not evaluated	No
11	*Cheravirus avii* (Cherry rasp leaf virus)	CRLV00	Viruses	No	*P. cerasus*	CABI	Not evaluated	No
12	*Robigovirus robigomaculae* (Cherry rusty mottle associated virus)	CRMAV0	Viruses	No	*P. cerasus*	EPPO	Not evaluated	No
13	*Conotrachelus nenuphar*	CONHNE	Insects	No	*P. canescens*, *P. cerasus*	EPPO, CABI	Not evaluated	No
14	*Erwinia amylovora*	ERWIAM	Bacteria	Yes	*P. cerasus*, *P.canescens*	Dossier	Uncertain	No
15	*Grapholita inopinata*	CYDIIN	Insects	No	*P. canescens*	EPPO	Not evaluated	No
16	*Grapholita packardi*	LASPPA	Insects	No	*P. canescens*, *P. cerasus*	EPPO, CABI	Not evaluated	No
17	*Grapholita prunivora*	LASPPR	Insects	No	*P. canescens*, *P. cerasus*	EPPO	Not evaluated	No
18	*Helicoverpa zea*	HELIZE	Insects	No	*P. cerasus*	EPPO	Not evaluated	No
19	*Lopholeucaspis japonica*[b]	LOPLJA	Insects	Yes	*Prunus* spp.	EPPO	The commodity is not a pathway	No
20	*Lycorma delicatula*	LYCMDE	Insects	No	*P. cerasus*	EPPO	Not evaluated	No
21	*Neokolla hieroglyphica*	GRCPHI	Insects	No	*P. cerasus*	Phillips (1951)	Not evaluated	No
22	*Trichovirus persicae* (Peach mosaic virus)	PCMV00	Viruses	No	*P. canescens*, *P. cerasus*	EPPO	Not evaluated	No
23	*Phymatotrichopsis omnivora*	PHMPOM	Fungi	No	*P. cerasus*	EPPO, USDA ARS Fungal Database	Not evaluated	No
24	*Popillia japonica*	POPIJA	Insects	No	*P. cerasus*	EPPO	Not evaluated	No
25	*Rhagoletis pomonella*	RHAGPO	Insects	No	*P. cerasus*	CABI, EPPO	Not evaluated	No
26	*Saperda candida*	SAPECN	Insects	No	*P.canescens*	EPPO	Not evaluated	No
27	*Trirachys sartus*[b]	AELSSA	Insects	No	*P. cerasus*	EPPO	Not evaluated	No

TABLE 3 (Continued)

N.	Pest name according to EU legislation[a]	EPPO code	Group	Present in Ukraine	Host	*Prunus cerasus* or *P. canescens* host (reference)	Pest can be associated with the commodity	Pest relevant for the opinion
28	*Xanthomonas arboricola* pv. *pruni*	XANTPR	Bacteria	Yes	*P. canescens*, *P. cerasus*	EPPO, Biotanz, CABI	Uncertain	No
29	*Xiphinema americanum*	XIPHAA	Nematoda	No	*P. cerasus*	Biotanz, Nemaplex	Not evaluated	No
30	*Xiphinema rivesi*[b]	XIPHRI	Nematoda	No	*Prunus* spp.	Nemaplex, CABI	Not evaluated	No
31	*Xylella fastidiosa*	XYLEFA	Bacteria	No	*P. canescens*, *P. cerasus*	CABI	Not evaluated	No

[a]Commission Implementing Regulation (EU) 2019/2072.

[b]Association with other *Prunus* species.

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

The information provided by Ukraine, integrated with the search EFSA performed, was evaluated in order to assess whether there are other potentially relevant pests of *P. cerasus* or *P. canescens* 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 Ukraine;
b. the pest is (i) absent or (ii) has a limited distribution in the EU;
c. *Prunus cerasus*, *P. canescens* or hybrids of these two species are hosts 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.

Based on the information collected, 659 potential pests known to be associated with *P. cerasus* or *P. canescens* were evaluated for their relevance to this opinion. None of the pests not regulated in the EU was selected for further evaluation because none of them met all selection criteria. Details can be found in Appendix B (Microsoft Excel® file).

4.3 | Justification for not proceeding further with certain pests

Four pest species could be associated with these rootstocks had they been grown under other conditions. These four pests were *Eotetranychus prunicola, Erwinia amylovora, Lopholeucaspis japonica* and *Xanthomonas arboricola* pv. *pruni*. The Panel evaluated whether there was sufficient evidence to select them for further evaluation and, if necessary, expert knowledge elicitation. The Panel noted that there is uncertainty related to the production of commodity plants in the tunnels and information on containment level. However, it was determined that the commodity could not be a pathway for these pests.

The justification for not proceeding further with these pests are reported below:

- *Eotetranychus prunicola*

There is no evidence that the hybrids of *P. cerasus* x *P. canescens* could be a host of *E. prunicola*, however, according to Spider Mites Web, *P. cerasus* is reported as a host of this mite. *Eotetranychus prunicola* lays eggs and develops on leaves and overwinters in small groups in cracks or under dead bark of large plants. Taking into consideration the strict production cycle (i.e. plants are micropropagated, then grown in vitro, transferred to an adaption room where they are grown in a peat substrate; acclimatisation then occurs in tunnels in plates with peat on 30-cm gravel beddings covered with geotextile followed by defoliation (Figure 8) which reduces likelihood of infestation significantly), and the young age of the commodity and very limited distribution of this mite in Ukraine (Livshits, 1960), the Panel concluded that the commodity is not a pathway for *E. prunicola*.

- *Erwinia amylovora*

The natural spread of *E. amylovora* takes place via water splash, wind and insects (EPPO, online). Spread over longer distances can occur via latently infected plant material and pollinating insects. Human assisted spread by contaminated pruning tools and machinery is another pathway. The starting material for the production of the commodity is tested and certified by the German NPPO (according to Annex A-3 in submitted Dossier) and the production cycle takes place in tunnels under controlled conditions, without pruning, and the absence of flowers. For these reasons, the panel concluded that the commodity is unlikely to be a pathway; however, there remains uncertainty about the level of containment of the tunnels.

