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SCIENTIFIC OPINION

Commodity risk assessment of *Ligustrum ovalifolium* and *Ligustrum vulgare* plants from the UK

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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 plants of the evergreen *Ligustrum ovalifolium* and the semi-evergreen *Ligustrum vulgare* imported from the United Kingdom (UK) as: (a) bare root plants and (b) plants in pots, taking into account the available scientific information, including the technical information provided by the UK. The category (a) 'bare root plants' includes bundles of 1- to 3-year-old bare root whips or transplants and single 1- to 7-year-old bare root plants. The category (b) 'plants in pots' includes bundles of 1- to 2-year-old cell grown plants (only *L. vulgare*) and 1- to 5-year-old plants in pots. All pests associated with the commodities were evaluated against specific criteria for their relevance for this opinion. Two EU quarantine pests, *Bemisia tabaci* and *Scirtothrips dorsalis*, and one pest not regulated in the EU, *Diaprepes abbreviatus*, fulfilled all relevant criteria and were selected for further evaluation. For the selected pests, the risk mitigation measures proposed in the technical dossier from the UK were evaluated taking into account the possible limiting factors. For these pests, an expert judgement is given on the likelihood of pest freedom considering the risk mitigation measures acting on the pest, including uncertainties associated with the assessment. In the assessment of risk, the age of the plants was considered, reasoning that older trees are more likely to be infested mainly due to longer exposure time and larger size. The degree of pest freedom varies among the pests evaluated, with *B. tabaci* being the pest most frequently expected on the imported plants. The Expert Knowledge Elicitation indicated with 95% certainty that between 9915 and 10,000 per 10,000 bare root plants and plants in pots will be free from *B. tabaci*.

KEYWORDS

commodity risk assessment, European Union, plant health, plant pest, privet

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1 | INTRODUCTION

1.1 | Background and terms of reference as provided by European Commission

1.1.1 | Background

The 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 *Ligustrum ovalifolium* and *L. vulgare* from the UK taking into account the available scientific information, including the technical dossier provided by the UK.

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 *L. ovalifolium* and *L. vulgare* from the UK following the Guidance on commodity risk assessment for the evaluation of high-risk plant dossiers (EFSA PLH Panel, 2019), taking into account the available scientific information, including the technical information provided by the UK.

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.

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 (SeveroZapadny federalny okrug),

[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.

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[5]).

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 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 in the technical dossier (hereafter referred to as 'the Dossier') provided by the applicant (United Kingdom, Department for Environment Food and Rural Affairs – hereafter referred to as 'DEFRA') was sufficient to conduct a commodity risk assessment. When necessary, additional information was requested to the applicant.
- Selected the relevant Union quarantine pests and protected zone quarantine pests (as specified in Commission Implementing Regulation (EU) 2019/2072, hereafter referred to as 'EU quarantine pests') and other relevant pests present in the UK and associated with the commodity.
- Did not assess the effectiveness of measures for Union quarantine pests for which specific measures are in place for the import of the commodity from the UK in Commission Implementing Regulation (EU) 2019/2072 and/or in the relevant legislative texts for emergency measures and if the specific country is in the scope of those emergency measures. The assessment was restricted to whether or not the applicant country implements those measures.
- 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 importation of the commodity from the UK and other relevant pests present in the UK 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 proposed by DEFRA of the UK.

2 | DATA AND METHODOLOGIES

2.1 | Data provided by DEFRA of the UK

The Panel considered all the data and information (hereafter called 'the Dossier') provided by DEFRA of the United Kingdom (UK) in April 2023 including the additional information provided by DEFRA of the UK in October 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.

[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.

TABLE 1 Structure and overview of the Dossier.

Dossier section	Overview of contents	Filename
1.1	Technical dossier of *Ligustrum ovalifolium*	Ligustrum ovalifolium commodity information final
1.2	Technical dossier of *Ligustrum vulgare*	Ligustrum vulgare commodity information final
2.0	Pest list	Ligustrum_UK_pest_list (1)
3.0	Producers sample product list	Ligustrum_vulgare_L.ovalifolium_producers_sample_product_list
4.1	*Ligustrum ovalifolium* distribution map	Ligustrum_ovalifolium_distribution_map
4.2	*Ligustrum vulgare* distribution map	Ligustrum_vulgare_distribution_map
5.1	Additional information: answers for *Ligustrum ovalifolium*	Ligustrum ovalifolium additional information 30 Aug 2023
5.2	Additional information: answers for *Ligustrum vulgare*	Ligustrum vulgare additional information 30 Aug 2023
5.3	Additional information: answers on pests	Ligustrum–pest queries final
5.4	Additional information: requirements	Requirements guide–Ligustrum

The data and supporting information provided by DEFRA of the UK formed the basis of the commodity risk assessment. Table 2 shows the main data sources used by DEFRA of the UK to compile the Dossier (Dossier Sections 1.1, 1.2, 2.0, 3.0, 4.1, 4.2, 5.1, 5.2, 5.3 and 5.4).

TABLE 2 Databases used in the literature searches by DEFRA of the UK.

Database	Platform/link
Aphids on worlds plants	https://www.aphidsonworldsplants.info/
Centre for Agriculture and Biosciences International (CABI)	https://www.cabi.org/
Database of Insects and their Food Plants	https://dbif.brc.ac.uk/homepage.aspx
Diaspididae of the World 2.0	https://diaspididae.linnaeus.naturalis.nl/linnaeus_ng/app/views/introduction/topic.php?id=3422
European and Mediterranean Plant Protection Organization Global Database (EPPO GD)	https://gd.eppo.int/
Food and Agriculture Organisation of the United Nations (FAO)	https://agris.fao.org/
Fungi of Great Britain and Ireland	https://fungi.myspecies.info/
Global Biodiversity Information Facility (GBIF)	https://www.gbif.org/
HANTSMOTHS–The Lepidoptera (Moths and Butterflies) of Hampshire and Isle of Wight	https://www.hantsmoths.org.uk/index.htm
HOSTS–a Database of the World's Lepidopteran Hostplants	https://data.nhm.ac.uk/dataset/hosts
Index Fungorum	https://www.speciesfungorum.org/Names/Names.asp
Influential Points	https://influentialpoints.com/
Insects (Insecta) of the World	https://insecta.pro/
Lepidoptera and some other life forms	https://ftp.funet.fi/pub/sci/bio/life/intro.html
Mycobank	https://www.mycobank.org/
NBN atlas	https://nbnatlas.org/
Plant Parasites of Europe	https://bladmineerders.nl/
The Royal Horticultural Society (RHS)	https://www.rhs.org.uk/
Scalenet	https://scalenet.info/associates/
Thaer-Institut für Agrar- und Gartenbauwissenschaften	https://www.agrar.hu-berlin.de/de
The Food and Environment Research Agency (FERA)	https://www.fera.co.uk/ncppb
The Fungal Records Database of Britain and Ireland	https://www.frdbi.info/
The Sawflies (Symphyta) of Britain and Ireland	https://www.sawflies.org.uk/
Thysanoptera Californica	https://keys.lucidcentral.org/keys/v3/thrips_of_california_2019//overview.html
Tortricids of Agricultural Importance (TortAI)	https://idtools.org/id/leps/tortai/information.html
Tortricid.net	https://www.tortricidae.com/
University of California (UC): Integrated Pest Management (IPM)	https://ipm.ucanr.edu/
UK Beetle Recording	https://www.coleoptera.org.uk/home
UK moths	https://www.ukmoths.org.uk/
UK Plant Health Information Portal	https://planthealthportal.defra.gov.uk/
USDA Fungal Database	https://nt.ars-grin.gov/fungaldatabases/

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 *Ligustrum* species. The following searches were combined: (i) a general search to identify pests reported on *Ligustrum* species in the databases and subsequently (ii) a tailored search to identify whether the above pests are present or not in the UK. The searches were run between May and June 2023. No language, date or document type restrictions were applied in the search strategy.

The Panel used the databases indicated in Table 3 to compile the list of pests associated with *Ligustrum* species. 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 3 Databases used by EFSA for the compilation of the pest list associated with *Ligustrum* spp.

Database	Platform/link
Aphids on World Plants	https://www.aphidsonworldsplants.info/C_HOSTS_AAIntro.htm
BIOTA of New Zealand	https://biotanz.landcareresearch.co.nz/
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://food.ec.europa.eu/plants/plant-health-and-biosecurity/europhyt_en
Leaf-miners	https://www.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://data.nal.usda.gov/dataset/united-states-national-fungus-collections-fungus-host-dataset (last available update 5 November 2021)
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

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 are 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 implemented risk mitigation measures for each relevant pest were evaluated.

A conclusion on the pest freedom status of the commodity for each of the relevant pests was determined and uncertainties identified using expert judgements.

Pest freedom was assessed by estimating the number of infested/infected units out of 10,000 exported units. Further details on the methodology used to estimate the likelihood of pest freedom are provided in Section 2.3.4.

2.3.1 | Commodity data

Based on the information provided by DEFRA of the UK, 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 the commodity from the UK, a pest list was compiled. The pest list is a compilation of all identified plant pests reported as associated with all species of *Ligustrum* based on information provided in the Dossier Sections 1.1, 1.2, 2.0, 3.0, 4.1, 4.2, 5.1, 5.2, 5.3 and 5.4 and on searches performed by the Panel. The search strategy and search syntax were adapted to each of the databases listed in Table 3, according to the options and functionalities of the different databases and CABI keyword thesaurus.

The scientific names of the host plant (i.e. *Ligustrum* species) were 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 investigated by searching for the interceptions associated with *Ligustrum* species imported from the whole world from 1995 to May 2020 and TRACES-NT from May 2020 to 31 July 2023, respectively. For the pests selected for further evaluation, a search in the EUROPHYT and/or TRACES-NT was performed for the years between 1995 and July 2023 for the interceptions from the whole world, at species level.

The search strategy used for Web of Science Databases was designed combining English common names for pests and diseases, terms describing symptoms of plant diseases and the scientific and English common names of the commodity and excluding pests which were identified using searches in other databases. The established search strings are detailed in Appendix B and they were run on 24 August 2023.

The titles and abstracts of the scientific papers retrieved were screened and the pests associated with *Ligustrum* 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® in Appendix F) includes all identified pests that use as host *Ligustrum* species.

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).

Pests for which limited information was available on one or more criteria used to identify them as relevant for this Opinion, e.g. on potential impact, are listed in Appendix E (List of pests that can potentially cause an effect not further assessed).

2.3.3 | Listing and evaluation of risk mitigation measures

All implemented risk mitigation measures were listed and evaluated. When evaluating the likelihood of pest freedom of the commodity, the following types of potential infection/infestation sources for *L. ovalifolium* and *L. vulgare* in export nursery were considered (see also Figure 1):

- pest entry from surrounding areas,
- pest entry with new plants/seeds,
- pest spread within the nursery.

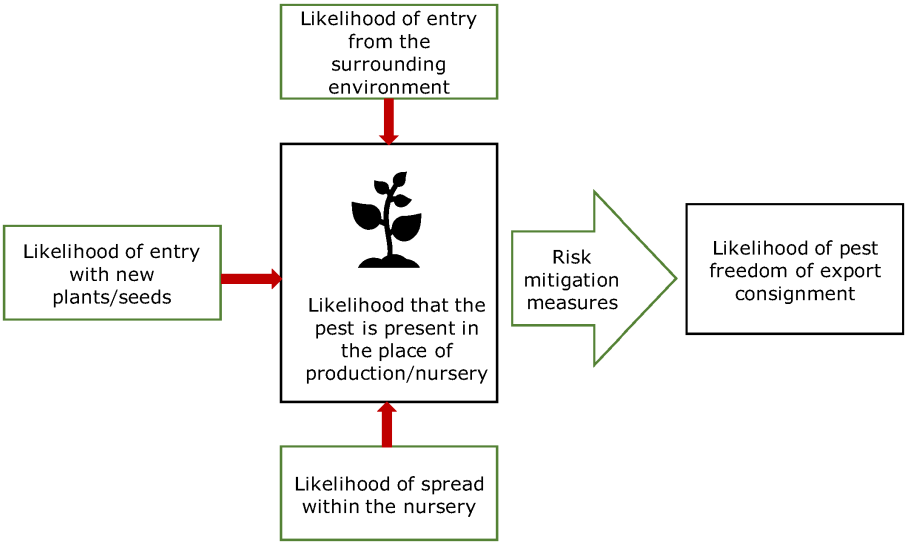

FIGURE 1 Conceptual framework to assess likelihood that plants are exported free from relevant pests (Source: EFSA PLH Panel, 2019).

The risk mitigation measures proposed by DEFRA of the UK were evaluated with Expert Knowledge Elicitation (EKE) according to the Guidance on uncertainty analysis in scientific assessment (EFSA Scientific Committee, 2018).

Information on the biology, likelihood of entry of the pest to the export nursery, of its spread inside the nursery and the effect of measures on the specific pests were summarised in data sheets of pests selected for further evaluation (see Appendix A).

2.3.4 | Expert knowledge elicitation

To estimate the pest freedom of the commodities, an EKE was performed following EFSA guidance (Annex B.8 of EFSA Scientific Committee, 2018). The specific question for EKE was: 'Taking into account (i) the risk mitigation measures in place in the nurseries, and (ii) other relevant information, how many of 10,000 commodity units, either single plants or bundles of plants will be infested with the relevant pest when arriving in the EU?

The commodities were grouped in bare root plants and plants in pots in the risk assessment. Bare root plants include 1- to 3-year-old whips and transplants in bundles of 5, 10 or 15 plants per bundle of whips and 25 or 50 plants per bundle of transplants, and 1- to 7-year-old single bare root plants. Plants in pots include 1- to 2-year-old cell grown plants in bundles of 5–15 plants and 1- to 5-year-old single plants in pots.

The commodity of cell-grown plants is relevant only for *L. vulgare*.

The following reasoning is given for considering bundles of whips and transplants:

(i) There is no quantitative information available regarding clustering of plants during production;
(ii) Plants are grouped in bundles of 5, 10, 15, 25 or 50 after sorting;
(iii) For the pests under consideration, a cross-contamination during transport is possible.

The following reasoning is given for grouping into bare root plants and plants in pots:

(i) Cell grown plants in bundles are comparable to single plants in pots with regard to the risk of pests being present on the leaves and on the roots. The overall canopy and root volume of cell grown plants in bundles can be similar to that of single plants in pots. Both commodities can be exported all year round.
(ii) Due to the absence of growing media and similar time of harvesting and export, bundles of whips and transplants and single bare rooted plants are considered to have a comparable risk with regard to the presence of pests.

The uncertainties associated with the EKE were taken into account and quantified in the probability distribution applying the semi-formal method described in section 3.5.2 of the EFSA-PLH Guidance on quantitative pest risk assessment (EFSA PLH Panel, 2018). Finally, the results were reported in terms of the likelihood of pest freedom. The lower 5% percentile of the uncertainty distribution reflects the opinion that pest freedom is with 95% certainty above this limit.

3 | COMMODITY DATA

3.1 | Description of the commodity

The commodities of *L. ovalifolium* (common names: California privet, Oval leafed privet, Korean privet, garden privet; family: Oleaceae), an evergreen species, to be imported from the UK to the EU are whips and transplants, bare root plants and rooted plants in pots. None of the nurseries expected to export to the EU are using grafting in the production of *L. ovalifolium*. There are many varieties of *L. ovalifolium* (Dossier Section 1.1).

The commodities of *L. ovalifolium* are as follows:

- Whips and transplants: The age of plants is between 1 and 3 years. The diameter is between 4 and 10 mm and height between 20 and 120 cm. Whips are slender, unbranched trees. Whips are exported to the EU with leaves as the species is evergreen (Dossier Section 1.1). Transplants are plants which have been transplanted and grown on, usually from seedlings less than 1 year old. They can be anything from circa 20 to 90 cm tall. Transplants have stronger and more developed root systems (Dossier Section 5.1). According to the Dossier Sections 1.1 and 5.1, whips can be bare root or containerised and transplants are bare root.
- Bare root plants: The age of plants is between 1 and 7 years. The diameter is between 4 and 40 mm and height between 20 and 120 cm. Bare root plants are exported to the EU with leaves as the species is evergreen (Dossier Section 1.1).
- Rooted plants in pots: The age of plants is between 1 and 5 years. The diameter is between 4 and 40 mm and height between 20 and 150 cm. The plants in pots are exported to the EU with leaves as the species is evergreen (Dossier Sections 1.1 and 5.1).

The commodities of *L. vulgare* (common name: Wild privet, common privet; family: Oleaceae), a semi-evergreen species, to be imported from the UK to the EU are whips and transplants, bare root plants, cell-grown plants and rooted plants in pots. None of the nurseries expected to export to the EU are using grafting in the production of *L. vulgare*. There are many varieties of *L. vulgare* (Dossier Section 1.2).

The commodities of *L. vulgare* are as follows:

- Whips and transplants: The age of plants is between 1 and 3 years. The diameter is between 4 and 10 mm and height between 20 and 120 cm. Whips are slender, unbranched trees. Whips can be bare root or containerised. Bare root whips may have some leaves at the time of export, as leaf drop may not occur in this species during mild winters (Dossier Section 1.2). Transplants are plants which have been transplanted and grown on, usually from seedlings less than 1 year old. They can be anything from circa 20 to 90 cm tall. Transplants have stronger and more developed root systems (Dossier Section 5.2).
- Bare root plants: The age of plants is between 1 and 7 years. The diameter is between 4 and 40 mm and height between 20 and 120 cm. Bare root plants may have some leaves at the time of export, as leaf drop may not occur in this species during mild winters (Dossier Section 1.2).
- Cell grown plants (plants can be grown in cells at one plant per cell): The age of plants is between 1 and 2 years. The diameter is between 4 and 10 mm and height between 20 and 60 cm (Dossier Section 1.2). Cell grown plants may have some leaves at the time of export, as leaf drop may not occur in this species during mild winters (Dossier Section 1.2).
- Rooted plants in pots: The age of plants is between 1 and 5 years. The diameter is between 4 and 40 mm and height between 20 and 150 cm. The plants in pots may have some leaves at the time of export, as leaf drop may not occur in this species during mild winters (Dossier Sections 1.2 and 5.2).

The growing media are virgin peat or peat-free compost (a mixture of coir, tree bark, wood fibre, etc.) (Dossier Sections 1.1, 1.2, 5.1 and 5.2) complying with the requirements for growing media as specified in the Annex VII of the Commission Implementing Regulation 2019/2072.

According to ISPM 36 (FAO, 2019), the commodities can be classified as 'bare root plants' and 'rooted plants in pots'.

According to the Dossier Section 1.1, the trade volume for *L. ovalifolium* is up to 50,000 bare root plants and 30,000 rooted plants in pots per year. According to the Dossier Section 1.2, the trade volume for *L. vulgare* is up to 20,000 bare root plants and 10,000 rooted plants in pots per year. The trade of these plants will mainly be to Northern Ireland and the Republic of Ireland.

According to the Dossier Sections 1.1 and 1.2 the intended use of the commodities of *L. ovalifolium* and *L. vulgare* is as follows. Plants are supplied directly to professional operators and traders. Uses may include propagation, growing-on, onward trading or direct sales to final consumers but will generally fall into three categories:

- Production and further growing-on by professional operators;
- Landscapers and garden centres, mainly for hedging but also some woodland and ornamental/landscape planting;
- Direct sales to final users as ornamentals.

3.2 | Description of the production areas

There are three known nurseries in the UK that are producing *L. ovalifolium* and *L. vulgare* plants for the export to the EU (Dossier Sections 1.1 and 1.2). The nurseries are shown in Figure 2.

The applicant states that: 'The map provided included the locations of those nurseries that have contributed the technical information required to prepare the dossier. Whilst these nurseries are likely to be responsible for most UK movements to Northern Ireland and the EU, the information they have contributed is intended to be representative of general industry practice. As with any market access application submitted in line with IPPC guidance, we assume unless specifically stated otherwise that the application is made at the country-to-country level. It may therefore be possible that other nurseries in the UK could produce these commodities and would want to export in the future. Such nurseries would need to meet the import requirements set out in any subsequent EU legislation as the nurseries that have contributed technical information to the dossiers' (Dossier Sections 5.1 and 5.2).

FIGURE 2 Nurseries in the UK of *Ligustrum ovalifolium* and *Ligustrum vulgare* plants for the export to the EU (Source: Dossier Sections 1.1 and 1.2).

Ligustrum species are grown in Great Britain in line with the Plant Health (Amendment, etc.) (EU Exit) Regulations 2020[6] and the Plant Health (Phytosanitary Conditions) (Amendment) (EU Exit) Regulations 2020.[7] These regulations are broadly similar to the EU phytosanitary regulations. All plants within the UK nurseries are grown under the same phytosanitary measures, meeting the requirements of the UK Plant Passporting regime (Dossier Sections 1.1 and 1.2).

The size of the nurseries is between 8 and 150 ha for container stock (plants in pots) and up to 325 ha for field grown stock (Dossier Sections 1.1 and 1.2).

The nurseries also grow other plant species as shown in Appendix C. The minimum and maximum proportion of *L. ovalifolium* and *L. vulgare* compared to the other plant species grown in the nurseries is between 1% and 5%. The majority of the nurseries also produce plants for the local market, and there is no distancing between production areas for the export and the local market (Dossier Sections 1.1 and 1.2).

Approximately 20% of the nurseries likely to export to the EU also sell plants within the UK to final users as ornamental plants, e.g. to the Local Authorities/Landscape Architects (Dossier Sections 1.1 and 1.2).

The nurseries are kept clear of non-cultivated herbaceous plants. In access areas, non-cultivated herbaceous plants are kept to a minimum and only exist at nursery boundaries. Non-cultivated herbaceous plants grow on less than 1% of the nursery area. The predominant species is rye grass (*Lolium* spp.). Other identified species include dandelions (*Taraxacum officinale*), hairy bittercress (*Cardamine hirsute*), common daisy (*Bellis perennis*), creeping cinquefoil (*Potentilla reptans*) and bluebells (*Hyacinthoides non-scripta*). These are all extremely low in number (Dossier Sections 1.1 and 1.2).

There are hedges surrounding the export nurseries made up of a range of species including hazel (*Corylus avellana*), yew (*Taxus baccata*), holly (*Ilex* spp.), ivy (*Hedera* spp.), alder (*Alnus glutinosa*), cherry laurel (*Prunus laurocerasus*), hawthorn (*Crataegus* spp.), blackthorn (*Prunus spinosa*) and leylandii (*Cupressus x leylandii*) (Dossier Sections 1.1, 1.2, 5.1 and 5.2).

The minimum distance in a straight line, between the growing area in the nurseries and the closest *L. ovalifolium* and *L. vulgare* plants in the local surroundings is 3 metres (Dossier Sections 1.1 and 1.2). No further information is available.

Nurseries are predominately situated in the rural areas. The surrounding land would tend to be arable farmland with some pasture for animals and small areas of woodland. Hedges are often used to define field boundaries and grown along roadsides (Dossier Sections 1.1, 1.2, 5.1 and 5.2).

[6]Plant Health (Amendment etc.) (EU Exit) Regulations 2020 of 14 December 2020, No. 1482, 80 pp. Available online: https://www.legislation.gov.uk/uksi/2020/1482/contents/made

[7]Plant Health (Phytosanitary Conditions) (Amendment) (EU Exit) Regulations 2020, No. 1527, 276 pp. Available online: https://www.legislation.gov.uk/uksi/2020/1527/contents/made

Arable crops present around the nurseries are rotated in line with good farming practice and could include oilseed rape (*Brassica napus*), wheat (*Triticum* spp.), barley (*Hordeum vulgare*), turnips (*Brassica rapa* subsp. *rapa*), potatoes (*Solanum tuberosum*) and maize (*Zea mays*) (Dossier Sections 1.1, 1.2, 5.1 and 5.2).

Pastures present around the nurseries are predominantly ryegrass (*Lolium* spp.) (Dossier Sections 1.1, 1.2, 5.1 and 5.2).

Woodlands tend to be a standard UK mixed woodland, with a range of the UK native trees such as oak (*Quercus robur*), pine (*Pinus* spp.), poplar (*Populus* spp.), ash (*Fraxinus* spp.), sycamore (*Acer pseudoplatanus*), holly (*Ilex* spp.), Norway maple (*Acer platanus*) and field maple (*Acer campestre*). The nearest woodland to one of the nurseries borders the boundary fence (Dossier Sections 1.1, 1.2, 5.1 and 5.2).

It is not possible to identify the plant species growing within the gardens of private dwellings around the nurseries (Dossier Sections 1.1, 1.2, 5.1 and 5.2).

Based on the global Köppen–Geiger climate zone classification (Kottek et al., 2006), the climate of the production areas of *L. ovalifolium* and *L. vulgare* in the UK is classified as Cfb, i.e. main climate (C): warm temperate; precipitation (f): fully humid; temperature (b): warm summer.

3.3 | Production and handling processes

3.3.1 | Source of planting material

The starting material of the commodities is a mix of seeds and seedlings depending on the nursery (Dossier Sections 1.1 and 1.2).

Ligustrum ovalifolium seed purchased in the UK is not covered by any certification scheme; seedlings sourced in the UK are certified with UK Plant Passports; seedlings from the EU countries are certified with phytosanitary certificates. Most plants are grown from the UK material. Some plants may be grown from seedlings sourced from the EU (mostly the Netherlands) (Dossier Section 1.1).

Ligustrum vulgare seed purchased in the UK may be certified under the Forestry Commission's Voluntary Scheme for the Certification of Native Trees and Shrubs. This allows certification of seeds not covered by The Forest Reproductive Material (Great Britain) Regulations 2002. Seedlings sourced in the UK are certified with UK Plant Passports. Seedlings from the EU countries are certified with phytosanitary certificates. Most plants are grown from the UK material; however, some plants may be grown from seedlings obtained from other countries. Any plant material obtained from other countries would originate in EU countries, specifically Belgium, Germany, France and the Netherlands (Dossier Sections 5.1 and 5.2). None of the nurseries is expected to export to the EU produce plants from grafting, they use only seed and seedlings. Therefore, there are no mother plants of *L. ovalifolium* and *L. vulgare* present in the nurseries (Dossier Sections 1.1 and 1.2).

3.3.2 | Production cycle

Plants are either grown in containers (cells, pots, tubes, etc.) or in field (Dossier Sections 1.1 and 1.2). Cell-grown plants of *L. vulgare* can be grown in greenhouses; however, most plants will be field grown, or field grown in containers (Dossier Section 1.2).

As the plants are intended for outdoor cultivation, it is normally only early growth stages that are maintained under protection, such as young plants/seedlings where there is an increased vulnerability due to climatic conditions including frost. The commodity to be exported should therefore be regarded as outdoor grown. Growth under protection is primarily to protect against external climatic conditions rather than protection from pests. The early stages of plants grown under protection are maintained in plastic polytunnels, or in glasshouses which typically consist of a metal or wood frame construction and glass panels (Dossier Sections 1.1, 1.2, 5.1 and 5.2). The minimum distance between greenhouses and the production fields of Ligustrum is approximately 3 meters (Dossier Sections 5.1 and 5.2).

All the cell-grown trees (1–2 years old) are grown in the EU-compliant growing media for their whole life (Dossier Section 5.2).

Rooted plants in pots may be either grown in EU-compliant growing media in pots for their whole life, or initially grown in the field before being lifted, root-washed to remove any soil and then potted in EU-compliant growing media. The soil is not used as growing medium in pots for 1- to 5-year-old trees. Trees will be lifted from the field a minimum of one growing season prior to export (Dossier Sections 5.1 and 5.2).

Plants for bare root plant production are planted from autumn until early spring (October–April); rooted plants in pots can be planted at any time of year, though winter is most common (Dossier Sections 1.1 and 1.2).

According to the Dossier Sections 1.1 and 1.2, bare root plants are harvested in winter to be able to lift plants from the field, and because this is the best time to move dormant plants. Rooted plants in pots can be moved at any point in the year to fulfil customer demand.

The growing media are virgin peat or peat-free compost. This compost is heat-treated by commercial suppliers during production to eliminate pests and diseases. It is supplied in sealed bulk bags or shrink-wrapped bales and stored off the ground on pallets, these are free from contamination. Where delivered in bulk, compost is kept in a dedicated bunker, either indoors or covered by tarpaulin outdoors, and with no risk of contamination with soil or other material (Dossier Sections 1.1, 1.2, 5.1 and 5.2).

The irrigation is done on the need basis and could be overhead, sub-irrigation or drip irrigation. Water used for irrigation can be drawn from several sources, the mains supply, bore holes or from rainwater collection or watercourses (Dossier Sections 1.1 and 1.2). Additional information on water used for irrigation is provided in Appendix D. Regardless of the source of the water used to irrigate, none of the nurseries have experienced the introduction of a pest/disease because of contamination of the water supply (Dossier Sections 1.1 and 1.2).

Growers are required to assess water sources, irrigation and drainage systems used in the plant production for the potential to harbour and transmit plant pests. Water is routinely sampled and sent for analysis (Dossier Sections 1.1 and 1.2).

Growers must have an appropriate programme of weed management in place on the nursery (Dossier Sections 1.1 and 1.2).

General hygiene measures are undertaken as part of routine nursery production, including disinfection of tools and equipment between batches/lots and different plant species. The tools are dipped in a disinfectant solution and wiped with a clean cloth between trees to reduce the risk of virus and bacterial transfer between subjects. There are various disinfectants available, with Virkon S (active substance: potassium peroxymonosulfate and sodium chloride) being a common example (Dossier Sections 1.1 and 1.2).