- *Lopholeucaspis japonica*

The hybrids of *P. cerasus* × *P. canescens* are not reported as hosts of *L. japonica*. However, other species of *Prunus* are hosts of this insect and in relation to its polyphagy, the Panel considered the possibility that these hybrids could be hosts. Given the very limited distribution in Ukraine (Crimea) of *L. japonica* (EPPO, online), the location of the nursery (western part of Ukraine - Ivano-Frankivsk Oblast) and the production cycle that is conducted under very controlled conditions, the Panel concluded that the commodity is not a pathway for *L. japonica*.

- *Xanthomonas arboricola* pv. *pruni*

Xanthomonas arboricola pv. *pruni* disperses via rain splash, wind and contaminated pruning tools. Spread over longer distances can occur via latently infected plant material. Since the starting material for the production of the commodity is

tested and certified by the German NPPO (according to Annex A-3 in submitted Dossier) and the production cycle takes place under controlled conditions, and the absence of leave. For these reasons, the panel concluded that the commodity is unlikely to be a pathway; however, there remains uncertainty about the level of containment of the tunnels.

4.4 | Overview of interceptions

According to EUROPHYT (online) (accessed on 22 July 2024) and TRACES (online) (accessed on 22 July 2024), there were no interceptions of plants for planting of *Prunus cerasus* or *Prunus canescens* or their hybrids coming from Ukraine to European Union.

5 | RISK MITIGATION MEASURES

As 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 Ukraine

With the information provided by Ukraine, the Panel summarised the risk mitigation measures (see Table 4) that are proposed in the production nurseries. The Panel identified uncertainties related to level of containment of tunnels. These uncertainties are linked to the lack of the information on the level of the physical isolation and hygiene measures being taken before entering the tunnel.

TABLE 4 Overview of proposed risk mitigation measures for hybrids of *Prunus cerasus* × *P. canescens* plants designated for export to the EU from Ukraine.

No.	Risk mitigation measure (name)	Implementation in Ukraine
1	Certified material	Basic material 2nd generation The source of basic (mother) plant material *Prunus* spp. for propagation in vitro comes from Laboratory Consortium Deutscher Baumschulen GmbH, Germany. It is certificated cherry plant material Gisela 5 (Gi1482) and Gisela 6 (Gi1481) in accordance with the licence contract with Dolyna Agro LTD (Annex A-3).
2	Registration, inspection, certification and surveillance of nurseries for export	All production sites are controlled by nursery staff weekly throughout the growing season. Commodities are also inspected by a phytosanitary inspector during the growing season, and before export. Examination is conducted by the state phytosanitary inspector during the growing season with the following frequency: – every half-year – at the place of production or production site; – annually – at business entities that grow elite seeds and planting material, at state variety research stations, at fruit growers, at quarantine greenhouses of botanical gardens, as well as in areas where quarantine is introduced; – once in 2 years – at business entities engaged in the production and processing of agricultural products, on the lands of persons where quarantine organisms were not found, and on the territories adjacent to them. During the inspection procedure to establish the status of the production site or production site free of regulated pests, the state phytosanitary inspector performs: – preliminary analysis of documents relating to the place of production or production site; – setting buffer zone boundaries; – visual inspection of plants, plant products and other control objects and/or objects located on the territory of the production site or production site; – examination of crops, fruit plantations, nurseries, industrial gardens, household plots and forest belts; – selection of plant samples, plant products and other objects of regulation; – preliminary visual analysis of selected samples on site; – sending samples for phytosanitary examination to quarantine laboratories; – other phytosanitary procedures that belong to his competence and are provided for by the current legislation. Throughout the whole propagation process and each production stage, laboratory staff visually examine all media and plant material for microbial infection. Rejected plant materials and growing media identified and controlled by technologists and is autoclaved for 1 hour to prevent their further use.

(Continues)

TABLE 4 (Continued)

No.	Risk mitigation measure (name)	Implementation in Ukraine
		The nursery staff conduct systematic surveys of *Prunus* spp. storages and in case of detection of pests, the central executive body implementing the state policy in the field of plant protection should be informed. Cultivation technologies are observed; a complex of preventive and extermination measures to combat pests, diseases and weeds is carried out in a timely manner; regulations for storage, transportation and use of plant protection products are implemented. The necessary commodity certification is carried out to certify the quality of planting material, and laboratory varietal control. Auditor from certification authority selects sample for examination and analysis of plants from each commodity and carries out soil and laboratory quality control (sample control) and then issues a certificate in triplicate according to ISO 4138-2002 'Seed crops. Methods quality determination' form. Plants for export are examined during loading up on the vehicle, samples are taken for phytosanitary analysis. A phytosanitary certificate is issued based on the results of the examination for a period of 14 days.
3	Growing plants in isolation	Preparation of the sterile nutrient medium takes place in aseptic rooms. Cultivation in vitro is carried out in special rooms with maintenance of set temperature, humidity and air circulation, equipped for cultivation of plants with racks with lighting. Twice a week the rooms are disinfected by ozonation, wet cleaning and disinfection of racks. In vitro plants are transferred into plant growing rooms after a month growing in rooting media. Acclimatisation of commodity plants to natural field conditions proceeds in tunnels outside the building with separation of the pots from the ground (30 cm gravel and a geotextile). However, there is a lack of information on the level of the physical isolation and hygiene measures being taken before entering the tunnel.
4	Cleaning and disinfection of facilities, tools and machinery	Media preparation and micropropagation areas have air-conditioning and filtration systems, UV-lamps, laminar-flow benches. All tools, shelves, equipment and containers are sterilised by ozonation technology, ultraviolet light and disinfecting with alcohol. Aseptic workspace is isolated from other areas of laboratory.
5	Application of chemical treatments	Nurseries have to keep records of the availability and used pesticides and agrochemicals, and report on the volume of pesticides used to the regulatory authorities. They are obliged to use pesticides and agrochemicals that comply with national legislation.
6	Defoliation	Leaves are removed before export.
7	Sorting and selection of export material	After the acclimatisation stage is finished and defoliation is over, each plant in the plot is labelled with name of a genus, variety, planting date and name of the responsible person. All plants are sorted into two classes. First class is well-developed plants with well-developed root system. Before export phytosanitary inspection is monitoring the place of loading and controlling the selection of samples of plants for phytosanitary certificate. The commodity is carried out from plots and wrapped in plastic sheets and loaded into cardboard boxes. Each box has a label with name of variety and category of commodity, quantity, date of packing, number of phytosanitary certificate. Carton boxes after packaging for export are loaded onto trucks immediately.
8	Storage temperature	Generally, transportation is carried out in refrigerated trucks. The moisture of the loaded truck must be between 85% and 95%, inside truck temperature must be between 2°C and 4°C.