Growers keep records to allow traceability for all plant material handled. These records must allow a consignment or consignment in transit to be traced back to the original source, as well as forward to identify all trade customers to which those plants have been supplied (Dossier Sections 1.1 and 1.2).

3.3.3 | Pest monitoring during production

All producers are registered as professional operators with the UK Competent Authority via the Animal and Plant Health Agency (APHA) for England and Wales, or with the Science and Advice for Scottish Agriculture (SASA) for Scotland and are authorised to issue the UK plant passports, verifying they meet the required national sanitary standards. The Competent Authority inspect crops at least once a year to check they meet the standards set out in the guides. Assessments are normally made based on visual examinations, but samples may be taken for laboratory analysis to get a definitive diagnosis (Dossier Sections 1.1 and 1.2).

The sanitary status of production areas is controlled by the producers as part of these schemes, as well as via official inspections by APHA Plant Health and Seeds Inspectors (PHSI) or with SASA (Scotland) (Dossier Sections 1.1 and 1.2).

In the last 3 years, there has been a substantial level of inspection of registered Ligustrum producers, both in support of the Plant Passporting scheme (checks are consistent with EU legislation, with a minimum of one a year for authorised operators) and as part of the Quarantine Surveillance programme (Great Britain uses the same framework for its surveillance programme as the EU) (Dossier Sections 1.1 and 1.2).

Plant material is regularly monitored for plant health issues. Pest monitoring is carried out by trained nursery staff via crop walking and records kept of this monitoring. Qualified agronomists also undertake crop walks to verify the producer's assessments. Curative or preventative actions are implemented together with an assessment of phytosanitary risk. Unless a pest can be immediately and definitively identified as non-quarantine, growers are required to treat it as a suspect quarantine pest and notify the competent authority (Dossier Sections 1.1 and 1.2).

The crops are inspected visually on a regular basis by competent nursery staff as part of the growing process. All plants are also carefully inspected by nurseries on arrival and dispatch for any plant health issues (Dossier Sections 1.1 and 1.2).

It is a legal requirement under the UK Plant Health law for any person in charge of a premise to notify the Competent Authority of the presence, or suspected presence, of a plant pest. The requirement is not limited to those organisms listed in the UK legislation but is also required for any organism not normally present in the UK which is likely to be injurious to plants (Dossier Sections 1.1 and 1.2).

The nurseries follow the Plant Health Management Standard issued by the Plant Healthy Certification Scheme of which DEFRA, the Royal Horticultural Society and others contribute to via The Plant Health Alliance Steering Group (Dossier Sections 1.1 and 1.2).

The UK surveillance is based on visual inspection with samples taken from symptomatic material, and where appropriate, samples are also taken from asymptomatic material (e.g. plants, tubers, soil, watercourses). For sites with the likelihood of multiple pest and host combinations (e.g. ornamental and retail sites), standard methods are used for site selection and visit frequency, whereby clients are assessed taking into account business activity, size of business and source material, so e.g. a large propagator using third country material receives 10 visits per year while a small retailer selling locally sourced material is visited once every second year. Where pest-specific guidelines are absent, inspectors select sufficient plants to give a 95% probability of detecting symptoms randomly distributed on 1.5% of plants in a batch/consignment. For inspections of single hosts, possibly with multiple pests, survey site selection is often directed to specific locations identified by survey planners, e.g. 0.5% of ware production land is annually sampled for potato cyst nematode (PCN) with farms randomly selected and sampled at a rate of 50 cores per hectare (Dossier Sections 1.1 and 1.2).

During production, in addition to the general health monitoring of the plants by the nurseries, official growing season inspections are undertaken by the UK Plant Health Service at an appropriate time, taking into consideration factors such as the likelihood of pest presence and growth stage of the crop. Where appropriate this could include sampling and laboratory analysis. Official sampling and analysis could also be undertaken nearer to the point of export depending on the type of analysis and the import requirements of the country being exported to. Samples are generally taken on a representative

sample of plants, in some cases however where the consignment size is quite small all plants are sampled. Magnification equipment is provided to all inspectors as part of their standard equipment and is used during inspections when appropriate (Dossier Sections 1.1 and 1.2).

All residues or waste materials shall be assessed for the potential to host, harbour and transmit pests (Dossier Sections 1.1 and 1.2).

Incoming plant material and other goods such as packaging material and growing media, that have the potential to be infected or harbour pests, are checked on arrival. Growers have procedures in place to quarantine any suspect plant material and to report findings to the authorities (Dossier Sections 1.1 and 1.2).

3.3.4 | Pest management during production

Crop protection is achieved using a combination of measures including approved plant protection products, biological control or physical measures. Plant protection products are only used when necessary and records of all plant protection treatments are kept (Dossier Sections 1.1 and 1.2).

Pest and disease pressure varies from season to season. Product application takes place only when required and depends on situation (disease pressure, growth stage, etc., and environmental factors) at that time. Subject to this variation in pest pressure, in some seasons few, if any, pesticides are applied; in others, it is sometimes necessary to apply preventative and/or control applications of pesticides. In many circumstances also, biological control is used to control outbreaks, rather than using chemical treatments (Dossier Sections 1.1 and 1.2).

Examples of typical treatments used against aphids, cankers, powdery mildew, root rots, spider mites and weeds are detailed in the Dossier Sections 1.1, 1.2, 5.1 and 5.2. These would be applied at the manufacturers recommended rate and intervals (Dossier Sections 1.1, 1.2, 5.1 and 5.2).

There are no specific measures/treatments against the soil pests. However, containerised plants are grown in trays on top of protective plastic membranes to prevent contact with soil. Membranes are regularly refreshed when needed. Alternatively, plants may be grown on raised galvanised steel benches stood on gravel as a barrier between the soil and bench feet and/or concreted surfaces (Dossier Sections 1.1 and 1.2).

Post-harvest and through the autumn and winter, nursery management is centred on pest and disease prevention and maintaining good levels of nursery hygiene. Leaves, pruning residues and weeds are all removed from the nursery to reduce the number of over wintering sites for pests and diseases (Dossier Sections 1.1 and 1.2). Pruning frequency was not provided by the applicant as it depends on the different kind of commodities, on growth, age of plant, nursery and customer preference. Whips are not pruned (Dossier Sections 5.1 and 5.2).

3.3.5 | Inspections before export

The UK NPPO carries out inspections and testing where required by the country of destination's plant health legislation, to ensure all requirements are fulfilled and a valid phytosanitary certificate with the correct additional declarations is issued (Dossier Sections 1.1 and 1.2).

The sites of production are inspected to ensure freedom from *Diaprepes abbreviatus* during official inspections carried out at appropriate times, since the beginning of the last growing season. Immediately prior to export, consignments of the plants will be subjected to an official inspection for the presence of *D. abbreviatus* with such a sample size as to enable at least the detection of 1% level of infestation with a level of confidence of 99% (Dossier Sections 1.1 and 1.2).

Separate to any official inspection, plant material is checked by growers for plant health issues prior to dispatch (Dossier Sections 1.1 and 1.2).

A final pre-export inspection is undertaken as part of the process of issuing a phytosanitary certificate. These inspections are generally undertaken as near to the time of export as possible, usually within 1–2 days, and not more than 2 weeks before export. Phytosanitary certificates are only issued if the commodity meets the required plant health standards after inspection and/or testing according to appropriate official procedures (Dossier Sections 1.1 and 1.2).

The protocol for plants infested by pests during inspections before export is to treat the plants, if they are on site for a sufficient period of time, or to destroy any plants infested by pests otherwise. All other host plants in the nursery would be treated. The phytosanitary certificate for export will not be issued until the UK Plant Health inspectors confirm that the plants are free from pests (Dossier Sections 1.1 and 1.2).

3.3.6 | Export procedure

Bare-rooted plants are harvested from autumn to early spring (November–April) to be able to lift plants from the field and because this is the best time to move dormant plants. Bare root plants are lifted and washed free from soil with a low-pressure washer in the outdoors nursery area away from packing/cold store area. In some cases, the plants may be kept in a cold store stored for up to 5 months after harvesting prior to export (Dossier Sections 1.1 and 1.2).

Rooted plants in pots can be moved at any point in the year to fulfil customer demand, but more usually September–May. These will likely be destined for amenity or garden centre trade rather than nurseries (Dossier Sections 1.1 and 1.2).

Prior to export bare root plants can be placed in bundles, depending on the size of the plants (25 or 50 for transplants; 5, 10 or 15 for whips; or single bare root trees). They are then wrapped in polythene and packed and distributed on ISPM 15 certified wooden pallets, or metal pallets. Alternatively, they may be placed in pallets which are then wrapped in polythene. Small volume orders may be packed in waxed cardboard cartons or polythene bags and dispatched via courier (Dossier Sections 1.1 and 1.2).

Rooted plants in pots are transported on Danish trolleys for smaller containers, or ISPM 15 certified pallets, or individually in pots for larger containers (Dossier Sections 1.1 and 1.2).

Small volume orders may be packed in waxed cardboard cartons or polythene bags and dispatched via courier (Dossier Sections 1.1 and 1.2).

The preparation of the commodities for export is carried out inside the nurseries in a closed environment, e.g. packing shed (Dossier Sections 1.1 and 1.2).

Plants are transported by lorry (size dependant on load quantity). Sensitive plants are occasionally transported by temperature-controlled lorry if weather conditions during transit are likely to be very cold (Dossier Sections 1.1 and 1.2).

4 | IDENTIFICATION OF PESTS POTENTIALLY ASSOCIATED WITH THE COMMODITY

The search for potential pests associated with the commodity rendered 973 species (see Microsoft Excel® file in Appendix F).

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.

20 EU-quarantine species that are reported to use commodity as a host plant 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 the UK;
b. the commodity is 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 20 EU-quarantine pest species that are reported as associated with the commodity.

Of these 20 EU-quarantine pest species evaluated, *Bemisia tabaci* (European populations) has been retained because of its presence in the UK. Another pest, *Scirtothrips dorsalis* has been selected for further evaluation because the applicant country mentioned that it is present, not widely distributed and under official control (see pest list provided by the applicant). Both pests could be associated with the commodities.

TABLE 4 Overview of the evaluation of the 20 EU-quarantine pest species for which information was found in the Dossier, databases and literature searches that use *Ligustrum* as a host plant for their relevance for this opinion.

No.	Pest name according to EU legislation[a]	EPPO code	Group	Pest present in the UK	*Ligustrum* confirmed as a host (reference)	Pest can be associated with the commodity	Pest relevant for the opinion
1	*Aleurocanthus woglumi*	ALECWO	Insects	No	*Ligustrum* (CABI, online)	Not assessed	No
2	*Ambrosiophilus osumiensis* as Scolytinae spp. (non-European)	AMBDRU	Insects	No	*Ligustrum*, *L. lucidum* (EPPO, 2020)	Not assessed	No
3	*Ambrosiodmus rubricollis* as Scolytinae spp. (non-European)	–	Insects	No	*Ligustrum lucidum* (Atkinson, online)	Not assessed	No
4	*Anisandrus maiche* as Scolytinae spp. (non-European)	ANIDMA	Insects	No	*Ligustrum obtusifolium* (Mandelshtam et al., 2018)	Not assessed	No
5	*Anthonomus bisignifer*	ANTHBI	Insects	No	*Ligustrum sinense* (Zhang et al., 2008)	Not assessed	No
6a	*Bemisia tabaci* (European populations)	BEMITA	Insects	Yes	*Ligustrum lucidum*, *L. quihoui*, *L. ovalifolium*, *L. vicaryi* (CABI, online)	Yes	Yes
6b	*Bemisia tabaci* (non-European populations)	BEMITA	Insects	No	*Ligustrum lucidum*, *L. quihoui*, *L. ovalifolium*, *L. vicaryi* (CABI, online)	Not assessed	No
7	*Euwallacea fornicatus sensu lato* (including: *Euwallacea fornicatus sensu stricto*, *Euwallacea fornicatior*, *Euwallacea kuroshio* and *Euwallacea perbrevis*)	XYLBFO EUWAWH EUWAFO EUWAKU EUWAPE	Insects	No	*Ligustrum compactum* (EPPO, online; EPPO, 2020)	Not assessed	No
8	*Homalodisca vitripennis*	HOMLTR	Insects	No	*Ligustrum* (EPPO, online)	Not assessed	No
9	*Hylesinus mexicanus* as Scolytinae spp. (non-European)	–	Insects	No	*Ligustrum japonicum* (Atkinson, online)	Not assessed	No
10	*Lopholeucaspis japonica*	LOPLJA	Insects	No	*Ligustrum* (García Morales et al., online)	Not assessed	No
11	*Lycorma delicatula*	LYCMDE	Insects	No	*Ligustrum lucidum* (EPPO, online)	Not assessed	No
12	*Meloidogyne enterolobii*	MELGMY	Nematodes	No	*Ligustrum* (EPPO, online)	Not assessed	No
13	*Oemona hirta*	OEMOHI	Insects	No	*Ligustrum* (EPPO, online)	Not assessed	No
14	*Phymatotrichopsis omnivora*	PHMPOM	Fungi	No	*Ligustrum* (EPPO, online; Farr and Rossman, online)	Not assessed	No
15	*Ripersiella hibisci*	RHIOHI	Insects	No	*Ligustrum ovalifolium* (CABI, online; EPPO, online)	Not assessed	No
16	*Scirtothrips citri*	SCITCI	Insects	No	*Ligustrum* (CABI, online)	Not assessed	No
17	*Scirtothrips dorsalis*	SCITDO	Insects	Yes	*Ligustrum japonicum* (CABI, online)	Yes	Yes
18	*Xiphinema americanum sensu stricto*	XIPHAA	Nematodes	No	*Ligustrum* (Ferris, online)	Not assessed	No
19	*Xylella fastidiosa*	XYLEFA	Bacteria	No	*Ligustrum sinense* (CABI, online; EPPO, online)	Not assessed	No
20	*Xylosandrus arquatus* as Scolytinae spp. (non-European)	–	Insects	No	*Ligustrum robustum* (Shaw et al., 2018)	Not assessed	No

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

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

The information provided by the UK, integrated with the search performed by EFSA, was evaluated in order to assess whether there are other relevant pests potentially associated with the commodity species 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 the UK;
b. the pest is (i) absent or (ii) has a limited distribution in the EU;
c. commodity 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.

For non-regulated species present in the UK and with a limited distribution in the EU (i.e. present in one or a few EU MSs) and fulfilling the other criteria (i.e. c, d and e), either one of the following conditions should be additionally fulfilled for the pest to be further evaluated:

- official phytosanitary measures have been adopted in at least one EU MS;
- any other reason justified by the panel (e.g. recent evidence of presence).

Pests that fulfilled the above listed criteria were selected for further evaluation.

Based on the information collected, 948 potential pests known to be associated with the species commodity were evaluated for their relevance to this Opinion. 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 F (Microsoft Excel® file). Of the evaluated EU non-quarantine pests, one pest (*Diaprepes abbreviatus*) was selected for further evaluation because it met all of the selection criteria. More information on this pest can be found in the pest datasheets (Appendix A).