6 | CONCLUSIONS

After a thorough analysis of the Dossier on hybrids of *P. cerasus* x *P. canescens* to be exported to the EU as submitted by SSUFSCP of the Ukraine and after the evaluation of the compiled pest list, none of the pests fulfilled all relevant criteria due to the production method and risk mitigation measures carried out by the nursery. None were selected for further evaluation and no Expert Knowledge Elicitation on pest freedom was performed.

REQUESTOR

European Commission

QUESTION NUMBER

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PANEL MEMBERS

Antonio Vicent Civera, Paula Baptista, Anna Berlin, Elisavet Chatzivassiliou, Jaime Cubero, Nik Cunniffe, Eduardo de la Peña, Nicolas Desneux, Francesco Di Serio, Anna Filipiak, Paolo Gonthier, Beata Hasiów-Jaroszewska, Hervé Jactel, Blanca B. Landa, Lara Maistrello, David Makowski, Panagiotis Milonas, Nikos T. Papadopoulos, Roel Potting, Hanna Susi, and Dirk Jan van der Gaag.

GLOSSARY

Control (of a pest)	Suppression, containment or eradication of a pest population (FAO, 2024a, 2024b).
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, 2024b).
Establishment (of a pest)	Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO, 2024b).
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, 2024).
Measures	Control (of a pest) is defined in ISPM 5 (FAO, 2024b) as 'Suppression, containment or eradication of a pest population' (FAO, 2024a). 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, 2024b).
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, 2024b).
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, 2024b).
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, 2024b).
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, 2024b).

ABBREVIATIONS

CABI	Centre for Agriculture and Bioscience International
EKE	Expert Knowledge Elicitation
EPPO	European and Mediterranean Plant Protection Organization
FAO	Food and Agriculture Organization
ISPM	International Standards for Phytosanitary Measures
PLH	Plant Health
PRA	Pest Risk Assessment
RNQPs	Regulated Non-Quarantine Pests
SSUFSCP	State Service of Ukraine on Food Safety and Consumer Protection

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX A

Web of Science All Databases Search String *Prunus canescens*

In the table below, the search string used in Web of Science is reported. In total, 12 papers were retrieved. Titles and abstracts were screened, and 1 pest was added to the list of pests (see Appendix B).

Web of Science All databases	TOPIC: ("Prunus canescens" OR "P. canescens" OR "Cerasus canescens") AND TOPIC: (pathogen* OR pathogenic bacteria OR fung* OR oomycet* OR myce* OR bacteri* OR virus* OR viroid* OR insect$ OR mite$ OR phytoplasm* OR arthropod* OR nematod* OR disease$ OR infecti* OR damag* OR symptom* OR pest$ OR vector OR hostplant$ OR "host plant$" OR host OR "root lesion$" OR decline$ OR infestation$ OR damage$ OR symptom$ OR dieback* OR "die back*" 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$" OR virosis OR viruses OR blight$ OR wilt$ OR wilted OR canker OR scab$ OR rot OR rots OR "rotten" OR "damping off" OR "damping-off" OR blister$ OR smut OR "mould" OR "mould" OR "damping syndrome$" OR mildew OR scald$ OR "root knot" OR "root-knot" OR rootkit OR cyst$ OR "dagger" OR "plant parasitic" OR "parasitic plant" OR "plant$parasitic" OR "root feeding" OR "root$feeding") NOT TOPIC: = ("heavy metal$" OR "pollut*" OR "weather" OR "propert*" OR probes OR "spectr*" OR "antioxidant$" OR "transformation" OR "RNA" 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$") NOT TOPIC: ("Anarsia lineatella" OR "Anthonomus quadrigibbus" OR "Apiosporina morbosa" OR "Apriona cinerea" OR "Aromia bungii" OR "Bronze leaf disease" OR "'Candidatus Phytoplasma prunorum'"OR "Carposina sasakii" OR "Ceratitis capitata" OR "Ceratitis quinaria" OR "Chaitophorus populialbae" OR "Coleophora fuscocuprella" OR "Comstockaspis perniciosa" OR "Conotrachelus nenuphar" OR "Drosophila suzukii" OR "Grapholita inopinata" OR "Grapholita molesta" OR "Grapholita packardi" OR "Grapholita prunivora" OR "Hesperotingis illinoiensis" OR "Hyphantria cunea" OR "Iphiclides podalirius" OR "Little cherry virus 1" OR "Malacosoma americanum" OR "Malacosoma parallela" OR "Monilinia fructicola" OR "Nepovirus lycopersici" OR "Parabemisia myricae" OR "Peach mosaic virus" OR "Phylloxerina populi" OR "Plum pox virus" OR "Pratylenchus vulnus" OR "Rhagoletis cingulata" OR "Rhagoletis fausta" OR "Rhagoletis indifferens" OR "Saperda candida" OR "Xanthomonas arboricola pv. pruni" OR "Xylella fastidiosa")

Web of Science All Databases Search String '*Prunus cerasus*'

In the table below, the search string used in Web of Science is reported. In total, 58 papers were retrieved. Titles and abstracts were screened, and 0 pests were added to the list of pests (see Appendix B).

Web of Science All databases	TOPIC: ("Prunus cerasus" OR "P. cerasus" OR "sour cherry tree$") AND TOPIC: ("pathogen*" OR "fung*" OR "oomycet*" OR "myce*" OR "disease$" 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 "canker" OR "scab$" OR "rot" OR "rots" OR "rotten" OR "damping-off" OR "smut" OR "mould" OR "mold" OR nematod* OR "root knot" OR "root-knot" OR root tip OR cyst$ 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 pathogenic bacteria OR mycoplasma* OR bacteri* OR phytoplasma* OR wilt$ OR wilted OR canker OR witch* OR yellowing OR leafroll OR bacterial gall OR crown gall OR spot OR blast OR 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" OR 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 caterpillar$ OR "foliar feeder$" OR "root feeder$")

(Continues)

(Continued)

NOT
TOPIC:
=("heavy metal$" OR "pollut*" OR "weather" OR "propert*" OR probes OR "spectr*" OR "antioxidant$" OR "transformation" OR RNA 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$")
NOT
TOPIC:
("Abagrotis alternata" OR "Acleris notana" OR "Acleris quinquefasciana" OR "Acleris rhombana" OR "Acleris tripunctana" OR "Acronicta alni" OR "Acronicta clarescens" OR "Acronicta impleta" OR "Acronicta interrupta" OR "Acronicta lanceolaria" OR "Acronicta pruni" OR "Acronicta psi" OR "Acronicta radcliffei" OR "Acronicta rumicis" OR "Acronicta superans" OR "Acrosternum hilare" OR "Actebia fennica" OR "Actias artemis" OR "Actias selene" OR "Actias selene ningpoana" OR "Aculus fockeui" OR "Adoxophyes orana" OR "Agrobacterium tumefaciens" OR "Aleurocanthus spiniferus" OR "Aleurodicus dispersus" OR "Allophyes oxyacanthae" OR "Alsophila pometaria" OR "Alternaria alternata" OR "Alternaria cerasi" OR "Alternaria cerasi" OR "Amara aenea" OR "Amblyseius andersoni" OR "American plum line pattern virus" OR "Amnestus pusillus" OR "Amphisphaeria vibratilis" OR "Amphisphaeria vibratilis" OR "Amphitetranychus viennensis" OR "Amphitetranychus viennensis" OR "Anarsia lineatella" OR "Anisandrus dispar" OR "Anoplophora chinensis" OR "Anthaxia nitidula" OR "Antheraea polyphemus" OR "Anthonomus humeralis" OR "Anthonomus quadrigibbus" OR "Aphelenchoides ritzemabosi" OR "Aphis aurantii" OR "Aphis gossypii" OR "Aphis odinae" OR "Aphis spiraecola" OR "Aphrodes costata" OR "Aphrophora alni" OR "Apiognomonia erythrostoma" OR "Apiosporina morbosa" OR "Apodiphus amygdali" OR "Apple chlorotic leaf spot virus" OR "Apple mosaic virus" OR "Apple rubbery wood phytoplasma" OR "Apriona cinerea" OR "Apriona germari" OR "Archips fuscocupreanus" OR "Archips rosanus" OR "Archips xylosteanus" OR "Argyresthia bonnetella" OR "Argyresthia ephippella" OR "Argyresthia pruniella" OR "Arhopalus tristis" OR "Armillaria mellea" OR "Armillaria mellea" OR "Armillaria ostoyae" OR "Aromia bungii" OR "Arthaldeus pascuellus" OR "Ascochyta ovalispora" OR "Ascochyta ovalispora" OR "Aspergillus niger" OR "Aspergillus niger" OR "Asteromella cerasicola" OR "Asteromella cerasicola" OR "Aureobasidium pullulans" OR "Aureobasidium pulluls" OR "Automeris io" OR "Bactrocera correcta" OR "Bactrocera dorsalis" OR "Balclutha punctata" OR "Balsa malana" OR "Banasa sordida" OR "Basilarchia arthemis" OR "Betacallis prunicola" OR "Blastobasis decolorella" OR "Blastospora itoa" OR "Blumeriella jaapii" OR "Blumeriella jaapii" OR "Botryosphaeria dothidea" OR "Botryosphaeria dothidea" OR "Botryosphaeria stevensii" OR "Botryotinia fuckelia" OR "Botrytis cinerea" OR "Botrytis cinerea" OR "Brachycaudus cardui" OR "Brachycaudus cerasicola" OR "Brachycaudus helichrysi" OR "Brachytydeus paraobliqua" OR "Brochymena quadripustulata" OR "Bryobia cerasi" OR "Bryobia osterloffi" OR "Bryobia rubrioculus" OR "Bryobia rubrioculus" OR "Cacoecimorpha pronubana" OR "Cacopsylla mali" OR "Cadophora novi-eboraci" OR "Cadophora novi-eboraci" OR "Cadophora prunicola" OR "Cadophora prunicola" OR "Cadophora ramosa" OR "Cadophora ramosa "OR "Caeoma makinoi" OR "Caeoma makinoi" OR "Caliroa annulipes" OR "Caliroa cerasi" OR "Caliroa limacina" OR "Callosamia promethea" OR "Calosphaeria princeps" OR "Calosphaeria pulchella" OR "Calosphaeria pulchella "OR "Candidatus Phytoplasma asteris" OR "Candidatus Phytoplasma mali" OR "Candidatus Phytoplasma pruni" OR "Candidatus Phytoplasma prunorum" OR "Capnodis tenebrionis" OR "Carnation ringspot virus" OR "Carposina sasakii" OR "Carsia sororiata" OR "Cartodere elongata" OR "Cedusa incisa" OR "Cenopalpus pulcher" OR "Cerambyx scopolii Fuessly" OR "Ceratitis capitata" OR "Ceratitis quinaria" OR "Cercospora cerasella" OR "Cercospora circumscissa" OR "Cerioporus leptocephalus" OR "Ceroplastes japonicus" OR "Cerura scitiscripta" OR "Ceuthospora laurocerasi" OR "Cherry green ring mottle virus" OR "Cherry leaf roll virus" OR "Cherry necrotic rusty mottle virus" OR "Cherry rasp leaf virus" OR "Cherry rusty mottle associated virus" OR "Cherry rusty mottle disease" OR "Cherry virus A" OR "Chionaspis furfura" OR "Chlidaspis asiatica" OR "Chloroclysta siterata" OR "Chlorotettix unicolor" OR "Chondrostereum purpureum" OR "Chondrostereum purpureum "OR "Chrysobothris mali" OR "Chrysomphalus aonidum" OR "Cicadatra adanai" OR "Cicadella melissae" OR "Cicadella stellulata" OR "Cladosporium carpophilum" OR "Cladosporium cladosporioides" OR "Cladosporium epiphyllum" OR "Cladosporium malorum" OR "Cladosporium phyllophilum" OR "Cladosporium phyllophilum" OR "Cloanthanus acutus" OR "Cloanthanus frontalis" OR "Clytus arietis" OR "Coccomyces hiemalis" OR "Coccus hesperidum" OR "Cochliobolus geniculatus" OR "Coleophora coracipennella" OR "Coleophora prunifoliae" OR "Coleophora spinella" OR "Colletotrichum acutatum" OR "Colletotrichum gloeosporioides" OR "Collophora paarla" OR "Comoclathris permunda" OR "Comstockaspis perniciosa" OR "Conotrachelus nenuphar" OR "Coptotriche gaunacella" OR "Corimelaena pulicaria" OR "Coronophora gregaria" OR "Coronophora gregaria" OR "Coryneum beijerinckii" OR "Coryneum carpophilum" OR "Cosmia trapezina" OR "Cosmopepla bimaculata" OR "Curculio betulae" OR "Curvularia geniculata" OR "Curvularia geniculata" OR "Cylindrocarpon destructans" OR "Cylindrocarpon destructs" OR "Cylindrosporium hiemalis" OR "Cynips quercusfolii" OR "Cytospora cincta" OR "Cytospora cincta" OR "Cytospora leucostoma" OR "Cytospora leucostoma" OR "Cytospora salicacearum" OR "Cytospora salicacearum "OR "Cytospora sorbicola" OR "Cytospora sorbicola" OR "Cytosporina ludibunda" OR "Cytosporina ludibunda" OR "Dasychira meridionalis" OR "Datana ministra" OR "Dematophora necatrix" OR "Dermatea cerasi" OR "Dermea cerasi" OR "Dermea cerasi" OR "Dermestes linarius" OR "Diabrotica speciosa" OR "Diaporthe decorticans" OR "Diaporthe decortics" OR "Diaporthe eres" OR "Diaporthe eres" OR "Diaporthe perniciosa" OR "Diaporthe perniciosa" OR "Diaspidiotus forbesi" OR "Diaspidiotus juglansregiae" OR "Diaspidiotus ostreaeformis" OR "Diaspidiotus prunorum" OR "Diaspidiotus pyri" OR "Diatrype macrothecia" OR "Dibotryon morbosum" OR "Dichomeris picrocarpa" OR "Didymella pomorum" OR "Dikraneura angustata" OR "Dikraneura mali" OR "Diloba caeruleocephala" OR "Diplodia cerasorum" OR "Diplodia cerasorum" OR "Diplodia malorum" OR "Diplodia mutila" OR "Diplodia