In the previous Scientific Opinion on commodity risk assessment of *Ligustrum delavayanum* topiary plants grafted on *Ligustrum japonicum* from the UK (EFSA PLH Panel, 2022), one more pest species was listed (*Epiphyas postvittana*). However, since the pest is present in a number of EU Member States, no official control measures are applied and the impact in the EU is not considered to be significant, a decision has been made by the EU Commission not to regulate this pest (Commission implementing regulation (EU) 2023/446). Therefore, the Panel decided to discard this pest from further evaluation in this opinion.

4.3 | Overview of interceptions

Data on the interception of harmful organisms on plants of *Ligustrum* spp. can provide information on some of the organisms that can be present on *Ligustrum* spp. despite the current measures taken. According to EUROPHYT, online (accessed on 14 August 2023) and TRACES-NT, online (accessed on 14 August 2023), there were no interceptions of plants for planting of *Ligustrum* from the UK destined to the EU Member States due to the presence of harmful organisms between the years 1995 and 31 July 2023. It should be noted that the UK was previously part of the EU and at that time *Ligustrum* was not subjected to plant passport, and that since Brexit the movement of *Ligustrum* to the EU has been banned according to the current plant health legislation (except *L. delavayanum* and *L. japonicum* since Feb. 2023, CIR 2023/446).

There were 67 interceptions of plants for planting of Ligustrum from China, the Republic of Korea and the Netherlands destined to the EU Member States due to the presence of harmful organisms (*Dialeurodes citri*, *Helicotylenchus dihystera*, *Helicotylenchus* sp., *Heliothis* sp., *Meloidogyne* sp., Nematodes, *Pratylenchus*, *Pratylenchus* sp., *Pseudaulacaspis pentagona*, *Tylenchorhynchus* sp. and *Xiphinema americanum sensu lato*) between the years 1995 and 31 July 2023.

4.4 | List of potential pests not further assessed

From the list of pests not selected for further evaluation, the Panel highlighted two species (see Appendix E) for which currently available evidence provides no reason to select these species for further evaluation in this Opinion. A specific justification of the inclusion in this list is provided for each species in Appendix E.

4.5 | Summary of pests selected for further evaluation

Three pests satisfying all the relevant criteria listed above in Sections 4.1 and 4.2 are included in Table 5. The effectiveness of the risk mitigation measures applied to the commodity was evaluated for these selected pests.

TABLE 5 List of relevant pests selected for further evaluation.

Number	Current scientific name	EPPO code	Name used in the EU legislation	Taxonomic information	Group	Regulatory status
1	*Bemisia tabaci*	BEMITA	*Bemisia tabaci* Genn. (European populations)	Hemiptera Aleyrodidae	Insects	EU Protected Zone quarantine pest according to Commission Implementing Regulation (EU) 2019/2072
2	*Diaprepes abbreviatus*	DPREAB	–	Coleoptera Curculionidae	Insects	Not regulated in the EU
3	*Scirtothrips dorsalis*	SCITDO	*Scirtothrips dorsalis* Hood	Thysanoptera Thripidae	Insects	EU Quarantine Pest according to Commission Implementing Regulation (EU) 2019/2072

5 | RISK MITIGATION MEASURES

For the selected pests (Table 5), the Panel evaluated the likelihood that it could be present in the *L. ovalifolium* and *L. vulgare* nurseries by evaluating the possibility that the commodity in the export nurseries is infested either by:

- introduction of the pest from the environment surrounding the nursery;
- introduction of the pest with new plants/seeds;
- spread of the pest within the nursery.

The information used in the evaluation of the effectiveness of the risk mitigation measures is summarised in pest data sheets (see Appendix A).

5.1 | Risk mitigation measures applied in the UK

With the information provided by the UK (Dossier Sections 1.1, 1.2, 2.0, 3.0, 4.1, 4.2, 5.1, 5.2, 5.3 and 5.4), the Panel summarised the risk mitigation measures (see Table 6) that are implemented in the production nursery.

TABLE 6 Overview of implemented risk mitigation measures for *Ligustrum* plants designated for export to the EU from the UK.

Number	Risk mitigation measure	Implementation in the UK
1	Registration of production sites	All producers are registered as professional operators with the UK Competent Authority via APHA for England and Wales, or SASA for Scotland, and are authorised to issue the UK plant passports, verifying they meet the required national sanitary standards (Dossier Sections 1.1 and 1.2)
2	Physical separation	The majority of the nurseries also produce plants for the local market, and there is no distancing between production areas for the export and the local market. All plants within the UK nurseries are grown under the same phytosanitary measures, meeting the requirements of the UK Plant Passporting regime. (Dossier Sections 1.1 and 1.2)
3	Certified plant material	Most plants are grown from the UK material. Some plants may be grown from seedlings sourced from the EU (mostly the Netherlands) *Ligustrum ovalifolium* seed purchased in the UK is not covered by any certification scheme; seedlings sourced in the UK are certified with the UK Plant Passports; seedlings from the EU countries are certified with phytosanitary certificates (Dossier Section 1.1) *Ligustrum vulgare* seed purchased in the UK may be certified under the Forestry Commission's Voluntary Scheme for the Certification of Native Trees and Shrubs. This allows certification of seeds not covered by The Forest Reproductive Material (Great Britain) Regulations 2002. Seedlings sourced in the UK are certified with UK Plant Passports. Seedlings from the EU countries are certified with phytosanitary certificates
4	Growing media	The growing media are virgin peat or peat-free compost. This compost is heat-treated by commercial suppliers during production to eliminate pests and diseases. It is supplied in sealed bulk bags or shrink-wrapped bales and stored off the ground on pallets, these are free from contamination. Where delivered in bulk, compost is kept in a dedicated bunker, either indoors, or covered by tarpaulin outdoors, and with no risk of contamination with soil or other material (Dossier Sections 1.1, 1.2, 5.1 and 5.2)
5	Surveillance, monitoring and sampling	For additional information, see Section 3.3.3 Pest monitoring during production
6	Hygiene measures	Growers must have an appropriate programme of weed management in place on the nursery (Dossier Sections 1.1 and 1.2) General hygiene measures are undertaken as part of routine nursery production, including disinfection of tools and equipment between batches/lots and different plant species. The tools are dipped in a disinfectant solution and wiped with a clean cloth between trees to reduce the risk of virus and bacterial transfer between subjects. There are various disinfectants available, with Virkon S (active substance: potassium peroxymonosulfate and sodium chloride) being a common example (Dossier Sections 1.1 and 1.2)

Number	Risk mitigation measure	Implementation in the UK
7	Removal of infested plant material	Post-harvest and through the autumn and winter, nursery management is centred on pest and disease prevention and maintaining good levels of nursery hygiene. Leaves, pruning residues, and weeds are all removed from the nursery to reduce the number of over wintering sites for pests and diseases (Dossier Sections 1.1 and 1.2). Pruning frequency was not provided by the applicant as it depends on the different kind of commodities, on growth, age of plant, nursery and customer preference. Whips are not pruned (Dossier Sections 5.1 and 5.2)
8	Irrigation water	Water for irrigation is routinely sampled and sent for analysis (Dossier Sections 1.1 and 1.2)
9	Application of pest control products	Crop protection is achieved using a combination of measures including approved plant protection products, biological control or physical measures. Plant protection products are only used when necessary and records of all plant protection treatments are kept (Dossier Sections 1.1 and 1.2) Pest and disease pressure varies from season to season. Product application takes place only when required and depends on situation (disease pressure, growth stage, etc., and environmental factors) at that time. Subject to this variation in pest pressure, in some seasons few, if any, pesticides are applied; in others it is sometimes necessary to apply preventative and/or control applications of pesticides. In many circumstances also, biological control is used to control outbreaks, rather than using chemical treatments (Dossier Sections 1.1 and 1.2) Examples of typical treatments used against aphids, cancer, powdery mildew, root rots, spider mites and weeds are detailed in Dossier Sections 1.1, 1.2, 5.1 and 5.2. These would be applied at the manufacturers recommended rate and intervals (Dossier Sections 1.1, 1.2, 5.1 and 5.2)
10	Measures against soil pests	There are no specific measures/treatments against the soil pests. However, containerised plants are grown in trays on top of protective plastic membranes to prevent contact with soil. Membranes are regularly refreshed when needed. Alternatively, plants may be grown on raised galvanised steel benches stood on gravel as a barrier between the soil and bench feet and/or concreted surfaces (Dossier Sections 1.1 and 1.2)
11	Inspections and management of plants before export	The UK NPPO carries out inspections and testing where required by the country of destination's plant health legislation, to ensure all requirements are fulfilled and a valid phytosanitary certificate with the correct additional declarations is issued (Dossier Sections 1.1 and 1.2) The sites of production are inspected to ensure freedom from *Diaprepes abbreviatus* during official inspections carried out at appropriate times, since the beginning of the last growing season. Immediately prior to export, consignments of the plants will be subjected to an official inspection for the presence of *D. abbreviatus* with such a sample size as to enable at least the detection of 1% level of infestation with a level of confidence of 99% (Dossier Sections 1.1 and 1.2) Separate to any official inspection, plant material is checked by growers for plant health issues prior to dispatch (Dossier Sections 1.1 and 1.2) A final pre-export inspection is undertaken as part of the process of issuing a phytosanitary certificate. These inspections are generally undertaken as near to the time of export as possible, usually within 1–2 days, and not more than 2 weeks before export. Phytosanitary certificates are only issued if the commodity meets the required plant health standards after inspection and/or testing according to appropriate official procedures (Dossier Sections 1.1 and 1.2) The protocol for plants infested by pests during inspections before export is to treat the plants, if they are on site for a sufficient period of time, or to destroy any plants infested by pests otherwise. All other host plants in the nursery would be treated. The phytosanitary certificate for export will not be issued until the UK Plant Health inspectors confirm that the plants are free from pests (Dossier Sections 1.1 and 1.2)
12	Separation during transport to the destination	According to Dossier Sections 1.1 and 1.2, the commodities are dispatched as single bare root trees or in bundles as follows: – 25 or 50 for seedlings or transplants – 5, 10 or 15 for whips Bare root plants are then wrapped in polythene and packed and distributed on ISPM 15 certified wooden pallets, or metal pallets. Alternatively, they may be placed in pallets which are then wrapped in polythene. Small volume orders may be packed in waxed cardboard cartons or polythene bags and dispatched via courier (Dossier Sections 1.1 and 1.2) Rooted plants in pots are transported on Danish trolleys for smaller containers, or ISPM 15 certified pallets, or individually in pots for larger containers (Dossier Sections 1.1 and 1.2) Small volume orders may be packed in waxed cardboard cartons or polythene bags and dispatched via courier (Dossier Sections 1.1 and 1.2) The preparation of the commodities for export is carried out inside the nurseries in a closed environment, e.g. packing shed (Dossier Sections 1.1 and 1.2) Plants are transported by lorry (size dependant on load quantity). Sensitive plants are occasionally transported by temperature-controlled lorry if weather conditions during transit are likely to be very cold (Dossier Sections 1.1 and 1.2)

5.2 | Evaluation of the current measures for the selected relevant pests including uncertainties

For each evaluated pest, the relevant risk mitigation measures acting on the pest were identified. Any limiting factors on the effectiveness of the measures were documented.

All the relevant information including the related uncertainties deriving from the limiting factors used in the evaluation are summarised in a pest data sheet provided in Appendix A. Based on this information, for each selected relevant pest, an expert judgement is given for the likelihood of pest freedom taking into consideration the risk mitigation measures and their combination acting on the pest.

An overview of the evaluation of each relevant pest is given in the sections below (Sections 5.2.1–5.2.3). The outcome of the EKE regarding pest freedom after the evaluation of the currently proposed risk mitigation measures is summarised in Section 5.2.4.

5.2.1 | Overview of the evaluation of *Bemisia tabaci* (European populations) (Hemiptera; Aleyrodidae)

Overview of the evaluation of *Bemisia tabaci* (European populations) for bare root plants and plants in pots					
Rating of the likelihood of pest freedom	Pest free with some exceptional cases (based on the median)				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free consignments	**9915** out of 10,000 consignments	**9953** out of 10,000 consignments	**9978** out of 10,000 consignments	**9993** out of 10,000 consignments	**9998.6** out of 10,000 consignments
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infested consignments	**1.4** out of 10,000 consignments	**7** out of 10,000 consignments	**22** out of 10,000 consignments	**47** out of 10,000 consignments	**85** out of 10,000 consignments
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** The pest is present in the UK, with few occurrences but continuously intercepted. The UK outbreaks of *B. tabaci* have been restricted to greenhouses. The pest is extremely polyphagous with a very wide host range. Other traded plants present in the surroundings of the nurseries could be a source of the pest. Polytunnels in the nurseries could act as a reservoir of the pest. The pest could go undetected during inspections if present in the hidden parts of the plants. *B. tabaci* is exclusively associated with leaves with negligible differences in terms of risk between bare root plants and plants in pots **Measures taken against the pest and their efficacy** *Bemisia tabaci* is a quarantine pest in the UK; therefore, plants should be free from *B. tabaci*. General measures expected to be most efficient include (a) the inspections; (b) insecticide treatments (if the pest is detected) and (c) weeding, which removes potential sources of insects. However, inspections may fail if the pest is present inside the plants **Interception records** In the EUROPHYT/TRACES-NT database, there are no records of notification of *Ligustrum*, *Ligustrum* sp., *L. ovalifolium* or *L. vulgare* plants for planting neither from the UK nor from other countries due to the presence of *B. tabaci* between the years 1995 and July 2023 (EUROPHYT, online; TRACES-NT, online) There were four interceptions of *B. tabaci* from the UK in 2007 and 2015 on other plants already planted likely produced under protected conditions (EUROPHYT, online) **Shortcomings of current measures/procedures** – None. **Main uncertainties** – Possibility of development of the pest outside greenhouses – Pest abundance in the nurseries and the surroundings – The level of detection during surveillance and the application of measures targeting the pest – The capacity of identification of the insect – Host suitability of *L. ovalifolium* and *L. vulgare* to the pest				

For more details, see relevant pest data sheet on *Bemisia tabaci* (European populations) (Section A.1 in Appendix A).