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mutila" OR "Diplodia seriata" OR "Diplodia seriata "OR "Diptacus gigantorhynchus" OR "Dolichomitus terebrans" OR "Drasterius bimaculatus" OR "Driotura gammaroides" OR "Drosicha maskelli" OR "Drosicha stebbingii" OR "Drosophila suzukii" OR "Empoasca decipiens" OR "Empoasca fabae" OR "Enarmonia formosana" OR "Enarmonia prunivorana" OR "Endria inimica" OR "Entoloma clypeatum" OR "Eotetranychus carpini" OR "Eotetranychus pruni" OR "Eotetranychus pruni" OR "Eotetranychus prunicola" OR "Eotetranychus rubiphilus" OR "Eotetranychus uncatus" OR "Epichoristodes acerbella" OR "Epicnaptera americana" OR "Epidiaspis leperii" OR "Epiphyas postvittana" OR "Erannis tiliaria" OR "Eriogaster lanestris" OR "Ernpoasca fabae" OR "Erythroneura lawsoniana" OR "Erythroneura plena" OR "Eulecanium cerasorum" OR "Eulecanium ciliatum" OR "Eulecanium kunoense" OR "Eulecanium rugulosum" OR "Eulecanium tiliae" OR "Euproctis chrysorrhoea" OR "Eupsilia morrisoni" OR "Eupsilia sidus" OR "Eupsilia transversa" OR "Euscelidius variegatus" OR "Euseius finlandicus" OR "Eutetranychus orientalis" OR "Eutetranychus orientalis" OR "Eutypa lata" OR "Euwallacea fornicatus sensu stricto" OR "Euxoa auxiliaris" OR "Euxoa tessellata" OR "Euzophera semifuneralis" OR "Exidia glandulosa" OR "Exidia gldulosa var. scutelliformis" OR "Exidia gldulosa var. scutelliformis" OR "Exoascus cerasi" OR "Exoascus pruni" OR "Fomes fomentarius" OR "Fomes fomentarius" OR "Fomes pomaceus" OR "Fomitopsis pinicola" OR "Forcipata loca" OR "Frankliniella australis" OR "Furcipus rectirostris" OR "Fusarium avenaceum" OR "Fusarium larvarum var. lavarum" OR "Fusarium lateritium" OR "Fusarium lateritium" OR "Fuscoporia gilva" OR "Fuscoporia gilva" OR "Fusicladium carpophilum" OR "Fusicladium cerasi" OR "Fusicolla violacea" OR "Ganoderma applanatum" OR "Gargaphia tillae" OR "Gibberella avenacea" OR "Gibberella intricans" OR "Glomerella cingulata" OR "Gnomonia erythrostoma" OR "Goderma applatum" OR "Goderma applatum" OR "Gonimbrasia gueinzii" OR "Gonocerus acuteangulatus" OR "Graminella nigrifrons" OR "Grammoptera ruficornis" OR "Grapholita funebrana" OR "Grapholita molesta" OR "Grapholita packardi" OR "Grapholita prunivora" OR "Halyomorpha halys" OR "Harkenclenus titus" OR "Harpalus distinguendus" OR "Harpalus tardus" OR "Hedya dimidioalba" OR "Helicobasidium mompa" OR "Helicoverpa zea" OR "Hemigraphiphora plebeia" OR "Hemileuca eglanterina" OR "Hemileuca maia" OR "Heterocampa biundata" OR "Heterocampa guttivitta" OR "Hibernia tiliaria" OR "Higginsia hiemalis" OR "Holcostethus limbolarius" OR "Homohadena badistriga" OR "Hop stunt viroid" OR "Hoplocampa danfengensis" OR "Hoplocampa flava" OR "Hyalesthes ponticorum" OR "Hyalophora cecropia" OR "Hyalophora columbia" OR "Hyalopterus pruni" OR "Hyphantria cunea" OR "Hypoxylon rubiginosum" OR "Hypoxylon rubiginosum" OR "Hysterium vulgare" OR "Hysteroneura setariae" OR "Idiocerus alternatus" OR "Ilyonectria robusta" OR "Ilyonectria robusta "OR "Imbrasia gueinzii" OR "Iphiclides podalirius" OR "Kampimodromus aberrans" OR "Kleidocerys resedae" OR "Kuwanina parva" OR "Lacanobia subjuncta" OR "Laetiporus sulphureus" OR "Laetiporus sulphureus" OR "Lambdina fervidaria" OR "Lentinus substrictus" OR "Lepidosaphes malicola" OR "Lepidosaphes ulmi" OR "Lepyronia coleoptrata" OR "Leucoptera malifoliella" OR "Leucostoma cinctum" OR "Leucostoma personii" OR "Leucostoma personii" OR "Leucostoma persoonii" OR "Leucotelium cerasi" OR "Liberibacter europaeus" OR "Lithophane antennata" OR "Lithophane bethunei" OR "Lithophane grotei" OR "Lithophane hemina" OR "Lithophane laticinerea" OR "Little cherry virus" OR "Little cherry virus 1" OR "Little cherry virus 2" OR "Lobesia botrana" OR "Lomographa temerata" OR "Longidorus euonymus" OR "Longidorus leptocephalus" OR "Longitarsus apicalis" OR "Longitarsus atricillus" OR "Longitarsus jacobae" OR "Lophocampa argentata" OR "Lophocampa caryae" OR "Lycorma delicatula" OR "Lygus oblineatus" OR "Lymantria dispar" OR "Lymantria dispar asiatica" OR "Lymantria obfuscata" OR "Lyonetia clerkella" OR "Macrophomina phaseoli" OR "Macrophomina phaseolina" OR "Macrosteles divisus" OR "Magdalis ruficornis" OR "Magicicada septendecim" OR "Malacosoma americana" OR "Malacosoma americanum" OR "Malacosoma californica" OR "Malacosoma disstria" OR "Malacosoma parallela" OR "Megaplatypus mutatus" OR "Meliola kusoi" OR "Meloidogyne hapla" OR "Meloidogyne javanica" OR "Meloidogyne sp." OR "Melolontha melolontha" OR "Mercetaspis halli" OR "Mesocriconema xenoplax" OR "Metarranthis warnerae" OR "Microdiplodia microsporella" OR "Microdiplodia microsporella" OR "Microgloeum pruni" OR "Microlestes maurus" OR "Monilia fructigena" OR "Monilia laxa" OR "Monilia mumecola" OR "Monilinia fructicola" OR "Monilinia fructicola" OR "Monilinia fructigena" OR "Monilinia fructigena" OR "Monilinia kusanoi" OR "Monilinia kusoi" OR "Monilinia laxa" OR "Monilinia laxa "OR "Monilinia padi" OR "Monilinia padi" OR "Monilinia polystroma" OR "Monilinia seaveri" OR "Monilinia seaveri" OR "Mordella fasciatta" OR "Mycosphaerella cerasella" OR "Mycosphaerella pruni-persicae" OR "Myzus cerasi" OR "Myzus cymbalariae" OR "Myzus mushaensis" OR "Myzus ornatus" OR "Myzus persicae" OR "Myzus siegesbeckiae" OR "Myzus varians" OR "Nattrassia mgiferae" OR "Naupactus xanthographus" OR "Nectria cinnabarina" OR "Nectria cinnabarina" OR "Nemapogon ruricolella" OR "Neofusicoccum mangiferae" OR "Neokolla hieroglyphica" OR "Neonectria radicicola" OR "Neopulvinaria innumerabilis innumerabilis" OR "Nepovirus avii" OR "Nepovirus nigranuli" OR "Nezara viridula" OR "Norvellina chenopodii" OR "Norvellina seminuda" OR "Nymphalis polychloros" OR "Nysius ericae" OR "Nysius vinitor" OR "Ochropleura fennic" OR "Oliarus aridus" OR "Oliarus humilis" OR "Oligonychus perseae" OR "Omophlus lepturoides" OR "Opatrum sabulosum" OR "Operophtera brumata" OR "Ophiola striatula" OR "Opsius stactogatus" OR "Orgyia leucostigma" OR "Orgyia vetusta" OR "Orthosia gracilis" OR "Orthosia hibisci" OR "Otiorhynchus albidus" OR "Otiorrhynchus ovatus" OR "Palomena viridissima" OR "Pammene rhediella" OR "Pandemis heparana" OR "Panonychus citri" OR "Panonychus ulmi" OR "Panonychus ulmi" OR "Panus rudis" OR "Paonias astylus" OR "Paonias excaecata" OR "Paonias myops" OR "Papilio glaucus" OR "Papilio multicaudatus" OR "Papilio rutulus" OR "Parabemisia myricae" OR "Paraphlepsius irroratus" OR "Paraphoma radicina" OR "Paraphoma radicina" OR "Parasa lepida" OR "Paraseiulus soleiger" OR "Paraseiulus talbii" OR "Paraseiulus triporus" OR "Paratrichodorus catharinae" OR "Parlatoria oleae" OR "Parlatoria theae" OR "Parornix geminatella" OR "Parthenolecanium corni" OR "Parthenolecanium corni corni" OR "Peach mosaic virus" OR "peach rosette phytoplasma" OR "Peach wart disease" OR "Peach yellows phytoplasma" OR "Penicillium expansum" OR "Penicillium expsum" OR "Peridroma saucia" OR "Pestalotia adusta" OR "Pestalotiopsis adusta" OR "Pestalotiopsis adusta" OR "Petunia asteroid mosaic virus" OR "Phaeoacremonium minimum" OR "Phaeoacremonium minimum" OR "Phaeoacremonium parasiticum" OR "Phaeoacremonium parasiticum" OR "Phaeosporis catacrypta" OR "Phaeosporis catacrypta" OR "Phellinus gilvus" OR "Phellinus igniarius" OR "Phellinus igniarius" OR