5.2.2 | Overview of the evaluation of *Diaprepes abbreviatus* (Coleoptera; Curculionidae)

Overview of the evaluation of *Diaprepes abbreviatus* for bare root plants					
Rating of the likelihood of pest freedom	Almost always pest free (based on the median)				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free consignments	**9996** out of 10,000 consignments	**9998.1** out of 10,000 consignments	**9998.9** out of 10,000 consignments	**9999.53** out of 10,000 consignments	**9999.9** out of 10,000 consignments
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infested consignments	**0.1** out of 10,000 consignments	**0.47** out of 10,000 consignments	**1.1** out of 10,000 consignments	**1.9** out of 10,000 consignments	**4** out of 10,000 consignments

Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** The pest has been reported as an introduced species, established indoors in a tropical glasshouse in SW England. It is a very polyphagous pest, feeding on the roots and foliage of more than 300 host species. Other traded plants present in the surroundings of the nurseries could be a source of the pest. The pest could go undetected during inspection as low infestations may not show symptoms **Measures taken against the pest and their efficacy** There are specific measures in place against this pest. The sites of production are inspected to ensure freedom from *D. abbreviatus* during official inspections carried out at appropriate times, since the beginning of the last growing season. Prior to export, consignments of the plants will be subjected to an official inspection for the presence of *D. abbreviatus* with such a sample size as to enable at least the detection of 1% level of infestation with a level of confidence of 99%. The growing media is virgin peat or peat-free compost **Interception records** In the EUROPHYT/TRACES-NT database, there are no records of notification of *Ligustrum*, *Ligustrum* sp., *L. ovalifolium* or *L. vulgare* plants for planting neither from the UK nor from other countries due to the presence of *D. abbreviatus* between the years 1995 and July 2023 (EUROPHYT, online; TRACES-NT, online) **Shortcomings of current measures/procedures** – None **Main uncertainties** – Possibility of development of the pest outside greenhouses at least during summer – Capacity of detection of low levels of infestation – Exact duration of the period between inspection and export

Overview of the evaluation of *D. abbreviatus* for plants in pots

Rating of the likelihood of pest freedom	Almost always pest free (based on the median)				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free consignments	**9992** out of 10,000 consignments	**9996** out of 10,000 consignments	**9997.7** out of 10,000 consignments	**9998.9** out of 10,000 consignments	**9999.77** out of 10,000 consignments
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infested consignments	**0.23** out of 10,000 consignments	**1.1** out of 10,000 consignments	**2.3** out of 10,000 consignments	**4** out of 10,000 consignments	**8** out of 10,000 consignments

Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** The pest has been reported as an introduced species, established indoors in a tropical glasshouse in SW England. It is a very polyphagous pest, feeding on the roots and foliage of more than 300 host species. Other traded plants present in the surroundings of the nurseries could be a source of the pest. The pest could go undetected during inspection as low infections may not show symptoms **Measures taken against the pest and their efficacy** There are specific measures in place against this pest. The sites of production are inspected to ensure freedom from *D. abbreviatus* during official inspections carried out at appropriate times, since the beginning of the growing season. Prior to export, consignments of the plants will be subjected to an official inspection for the presence of *D. abbreviatus* with such a sample size as to enable at least the detection of 1% level of infestation with a level of confidence of 99%. However, inspections may fail in the case of a low-level infestation or if they are not targeted to the soil. In parallel, the growing media are virgin peat or peat-free compost. This compost is heat-treated by commercial suppliers during production to eliminate pests and diseases **Interception records** In the EUROPHYT/TRACES-NT database, there are no records of notification of *Ligustrum*, *Ligustrum* sp., *L. ovalifolium* or *L. vulgare* plants for planting neither from the UK nor from other countries due to the presence of *D. abbreviatus* between the years 1995 and July 2023 (EUROPHYT, online; TRACES-NT, online) **Shortcomings of current measures/procedures** – None **Main uncertainties** – Possibility of development of the pest outside greenhouses – Capacity of detection of low levels of infestation – Whether the inspections are targeting the growing media, where larvae can be present

For more details, see relevant pest data sheet on *Diaprepes abbreviatus* (Section A.2 in Appendix A).

5.2.3 | Overview of the evaluation of *Scirtothrips dorsalis* (Thysanoptera; Thripidae)

Overview of the evaluation of *Scirtothrips dorsalis* for bare root plants					
Rating of the likelihood of pest freedom	Almost always pest free (based on the median)				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free consignments	**9994** out of 10,000 consignments	**9997** out of 10,000 consignments	**9998** out of 10,000 consignments	**9999** out of 10,000 consignments	**9999.78** out of 10,000 consignments
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infested consignments	**0.22** out of 10,000 consignments	**1** out of 10,000 consignments	**2** out of 10,000 consignments	**3** out of 10,000 consignments	**6** out of 10,000 consignments
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** The pest was found for the first time in the UK in December 2007. Although it has been under official control, there is no information of the pest being able to spread beyond the greenhouse. The pest is represented by a complex of species that can be specialised on different hosts; however, the strain present in the UK has not been screened yet Other traded plants present in the surroundings of the nurseries could be a source of the pest. Polytunnels in the nurseries could act as a reservoir of the pest. The pest could go undetected during inspections, if present in the hidden parts of plants or in early stages of infestation **Measures taken against the pest and their efficacy** *Scirtothrips dorsalis* is quarantine pest in the UK. General measures expected to be most efficient include (a) the inspections; (b) insecticide treatments (if the pest is detected); and (c) weeding. However, inspections may fail in the case of low level of infestation **Interception records** In the EUROPHYT/TRACES-NT database, there are no records of notification of *Ligustrum*, *Ligustrum* sp., *L. ovalifolium* or *L. vulgare* plants for planting neither from the UK nor from other countries due to the presence of *S. dorsalis* between the years 1995 and July 2023 (EUROPHYT, online; TRACES-NT, online) **Shortcomings of current measures/procedures** – None **Main uncertainties** – Presence of the pest in the UK – The level of detection during surveillance and the application of measures targeting the pest – Possibility of spread beyond the infested greenhouse – Possibility of development of the pest outside greenhouses – Pest pressure in nurseries and the surroundings – Whether the pest and the symptoms are visible during inspections				

Overview of the evaluation of *S. dorsalis* for plants in pots					
Rating of the likelihood of pest freedom	Almost always pest free (based on the median)				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free consignments	**9991** out of 10,000 consignments	**9994** out of 10,000 consignments	**9997** out of 10,000 consignments	**9998.7** out of 10,000 consignments	**9999.8** out of 10,000 consignments
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infested consignments	**0.2** out of 10,000 consignments	**1.3** out of 10,000 consignments	**3** out of 10,000 consignments	**6** out of 10,000 consignments	**9** out of 10,000 consignments
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** The pest was found for the first time in the UK in December 2007. Although it has been under official control, there is no information of the pest being able to spread beyond the greenhouse. The pest is represented by a complex of species that can be specialised on different hosts; however, the strain present in the UK has not been screened yet. *Scirtothrips dorsalis* can be found on all the aboveground plant parts, with adults and pupae associated also with the litter or possibly with the growing medium Other traded plants present in the surroundings of the nurseries could be a source of the pest. Polytunnels in the nurseries could act as a reservoir of the pest. The pest could go undetected during inspections, if present in the hidden parts of plants **Measures taken against the pest and their efficacy** *Scirtothrips dorsalis* is quarantine pest in the UK. General measures expected to be most efficient include (a) the inspections; (b) insecticide treatments (if the pest is detected) and (c) weeding. However, inspections may fail in the case of low level of infestation **Interception records** In the EUROPHYT/TRACES-NT database, there are no records of notification of *Ligustrum*, *Ligustrum* sp., *L. ovalifolium* or *L. vulgare* plants for planting neither from the UK nor from other countries due to the presence of *S. dorsalis* between the years 1995 and July 2023 (EUROPHYT, online; TRACES-NT, online) **Shortcomings of current measures/procedures** – None **Main uncertainties** – Presence of the pest in the UK – The level of detection during surveillance and the application of measures targeting the pest – Possibility of spread beyond the infested greenhouse – Possibility of development of the pest outside greenhouses – Pest pressure in nurseries and the surroundings – Whether the pest and the symptoms are visible during inspections				

For more details, see relevant pest data sheet on *Scirtothrips dorsalis* (Section A.3 in Appendix A).

5.2.4 | Outcome of expert knowledge elicitation

Table 7 and Figures 3 show the outcome of the EKE regarding pest freedom after the evaluation of the implemented risk mitigation measures for all the evaluated pests.

Figure 4 provides an explanation of the descending distribution function describing the likelihood of pest freedom after the evaluation of the implemented risk mitigation measures for *L. ovalifolium* and *L. vulgare* plants in pots up to 7 years old designated for export to the EU for *Bemisia tabaci*.

TABLE 7 Assessment of the likelihood of pest freedom following evaluation of current risk mitigation measures against pests on *Ligustrum ovalifolium* and *L. vulgare* plants designated for export to the EU. In panel A, the median value for the assessed level of pest freedom for each pest is indicated by 'M', the 5% percentile is indicated by 'L' and the 95% percentile is indicated by 'U'. The percentiles together span the 90% uncertainty range regarding pest freedom. The pest freedom categories are defined in panel B of the table.

Number	Group	Pest species	Sometimes pest free	More often than not pest free	Frequently pest free	Very frequently pest free	Extremely frequently pest free	Pest free with some exceptional cases	Pest free with few exceptional cases	Almost always pest free
Commodity 1: bare root plants (bundles of whips and transplants + single bare root plants)										
1	Insects	*Bemisia tabaci* (European populations)					L	M		U
2	Insects	*Diaprepes abbreviatus*								LMU
3	Insects	*Scirtothrips dorsalis*							L	MU
Commodity 2: plants in pots (bundles of cell grown plants + single plants in pots)										
4	Insects	*Bemisia tabaci* (European populations)					L	M		U
5	Insects	*Diaprepes abbreviatus*							L	MU
6	Insects	*Scirtothrips dorsalis*							L	MU

PANEL A

	Pest freedom category	Pest-free plants out of 10,000
	Sometimes pest free	≤ 5000
	More often than not pest free	5000 to ≤ 9000
	Frequently pest free	9000 to ≤ 9500
	Very frequently pest free	9500 to ≤ 9900
	Extremely frequently pest free	9900 to ≤ 9950
	Pest free with some exceptional cases	9950 to ≤ 9990
	Pest free with few exceptional cases	9990 to ≤ 9995
	Almost always pest free	9995 to ≤ 10,000

Legend of pest freedom categories	
L	Pest freedom category includes the elicited lower bound of the 90% uncertainty range
M	Pest freedom category includes the elicited median
U	Pest freedom category includes the elicited Upper bound of the 90% uncertainty range

PANEL B

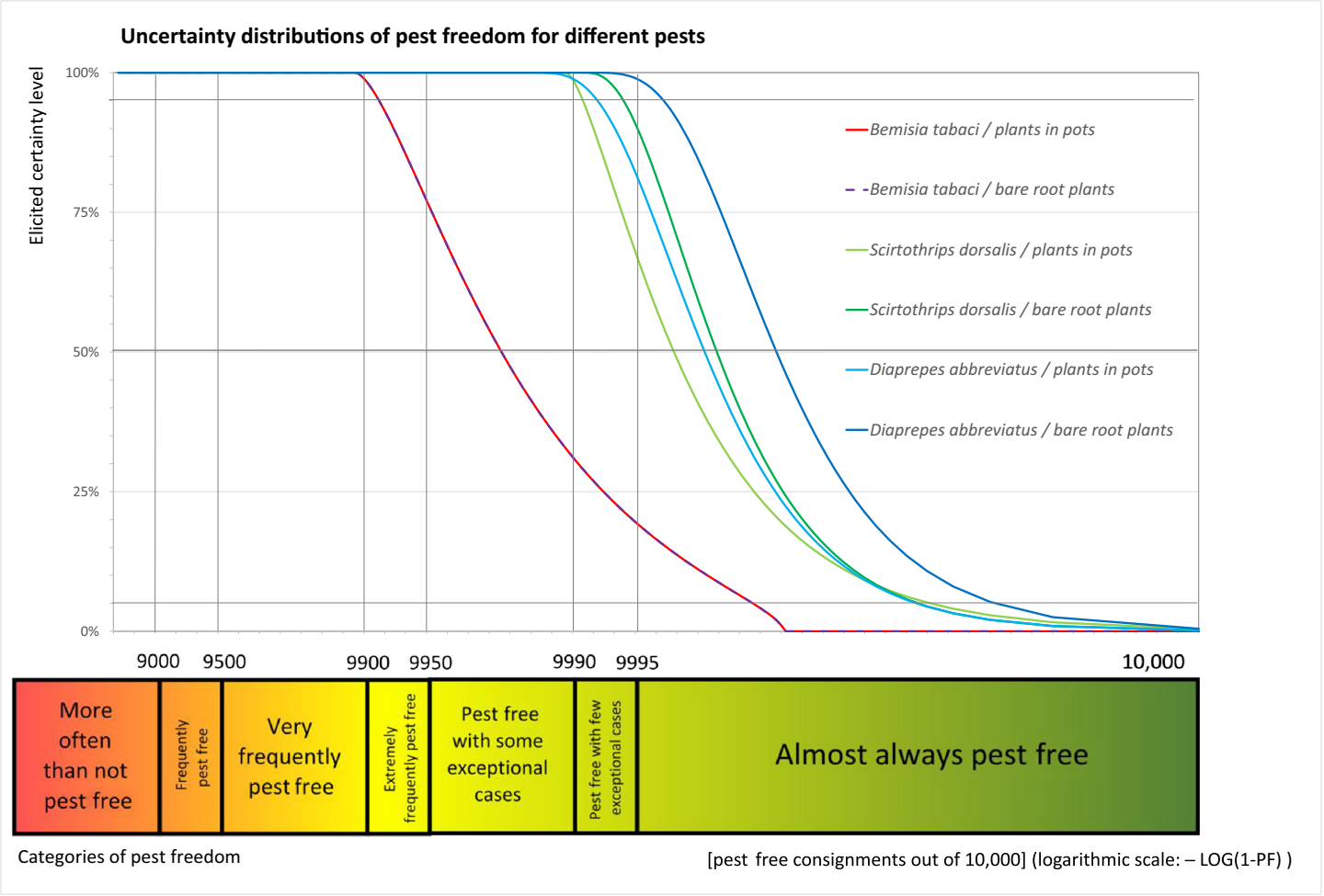

FIGURE 3 Elicited certainty (*y*-axis) of the number of pest-free consignments of *Ligustrum ovalifolium* and *L. vulgare* (*x*-axis; log-scaled) out of 10,000 consignments designated for export to the EU from the UK for all evaluated pests visualised as descending distribution function. Horizontal lines indicate the percentiles (starting from the bottom 5%, 25%, 50%, 75%, 95%).

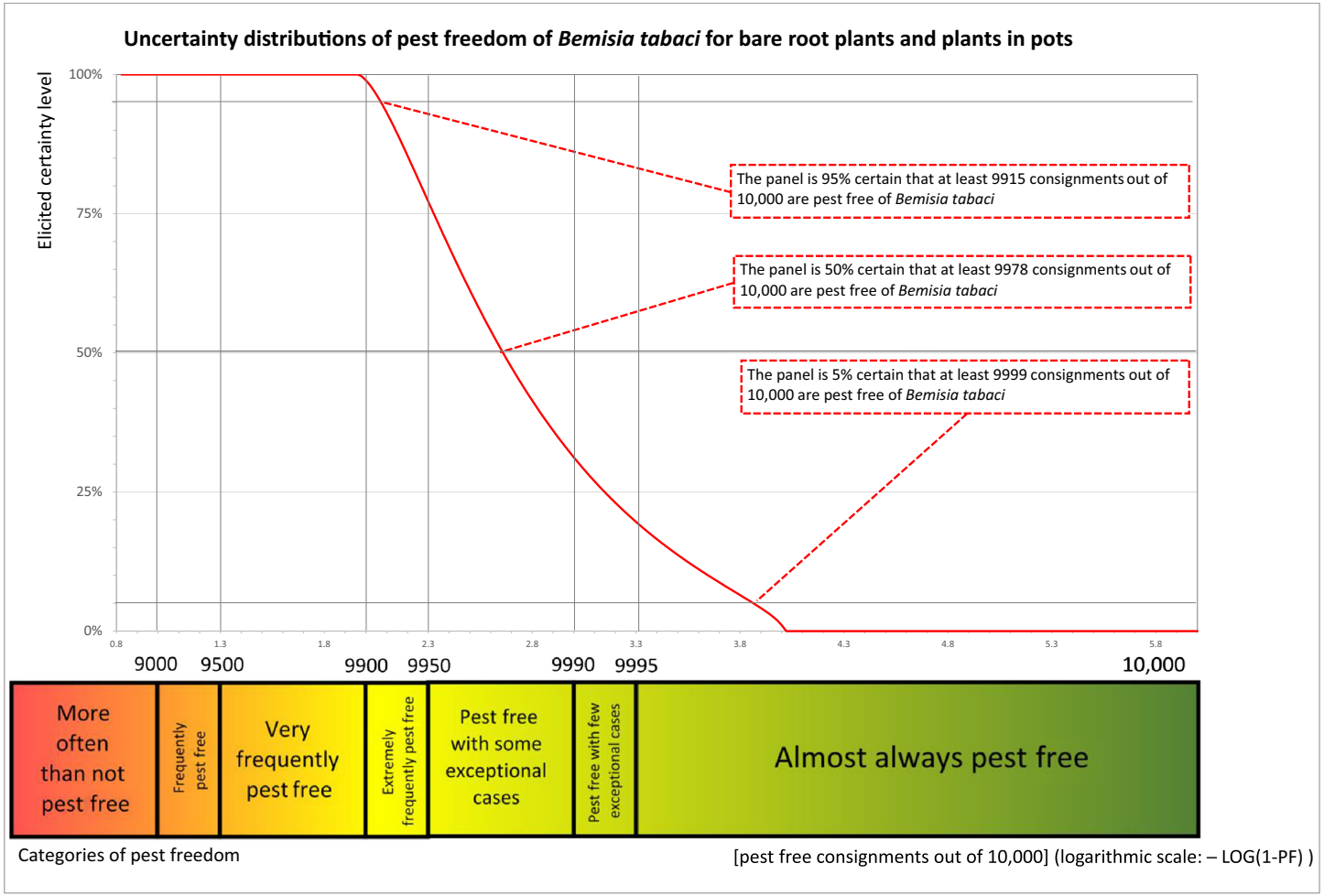

FIGURE 4 Explanation of the descending distribution function describing the likelihood of pest freedom after the evaluation of the implemented risk mitigation measures for plants designated for export to the EU based on based on the example of *Bemisia tabaci* on *Ligustrum ovalifolium* and *L. vulgare* on bare root plants and plants in pots.

6 | CONCLUSIONS

There are three pests identified to be present in the UK and considered to be potentially associated with the commodities imported from the UK and relevant for the EU.

These pests are *Bemisia tabaci*, *Diaprepes abbreviatus* and *Scirtothrips dorsalis*. The likelihood of the pest freedom after the evaluation of the proposed risk mitigation measures for the commodities designated for export to the EU was estimated. In the assessment of risk, the age of the plants was considered, reasoning that older trees are more likely to be infested mainly due to longer exposure time and larger size. The presence of leaves was considered for all commodities. *B. tabaci* is only associated with leaves. Given the presence of leaves on all commodities and overlap of the canopy volume of the commodities, in the case of *B. tabaci*, the risk was considered to be similar for all commodities and no separate EKE for bare root plants and plants in pots was conducted.

The category 'bare root plants' includes the commodities 1- to 3-year-old whips (bundles of 5–15 plants) and transplants (bundles of 5–50 plants) and 1- to 7-year-old single bare root plants. The category 'plants in pots' includes the commodities 1- to 2-year old cell grown plants in bundles (only relevant for *L. vulgare*) and 1- to 5-year-old single plants in pots.

For *Bemisia tabaci*, the likelihood of pest freedom for bare root plants and plants in pots following evaluation of current risk mitigation measures was estimated as 'pest free with some exceptional cases' with the 90% uncertainty range reaching from 'extremely frequently pest free' to 'almost always pest free'. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9915 and 10,000 bare root plants and plants in pots per 10,000 will be free from *B. tabaci*.

For *Diaprepes abbreviatus*, the likelihood of pest freedom for bare root plants following evaluation of current risk mitigation measures was estimated as 'almost always pest free' with the 90% uncertainty range reaching from 'almost always pest free' to 'almost always pest free'. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9996 and 10,000 bare rooted plants per 10,000 will be free from *D. abbreviatus*. The likelihood of pest freedom for plants in pots following evaluation of current risk mitigation measures was estimated as 'almost always pest free' with the 90% uncertainty range reaching from 'pest free with few exceptional cases' to 'almost always pest free'. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9992 and 10,000 plants in pots per 10,000 will be free from *D. abbreviatus*.

For *Scirtothrips dorsalis*, the likelihood of pest freedom for bare root plants following evaluation of current risk mitigation measures was estimated as 'almost always pest free' with the 90% uncertainty range reaching from 'pest free with few exceptional cases' to 'almost always pest free'. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9994 and 10,000 bare rooted plants per 10,000 will be free from *S. dorsalis*. The likelihood of pest freedom for plants in pots following evaluation of current risk mitigation measures was estimated as 'almost always pest free' with the 90% uncertainty range reaching from 'pest free with few exceptional cases' to 'almost always pest free'. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9991 and 10,000 plants in pots per 10,000 will be free from *S. dorsalis*.

ABBREVIATIONS

APHA	Animal and Plant Health Agency
CABI	Centre for Agriculture and Bioscience International
DEFRA	Department for Environment Food and Rural Affairs
EFSA	European Food Safety Authority
EKE	Expert Knowledge Elicitation
EPPO	European and Mediterranean Plant Protection Organization
FAO	Food and Agriculture Organization
ISPM	International Standards for Phytosanitary Measures
NPPO	National Plant Protection Organisation
PHSI	Plant Health and Seeds Inspectorate
PLH	Plant Health
PRA	Pest Risk Assessment
RNQPs	Regulated Non-Quarantine Pests
SASA	Science and Advice for Scottish Agriculture

GLOSSARY

Control (of a pest)	Suppression, containment or eradication of a pest population (FAO, 1995, 2017)
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, 2017)
Establishment (of a pest)	Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO, 2017)
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, 2017)

Measures	Control (of a pest) is defined in ISPM 5 (FAO, 2017) 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, 2017)
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, 2017)
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, 2017)
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, 2017)
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, 2017)

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CONFLICT OF INTEREST

If you wish to access the declaration of interests of any expert contributing to an EFSA scientific assessment, please contact interestmanagement@efsa.europa.eu.

REQUESTOR

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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

Data sheets of pests selected for further evaluation

A.1 | *Bemisia tabaci* (European populations)

A.1.1 | Organism information

Taxonomic information	Current valid scientific name: *Bemisia tabaci* Synonyms: *Aleurodes inconspicua, Aleurodes tabaci, Bemisia achyranthes, Bemisia bahiana, Bemisia costa-limai, Bemisia emiliae, Bemisia goldingi, Bemisia gossypiperda, Bemisia gossypiperda mosaicivectura, Bemisia hibisci, Bemisia inconspicua, Bemisia longispina, Bemisia lonicerae, Bemisia manihotis, Bemisia minima, Bemisia minuscula, Bemisia nigeriensis, Bemisia rhodesiaensis, Bemisia signata, Bemisia vayssieri* Name used in the EU legislation: *Bemisia tabaci* Genn. (European populations) Order: Hemiptera Family: Aleyrodidae Common name: Cassava whitefly, cotton whitefly, silver-leaf whitefly, sweet-potato whitefly, tobacco whitefly Name used in the dossier: *Bemisia tabaci*
Group	Insects
EPPO code	BEMITA
Regulated status	*Bemisia tabaci* Genn. (European populations) is listed in Annex III of Commission Implementing Regulation (EU) 2019/2072 as protected zone quarantine pest for Ireland and Sweden. The non-European populations of *Bemisia tabaci* are listed in Annex II *Bemisia tabaci* is included in the EPPO A2 list (EPPO, online_a) The species is a quarantine pest in Belarus, Moldova, Norway and New Zealand. It is on A1 list of Azerbaijan, Chile, Georgia, Kazakhstan, Switzerland, Ukraine and the UK. It is on A2 list of Bahrain, Russia, Türkiye, EAEU (= Eurasian Economic Union – Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia) and OIRSA (=Organismo Internacional Regional de Sanidad Agropecuaria – Belize, Costa Rica, the Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama) (EPPO, online_b)
Pest status in the UK	*Bemisia tabaci* (European populations) is present in the UK, with few occurrences (CABI, online; EPPO, online_c) and it is continuously intercepted to the UK. The intercepted populations were identified as B biotype Middle East-Asia Minor 1 (=MEAM1) and Q biotype Mediterranean (=MED) (Cuthbertson, 2013) From 1998 to 2015, there were between 7 and 35 outbreaks per year of *B. tabaci* in the UK and all the findings were subject to eradication. The UK outbreaks of *B. tabaci* have been restricted to greenhouses and there are no records of the whitefly establishing outdoors during summer (Bradshaw et al., 2019; Cuthbertson and Vänninen, 2015) There is a contradictory information provided by the UK. According to the EFSA PLH Panel (2023a–d) citing the UK Dossier on *Acer* species, *B. tabaci* is present: not widely distributed and under official control, restricted to four outbreak sites in 2022/23 in contained environments (glasshouses). Many interceptions and outbreaks (356 in total in 2021), but all outbreaks subject to eradication measures. Not known outdoors (i.e. not under protection) and not thought to be able to establish outdoors However, according to Dossier Section 2.0 provided by the UK on *Ligustrum* species, *B. tabaci* is absent from the UK – pest eradicated. Many interceptions and outbreaks (356 in total in 2021), but all outbreaks subject to eradication measures. Not known outdoors (i.e. not under protection) and not thought to be able to establish outdoors Therefore, the Panel cannot exclude that the pest is still present in the UK
Pest status in the EU	*Bemisia tabaci* is an alien species widespread in the EU – Austria, Belgium, Bulgaria, Croatia, the Republic of Cyprus, Czechia, Finland, France, Germany, Greece, Hungary, Italy, Malta, the Netherlands, Poland, Portugal, Romania, Slovenia and Spain (CABI, online; EPPO, online_c) It is absent from Denmark, Estonia, Ireland, Latvia, Lithuania, Luxembourg, Slovakia and Sweden (CABI, online; EPPO, online_c) In the EU, *B. tabaci* is mainly present in the greenhouses, with exception of Mediterranean coastal region (Cyprus, Greece, Malta, Italy, south of France, certain parts of Spain and Portugal), where the whitefly occurs also outdoors (EFSA PLH Panel, 2013)
Host status on *Ligustrum*	*Ligustrum lucidum*, *L. quihoui* and *L. vicaryiis* are reported hosts of *B. tabaci* in China (CABI, online; Li et al., 2011) There is no information on whether *B. tabaci* can also attack *Ligustrum ovalifolium*, *L. vulgare* or other *Ligustrum* species. However, considering the documented polyphagy of *B. tabaci*, the Panel considered likely that *L. ovalifolium* and *L. vulgare* can host *B. tabaci*
PRA information	Available Pest Risk Assessments: – Scientific Opinion on the risks to plant health posed by *Bemisia tabaci* species complex and viruses it transmits for the EU territory (EFSA PLH Panel, 2013) – UK Risk Register Details for *Bemisia tabaci* non-European populations (DEFRA, online_a) – UK Risk Register Details for *Bemisia tabaci* European populations (DEFRA, online_b)

(Continued)

Other relevant information for the assessment

Biology

Bemisia tabaci is a cosmopolitan whitefly present on almost all continents except for Antarctica (CABI, online; EPPO, online_c). In the literature, it is reported as either native to Africa, Asia, India, North America or South America (De Barro et al., 2011). However, based on mtCO1 (mitochondrial cytochrome oxidase 1), sequence its origin is most likely to be sub-Saharan Africa (De Barro, 2012)

Bemisia tabaci is a complex of at least 40 cryptic species that are morphologically identical but distinguishable at molecular level (Khatun et al., 2018). The species differ from each other in host association, spread capacity, transmission of viruses and resistance to insecticides (De Barro et al., 2011)

Bemisia tabaci develops through three life stages: egg, nymph (four instars) and adult (Walker et al., 2010). Nymphs of *B. tabaci* mainly feed on phloem in minor veins of the underside leaf surface (Cohen et al., 1996). Adults feed also on xylem of leaves (Janssen et al., 1989; Lei et al., 1997, 2001; Jiang et al., 1999 cited in Walker et al., 2010). Honeydew is produced by both nymphs and adults (Davidson et al., 1994). *Bemisia tabaci* is multivoltine with up to 15 generations per year (Ren et al., 2001). The life cycle from egg to adult requires from 2.5 weeks up to 2 months depending on the temperature (Norman et al., 1995) and the host plant (Coudriet et al., 1985)

In the southern California desert on field-grown lettuce (from 27 October 1983 to 4 January 1984), *B. tabaci* completed at least one generation (Coudriet et al., 1985). In Israel, the reproduction of *B. tabaci* was much reduced in winter months, but adults emerging in December survived and started ovipositing at the end of the cold season (Avidov, 1956). The most cold-tolerant stage are eggs (−2°, −6°, −10°C) and the least tolerant are large nymphs. Short periods of exposure in 0° to −6°C have little effect on mortality. As the temperature lowers to −10°C, the duration of time required to cause significant mortality shortens dramatically (Simmons and Elsey, 1995)

Females can lay more than 300 eggs (Gerling et al., 1986), which can be found mainly on the underside of the leaves (CABI, online). Females develop from fertilised and males from unfertilised eggs (Gerling et al., 1986). Eggs are yellowish white and with age turn golden brown. Their size is about 0.19–0.20 mm long and 0.10–0.12 mm wide. First-instar nymph (=crawler) is scale-like, elliptical, darker yellow in colour and about 0.26 mm long and 0.15 mm wide. Crawlers have legs and crawl actively on leaves before they settle down and moult through second- (0.38 mm long and 0.24 mm wide), third- (0.55 mm long and 0.35 mm wide) and fourth-instar nymph (0.86 mm long and 0.63 mm wide) (Hill, 1969). Fourth-instar nymph (=pupa) stops feeding and moults into an adult (Walker et al., 2009, citing others). Adult emerges through a 'T'-shaped rupture in the pupal case (El-Helaly et al., 1971). Adults are pale yellow and have two pairs of white wings dusted with a white waxy powder (Hill, 1969). Female is approximately 1 mm long. Males are smaller about 0.8 mm long (EFSA PLH Panel, 2013)