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	"Phellinus pomaceus" OR "Phellinus pomaceus" OR "Phenacoccus aceris" OR "Phenacoccus transcaucasicus" OR "Philaenus leucophthalmus" OR "Philaenus spumarius" OR "Phloeosporella padi" OR "Phloeosporella padi" OR "Phoma macrostoma var. macrostoma" OR "Phoma pomorum" OR "Phomopsis padina" OR "Phorodon humuli" OR "Phyllactinia guttata" OR "Phyllactinia mali" OR "Phyllactinia mali" OR "Phyllactinia suffulta" OR "Phyllobius oblongus" OR "Phyllobius pyri" OR "Phyllodesma americana" OR "Phyllonorycter cavella" OR "Phyllonorycter cerasicolella" OR "Phyllonorycter corylifoliella" OR "Phyllosticta circumscissa" OR "Phyllosticta circumscissa" OR "Phyllosticta prunicola" OR "Phyllosticta vulgaris var. philadelphi" OR "Phymatotrichopsis omnivora" OR "Phymatotrichum omnivorum" OR "Physatocheila dumetorum" OR "Phytophthora cactorum" OR "Phytophthora cactorum" OR "Phytophthora cambivora" OR "Phytophthora cambivora" OR "Phytophthora cryptogea" OR "Phytophthora cryptogea "OR "Phytophthora gregata" OR "Phytophthora gregata" OR "Phytophthora megasperma" OR "Phytophthora megasperma" OR "Phytophthora plurivora" OR "Phytophthora plurivora" OR "Phytophthora syringae" OR "Phytophthora syringae" OR "Phytoplasma pruni" OR "Phytoplasma prunorum" OR "Phytoseius finitimus" OR "Piesma cinerea" OR "Piezodorus lituratus" OR "Plagodis fervidaria" OR "Plagodis pulveraria" OR "Plemyria rubiginata" OR "Pleospora cerasi" OR "Pleospora cerasi" OR "Plum pox virus" OR "Podosphaera clandestina" OR "Podosphaera cldestina" OR "Podosphaera oxyacthae" OR "Podosphaera pannosa" OR "Podosphaera pnosa "OR "Podosphaera tridactyla" OR "Podosphaera tridactyla var. tridactyla" OR "Podosphaera tridactyla var. tridactyla" OR "Podosphaera tridactyla" OR "Polygonia c-album" OR "Polyporus ciliatus" OR "Polyporus leptocephalus" OR "Polyporus tulipiferae" OR "Polystigma rubrum" OR "Popillia japonica" OR "Pratylenchus neglectus" OR "Pratylenchus penetrans" OR "Pratylenchus pratensis" OR "Pratylenchus thornei" OR "Pratylenchus vulnus" OR "Prescottia lobata" OR "Pristiphora condei" OR "Profenusa canadensis" OR "Prune dwarf virus" OR "Pruniphilomyces circumscissus" OR "Pruniphilomyces circumscissus" OR "Prunus necrotic ringspot virus" OR "Prunus virus F" OR "Pseudaulacaspis pentagona" OR "Pseudaulacaspis prunicola prunicola" OR "Pseudocercospora circumscissa" OR "Pseudococcus calceolariae" OR "Pseudococcus comstocki" OR "Pseudococcus viburni" OR "Pseudomonas pruni" OR "Pseudomonas syringae" OR "Pseudomonas syringae pv. morsprunorum" OR "Pseudomonas syringae pv. syringae" OR "Pterochloroides persicae" OR "Puccinia cerasi" OR "Puccinia radiata" OR "Pucciniastrum areolatum" OR "Pus rudis" OR "Pycnoporus cinnabarinus" OR "Pythium irregulare" OR "Pythium rostratum" OR "Pythium sylvaticum" OR "Pythium ultimum" OR "Quadraspidiotus marani" OR "Quadraspidiotus ostreaeformis" OR "Quadraspidiotus perniciosus" OR "Radulum orbiculare" OR "Ramphus oxyacanthae" OR "Ramularia cerasorum" OR "Ramularia cerasorum" OR "Ramularia mali" OR "Ramularia mali" OR "Recurvaria nanella" OR "Reptalus panzeri" OR "Reptalus quinquecostatus" OR "Rhagium bifasciatum F." OR "Rhagoletis cerasi" OR "Rhagoletis cingulata" OR "Rhagoletis fausta" OR "Rhagoletis indifferens" OR "Rhagoletis pomonella" OR "Rhaphigaster nebulosa" OR "Rhinophytoptus avium" OR "Rhinotergum cerasifoliae" OR "Rhizobium radiobacter" OR "Rhizobium rhizogenes" OR "Rhizopus stolonifer" OR "Rhizopus stolonifer "OR "Rhodococcus turanicus" OR "Rhopalosiphum maidis" OR "Rhopalosiphum nymphaeae" OR "Rhopalosiphum oxyacanthae" OR "Rhopalosiphum rufiabdominale" OR "Rhyncaphytoptus popovi" OR "Rhynchites aequatus" OR "Rhynchites auratus" OR "Rhynchites cupreus" OR "Roepkea marchali" OR "Rosellinia necatrix" OR "Rosellinia necatrix" OR "Rosenscheldia abundans" OR "Saperda scalaris" OR "Satyrium liparops" OR "Scaphoideus ochraceous" OR "Schizophyllum alneum" OR "Schizophyllum commune" OR "Schizotetranychus iraniensis" OR "Schizura concinna" OR "Schizura unicornis" OR "Schoutedenia ralumensis" OR "Sciaphobus squalidus" OR "Sclerotinia fructicola" OR "Sclerotinia kusoi "OR "Sclerotinia laxa" OR "Sclerotium bataticola" OR "Scolecocampa liburna" OR "Scolytus mediterraneus" OR "Scolytus schevyrewi" OR "Scolytus sulcatus" OR "Selenia tetralunaria" OR "Septoria cerasi" OR "Septoria cerasi" OR "Sinomegoura citricola" OR "Siobla ruficornis" OR "Sishania nigropilata" OR "Smerinthus jamaicensis" OR "Smerinthus ocellatus" OR "Sour cherry pink fruit agent" OR "Sour cherry yellows virus" OR "Sphaerolecanium prunastri" OR "Sphenoptera tappesi" OR "Sphinx drupiferarum" OR "Spilonota ocellana" OR "Spilosoma virginica" OR "Sporidesmium pruni" OR "Stenocorus meridianus" OR "Stereum hirsutum" OR "Stereum hirsutum" OR "Stereum purpureum" OR "Stictocephala bisonia" OR "Stictocephala bubalis" OR "Stigmella plagicolella" OR "Stigmella prunetorum" OR "Stigmina carpophila" OR "Strangalia aurulenta" OR "Swammerdamia pyrella" OR "Synanthedon myopaeformis" OR "Synanthedon pictipes" OR "Taphrina cerasi" OR "Taphrina pruni" OR "Taphrina wiesneri" OR "Taphrina wiesneri" OR "Tarsonemus waitei" OR "Tetranychus turkestani" OR "Tetranychus urticae" OR "Tetranychus viennensis" OR "Tetranycopsis cerasi" OR "Thekopsora areolata" OR "Thekopsora areolata" OR "Thekopsora pseudocerasi" OR "Thekopsora pseudocerasi" OR "Thrips euphorbiae" OR "Thrips simplex" OR "Thyridopteryx ephemeraeformis" OR "Tinocalloides montanus" OR "Tischeria gaunacella" OR "Tolype velleda" OR "Tomato black ring virus" OR "Tomato ringspot virus" OR "Toxoptera odinae" OR "Trametes hirsuta" OR "Trametes hirsuta" OR "Trametes pubescens" OR "Trametes velutina" OR "Trametes versicolor" OR "Trametes versicolor" OR "Trametes zonata" OR "Trametes zonata" OR "Transeius wainsteini" OR "Tranzschelia discolor" OR "Tranzschelia japonica" OR "Tranzschelia pruni-spinosae" OR "Tremulicerus vitreus" OR "Trialeurodes packardi" OR "Trichoferus campestris" OR "Triophtydeus triophthalmus" OR "Trirachys sartus" OR "Tropinota hirta" OR "Trzschelia discolor" OR "Trzschelia japonica" OR "Trzschelia pruni-spinosae var. discolor" OR "Trzschelia pruni-spinosae" OR "Tuberocephalus higansakurae" OR "Tuberocephalus liaoningensis" OR "Tuberocephalus misakurae" OR "Tuberocephalus momonis" OR "Tuberocephalus sakurae" OR "Tuberocephalus tianmushanensis" OR "Tumoranuraphis indica" OR "Tydeus californicus" OR "Tydeus caudatus" OR "Tydeus goetzi" OR "Typhlocyba froggatti" OR "Typhlocyba modesta" OR "Typhlocyba pomaria" OR "Typhlocyba rosae" OR "Typhlodromus athiasae" OR "Typhlodromus pyri" OR "Typhlodromus rhenanus" OR "Tyrophagus putrescentiae" OR "Valsa japonica" OR "Valsaria insitiva" OR "Venturia carpophila" OR "Venturia cerasi" OR "Venturia cerasi" OR "Verticillium albo-atrum" OR "Verticillium dahliae" OR "Verticillium dahliae" OR "Viscum album ssp. album" OR "Wilsonomyces carpophilus" OR "Xanthomonas arboricola pv. pruni" OR "Xestocephalus pulicarius" OR "Xiphinema americanum" OR "Xiphinema brevicolle" OR "Xiphinema rivesi" OR "Xylaria mali" OR "Xylaria mali" OR "Xyleborus dispar" OR "Xylella fastidiosa" OR "Xylella fastidiosa subsp. multiplex" OR "Xylodon radula" OR "Yponomeuta evonymella" OR "Yponomeuta mahalebella" OR "Yponomeuta padella" OR "Zaprionus indianus" OR "Zetzellia mali" OR "Zygina flammigera")

APPENDIX B

Excel file with the pest list of *Prunus cerasus* and *Prunus canescens*

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