Out of all life stages, only first-instar nymph (=crawler) and adults are mobile. Movement of crawlers by walking is very limited, usually within the leaf where they hatched (Price and Taborsky, 1992) or to more suitable neighbouring leaves. The average distance was estimated within 10–70 mm (Summers et al., 1996). For these reasons, they are not considered to be good colonisers. On the contrary, adults can fly reaching quite long distances searching for a permanent host. According to a study done by Cohen et al. (1988), some of the marked individuals were trapped 7 km away from the initial place after 6 days. Long-distance passive dispersal by wind is also possible (Byrne, 1999)

Bemisia tabaci is an important agricultural pest able to transmit many viruses (belonging to genera *Begomovirus*, *Crinivirus*, *Ipomovirus*, *Carlavirus* and *Torradovirus*) causing significant damage to food crops such as tomatoes, cucurbits, beans and ornamental plants (EFSA PLH Panel, 2013; Fiallo-Olivé et al., 2020). However, these viruses are not reported to infect *Ligustrum* species

Possible pathways of entry for *B. tabaci* are plants for planting including cuttings and rooted ornamental plants; cut flowers and branches with foliage; fruits and vegetables; human-assisted spread; natural spread such as wind (EFSA PLH Panel, 2013)

Symptoms

Main type of symptoms

Main symptoms of *B. tabaci* on plants are chlorotic spotting, decrease of plant growth, deformation of fruits, deformation of leaves, intervein yellowing, leaf yellowing, leaf curling, leaf crumpling, leaf vein thickening, leaf enations, leaf cupping, leaf loss, necrotic lesions on stems, plant stunting, reduced flowering, reduced fruit development, silvering of leaves, stem twisting, vein yellowing, wilting, yellow blotching of leaves, yellow mosaic of leaves, presence of honeydew and sooty mould. These symptoms are plant responses to the feeding of the whitefly and to the presence of transmitted viruses (CABI, online; EFSA PLH Panel, 2013; EPPO, 2004)

Presence of asymptomatic plants

Symptoms of *B. tabaci* being present on the plants are usually visible. However, *B. tabaci* is a vector of several viruses and their infection could be asymptomatic

Confusion with other pests

Bemisia tabaci can be easily confused with other whitefly species such as *B. afer*, *Trialeurodes lauri*, *T. packardi*, *T. ricini*, *T. vaporariorum* and *T. variabilis*. A microscopic slide is needed for morphological identification (EPPO, 2004)

Different species of *B. tabaci* complex can be distinguished using molecular methods (De Barro et al., 2011)

Host plant range

Bemisia tabaci has a wide host range, including more than 1000 different plant species (Abd-Rabou and Simmons, 2010)

Some of the many hosts of *B. tabaci* are *Abelmoschus esculentus, Amaranthus blitoides, A. retroflexus, Arachis hypogaea*, *Atriplex semibaccata*, *Bellis perennis, Borago officinalis*, *Brassica oleracea* var. *botrytis*, *B. oleracea* var. *gemmifera*, *B. oleracea* var. *italica*, *Bryonia dioica*, *Cajanus cajan*, *Capsella bursa-pastoris*, *Capsicum annuum*, *Citrus* spp., *Crataegus* spp., *Cucumis sativus*, *Cucurbita pepo*, *Erigeron canadensis*, *Euphorbia pulcherrima*, *Gerbera jamesonii*, *Glycine max*, *Gossypium* spp., *G. hirsutum*, *Hedera helix*, *Ipomoea batatas*, *Lactuca sativa*, *L. serriola*, *Lavandula coronopifolia*, *Ligustrum lucidum*, *L. quihoui*, *L. vicaryiis*, *Manihot esculenta*, *Melissa officinalis*, *Nicotiana tabacum*, *Ocimum basilicum*, *Origanum majorana*, *Oxalis pes-caprae*, *Phaseolus* spp., *P. vulgaris*, *Piper nigrum*, *Potentilla* spp., *Prunus* spp., *Rosa* spp., *Rubus fruticosus*, *Salvia officinalis*, *S. rosmarinus*, *Senecio vulgaris*, *Sinningia speciosa*, *Solanum lycopersicum*, *S. melongena*, *S. nigrum*, *S. tuberosum, Sonchus oleraceus, Stellaria media, Tagetes erecta, Taraxacum officinale, Thymus serpyllum, Urtica urens, Vitis vinifera* and many more (CABI, online; EFSA PLH Panel, 2013; EPPO, online_c; Li et al., 2011)

For a full host list, refer to CABI (online), EFSA PLH Panel (2013), EPPO (online_c), Li et al. (2011)

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Reported evidence of impact	*Bemisia tabaci* (European populations) is EU protected zone quarantine pest
Evidence that the commodity is a pathway	*Bemisia tabaci* is continuously intercepted in the EU on different commodities including plants for planting (EUROPHYT, online; TRACES-NT, online). Therefore, the commodity is a pathway for *B. tabaci*. Plants can carry leaves at the time of export which can host all life stages of the pest
Surveillance information	*Bemisia tabaci* is regulated quarantine pest in the UK. As such, the policy for any outbreak is to eradicate the population. The UK makes many interceptions of *B. tabaci* and experiences a few outbreaks each year (356 interceptions and outbreaks in 2021), but all outbreaks are under protection and subject to eradication measures. This pest has never established outdoors in the UK (Dossier Sections 1.1 and 1.2)

A.1.2 | Possibility of pest presence in the nursery

A.1.2.1 | Possibility of entry from the surrounding environment

Bemisia tabaci (European populations) is present in the UK with few occurrences (location not specified) (CABI, online; EPPO, online_c) and is continuously intercepted to the UK. The UK outbreaks of *B. tabaci* have been restricted to glasshouses and there are no records of *B. tabaci* establishing outdoors during summer (Bradshaw et al., 2019; Cuthbertson and Vänninen, 2015). Bradshaw et al. (2019) indicate that theoretically *B. tabaci* (in summertime) could complete one generation across most of Scotland, and one to three generations over England and Wales. However, the temperatures experienced during the cold days and nights during summer may be low enough to cause chilling injury to *B. tabaci*, thereby inhibiting development and preventing establishment in the UK. It is unlikely, therefore, that this pest will establish outdoors in the UK under current climate conditions.

The possible entry of *B. tabaci* from surrounding environment to the nurseries may occur through adult dispersal and passively on wind currents and accidental transportation (vehicles and clothes) (Byrne, 1999; Cohen et al., 1988; EFSA PLH Panel, 2013).

Bemisia tabaci is polyphagous species that can infest number of different plants. Suitable hosts of *B. tabaci* like *Brassica rapa, Fraxinus* spp., *Ilex* spp., *Quercus* spp., *Solanum* spp. and *Triticum* spp. are present within 2 km from the nurseries.

Uncertainties:

- Exact locations where the whitefly is present.
- Possibility of spread beyond the infested greenhouses.
- Possibility of the whitefly to survive the UK summer in outdoor conditions.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible for the pest to enter the nurseries from surrounding environment, even though it is only reported to be present in greenhouses. In the surrounding area, suitable hosts are present and the pest can spread by wind and adult flight.

A.1.2.2 | Possibility of entry with new plants/seeds

The starting materials of *L. ovalifolium* and *L. vulgare* are either seeds or seedlings. Seeds are coming from the UK. Seedlings are either from the UK (certified with UK Plant Passports) or the EU (mostly the Netherlands) (certified with phytosanitary certificates) (Dossier Sections 1.1 and 1.2). Seeds are not a pathway for the whitefly.

In the nurseries, many other plants are cultivated (Dossier Section 3.0). Out of them *Acer* spp., *Acacia* spp., *Crataegus* spp., *Hedera* spp., *Prunus* spp., *Pyrus* spp., *Rosa* spp., *Salvia* spp., *Viburnum* spp. and many more plants are potential suitable hosts of the whitefly. However, there is no information on how and where the plants are produced. Therefore, if the plants are first produced in another nursery, the whitefly could possibly travel with them.

The nurseries are using virgin peat or peat-free compost as a growing media, which is a mixture of coir, tree bark, wood fibre, etc., heat-treated by commercial suppliers during production to eliminate pests and diseases (Dossier Sections 1.1 and 1.2). Growing media are not a pathway for the whitefly.

Uncertainties:

- No information is available on the provenance of plants other than *Ligustrum* used for plant production in the nurseries.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible for the pest to enter the nurseries with new seedlings of *Ligustrum* and new plants of other species used for plant production in the area. The entry of the pest with seeds and the growing media is considered as not possible.

A.1.2.3 | Possibility of spread within the nursery

Ligustrum plants are grown both in containers outdoors and in fields. There are no mother plants present in the nurseries and none of the nurseries expected to export to the EU produce plants from grafting (Dossier Sections 1.1 and 1.2).

The whitefly can attack other suitable plants (such as *Acer* spp., *Acacia* spp., *Crataegus* spp., *Hedera* spp., etc.) and non-cultivated herbaceous plants (*Bellis perennis*, *Potentilla* spp., *Taraxacum officinale*) present within the nurseries and hedges surrounding the nurseries (*Crataegus* spp., *Hedera helix*, *Ilex* spp. and *Prunus* spp.)

There are greenhouses within the nurseries (Dossier Sections 1.1 and 1.2).

The whitefly can spread within the nurseries by adult flight, wind and accidental transportation. Spread within the nurseries through equipment and tools is not relevant.

Uncertainties:

- Possibility of the whitefly to survive the UK summer in outdoor conditions.
- Possibility that greenhouses are heated which allows the pest to overwinter.

Taking into consideration the above evidence and uncertainties, the Panel considers that the spread of the pest within the nurseries is possible either by wind or by active flight.

A.1.3 | Information from interceptions

In the EUROPHYT/TRACES-NT database, there are no records of notification of *Ligustrum*, *Ligustrum* sp., *L. ovalifolium* or *L. vulgare* plants for planting neither from the UK nor from other countries due to the presence of *B. tabaci* between the years 1995 and July 2023 (EUROPHYT, online; TRACES-NT, online).

There were four interceptions of *B. tabaci* from the UK in 2007 and 2015 on other plants likely produced under protected conditions (EUROPHYT, online).

A.1.4 | Evaluation of the risk mitigation measures

In the table below, all risk mitigation measures currently applied in the UK are listed and an indication of their effectiveness on *B. tabaci* is provided. The description of the risk mitigation measures currently applied in the UK is provided in Table 6.

N	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Registration of production sites	Yes	As the plant passport is very similar to the EU one, plants shall be free from quarantine pests Uncertainties: – None
2	Physical separation	No	Not applied, there is no separation between production areas for the export and the local market
3	Certified plant material	Yes	Seeds are not a pathway for *Bemisia* As the plant passport is very similar to the EU one, seedlings shall be free from quarantine pests. Phytosanitary certificates should ensure that seedlings are free from quarantine pests Uncertainties: – None
4	Growing media	No	Not relevant, growing media are not a pathway of *Bemisia*
5	Surveillance, monitoring and sampling	Yes	Plant material is regularly monitored for plant health issues. They must meet the required national sanitary standards. Monitoring should be effective in finding infestation of *Bemisia* Uncertainties: – Difficulty of detecting low levels of infestation
6	Hygiene measures	Yes	Weeding can have some effect on the reduction of *Bemisia* populations. The other measures are not relevant Uncertainties: – None

(Continues)

(Continued)

N	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
7	Removal of infested plant material	Yes	Removing infested plant material can have some effect on the reduction of *Bemisia* populations Uncertainties: – None
8	Irrigation water	No	Not relevant, water is not a pathway of *Bemisia*
9	Application of pest control products	Yes	Plant protection products are only used when necessary and records of all plant protection treatments are kept. It may have an effect on the pest Uncertainties: – No information about the specific treatments
10	Measures against soil pests	No	Not relevant to the pest
11	Inspections and management of plants before export	Yes	Exporting plants should meet phytosanitary certificate requirements. Inspection before export should be affective in finding infestation of *Bemisia*. However, a low level of infestation by *B. tabaci* could go undetected Inspection is performed between 1 day and 2 weeks before the export, but a reinfestation can occur during this period Uncertainties: – Capacity of detection of low levels of infestation – Exact duration of the period between inspection and export
12	Separation during transport to the destination	Yes	The pest could spread from infested plants to non-infested plants during transport to the destination Uncertainties: – None

A.1.5 | Overall likelihood of pest freedom for bare root plants and plants in pots

A.1.5.1 | Reasoning for a scenario which would lead to a reasonably low number of infested bare root plants and plants in pots

Although there are few occurrences of the pest in the UK, the pressure of the pest in the surroundings of the nurseries is very low because it is very unlikely to survive outdoors. *Ligustrum* is a minor host. The scenario also assumes that inspection should be effective because the presence of honeydew is easily detectable.

A.1.5.2 | Reasoning for a scenario which would lead to a reasonably high number of infested bare root plants and plants in pots

There are few occurrences of the pest and it is continuously intercepted in the UK. There is a higher proportion of *L. ovalifolium* which is evergreen. The scenario assumes that, although it is unlikely that the pest can survive or develop outdoors, polytunnels present in the nurseries could host some plants that are potentially infested.

A.1.5.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infested bare root plants and plants in pots (Median)

Median is very shifted to the left side (lower infestation rate) because of the low likelihood of pressure of the pest from outside. The commodity is produced outdoors and the pest is unlikely to have a good performance outdoor. In addition, inspections will be successful because of the presence of honeydew and adults flying around when disturbed.

A.1.5.4 | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/ interquartile range)

The low probability of good performance of the pest outdoors results in high level of uncertainties for infestation rates below the median. Otherwise, low pest pressure from the surroundings and easy detection of honeydew gives less uncertainties for rates above the median.

A.1.5.5 | Elicitation outcomes of the assessment of the pest freedom for *Bemisia tabaci* (European populations) on bare root plants and plants in pots

The following tables show the elicited and fitted values for pest infestation (Table A.1) and pest freedom (Table A.2).

TABLE A.1 Elicited and fitted values of the uncertainty distribution of pest infestation by *Bemisia tabaci* (European populations) per 10,000 consignments.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	1					9		18		50					100
EKE	0.996	1.09	1.37	2.26	4.04	7.11	11.1	21.9	37.2	47.2	59.4	72.1	84.6	93.1	100

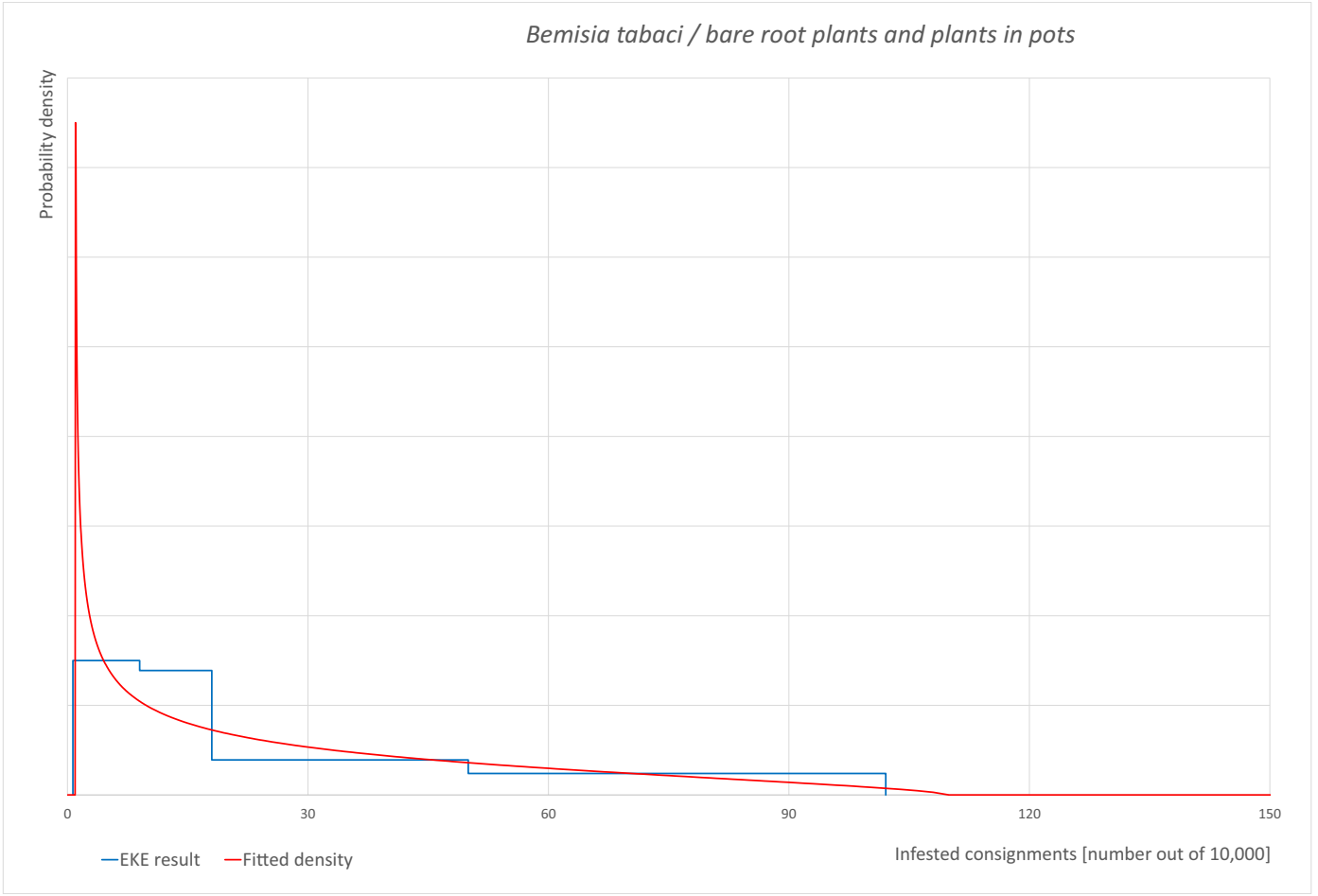
Note: The EKE results are the BetaGeneral (0.59301, 1.6339, 0.97, 110) distribution fitted with @Risk version 7.6.

Based on the numbers of estimated infested consignments, the pest freedom was calculated (i.e. = 10,000 – number of infested consignments per 10,000). The fitted values of the uncertainty distribution of the pest freedom are shown in Table A.2.

TABLE A.2 The uncertainty distribution of consignments free of *Bemisia tabaci* (European populations) per 10,000 consignments calculated by Table A.1.

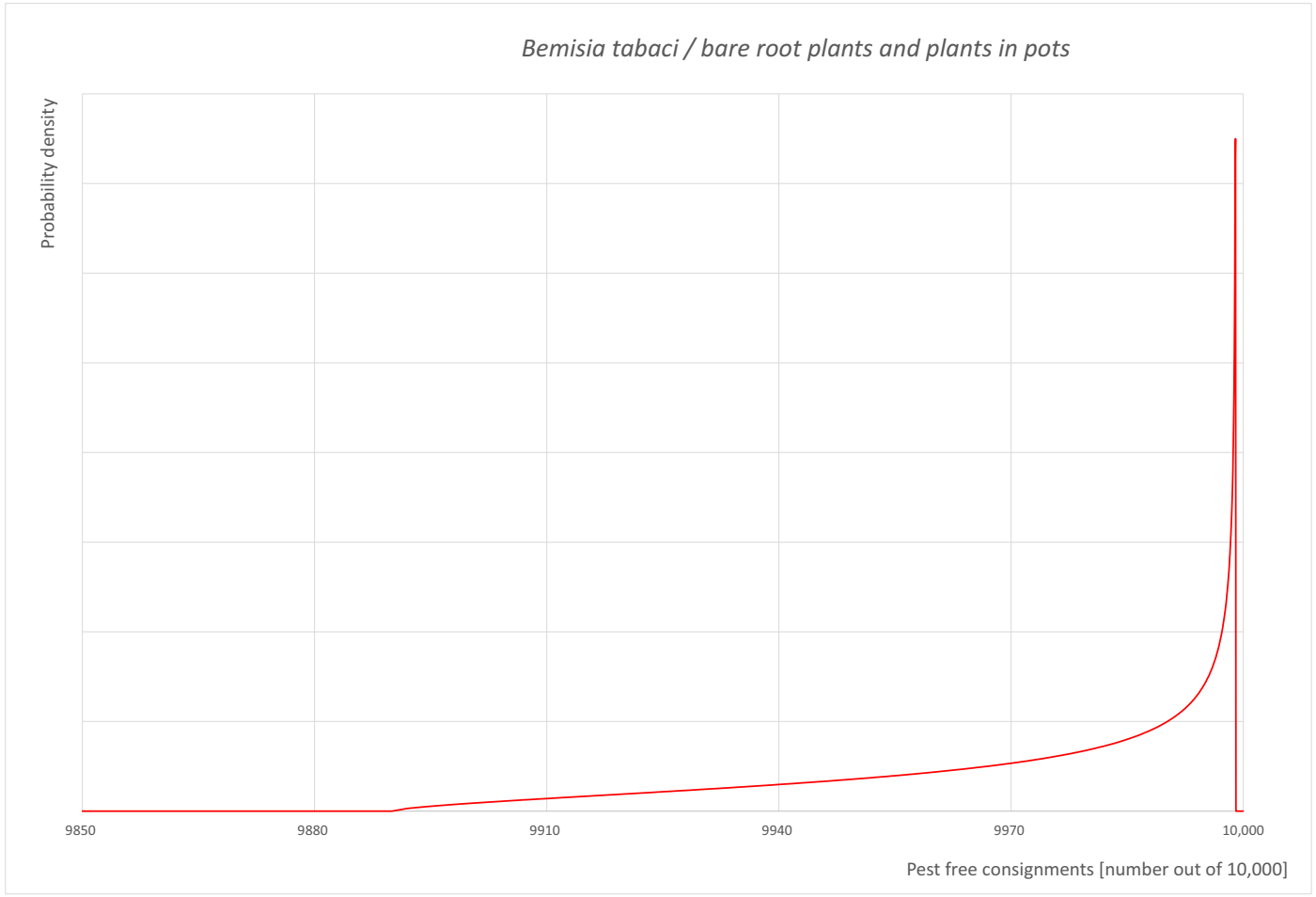
Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9900					9950		9982		9991					9999
EKE results	9900	9907	9915	9928	9941	9953	9963	9978	9989	9993	9996	9997.7	9998.6	9998.9	9999.0

Note: The EKE results are the fitted values.



(A)

FIGURE A.1 (Continued)



(B)

FIGURE A.1 (Continued)

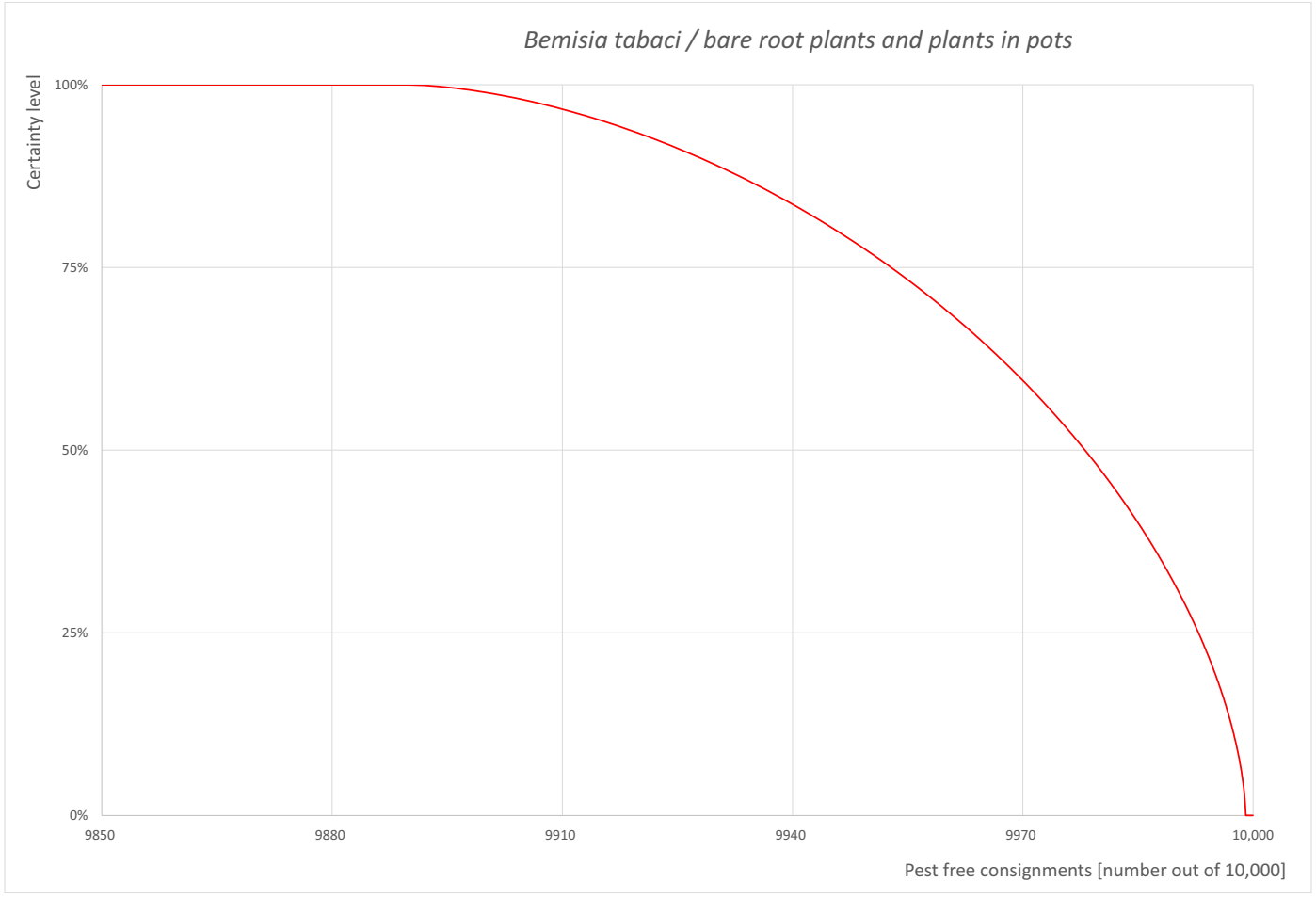


FIGURE A.1 (A) Elicited uncertainty of pest infestation per 10,000 consignments (histogram in blue–vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (B) uncertainty of the proportion of pest-free consignments per 10,000 (i.e. = 1 – pest infestation proportion expressed as percentage); (C) descending uncertainty distribution function of pest infestation per 10,000 consignments.

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A.2 | *Diaprepes abbreviatus*

A.2.1 | Organism information

Taxonomic information	Current valid scientific name: *Diaprepes abbreviatus* Synonyms: *Diaprepes spengleri, Exophthalmus abbreviatus* Name used in the EU legislation: – Order: Coleoptera Family: Curculionidae Common name: Citrus root weevil, sugarcane root and stalk borer weevil, sugarcane root-boring weevil, West Indian sugarcane root and stalk borer, West Indian sugarcane stalk borer, West Indian weevil Name used in the dossier: *Diaprepes abbreviatus*
Group	Insects
EPPO code	DPREAB
Regulated status	*Diaprepes abbreviatus* is not regulated in the EU It is quarantine pest in Australia, China, Mexico and the USA (Australian Department of Agriculture and Water Resources, 2021; EPPO, online_a; USDA-APHIS, online) and included in the A1 list of Chile, Jordan, Türkiye, the APPPC (Asia and Pacific Plant Protection Commission) and the PPPO (Pacific Plant Protection Organization) (EPPO, online_a)
Pest status in the UK	The record of presence of *D. abbreviatus* in the UK pertains to findings in a tropical glasshouse in SW England in 2014 and there are no other records. The presence in Great Britain is reported as introduced species established indoors on palm plants. The last recorded finding in the glasshouse was in 2014, and the pest may no longer be present. However, without further evidence, the status in the UK is considered by the applicant country as 'Present: transient' (EFSA PLH Panel, 2022; Dossier Section 2.0) According to EPPO (online_c), the status of the pest in the UK is 'present, few occurances'
Pest status in the EU	*Diaprepes abbreviatus* is present with few occurrences in Madeira (Portugal). The species is also present in Gran Canaria (Spain) with restricted distribution (EFSA PLH Panel, 2023; EPPO, online_c) Moreover, *D. abbreviatus* was intercepted in 1994 in the Netherlands on *Areca* palm imported from the Dominican Republic (EPPO, online_c) The reported presence for Sweden from 1993 (CABI, online_a) was not confirmed by the Swedish NPPO that considers the pest as 'absent, invalid record' (EFSA PLH Panel, 2023; SLU, 2023; EPPO, online_c)
Host status on *Ligustrum*	*Ligustrum* sp. is a host of *D. abbreviatus* (Mannion et al., 2003; CABI, online_b) There is no specific information on whether *D. abbreviatus* can also attack *Ligustrum ovalifolium* and *L. vulgare*. However, considering the documented polyphagy of *D. abbreviatus*, the Panel considers likely that *L. ovalifolium* and *L. vulgare* can host *D. abbreviatus*
PRA information	Available Pest Risk Assessment: – Risk and pathway assessment for the introduction of exotic insects and pathogens that could affect Hawai'i's native forests (DeNitto et al., 2015) – Importation of irradiated mango from Grenada into the United States and Territories. A qualitative, pathway-initiated pest risk assessment (USDA-APHIS, 2019) – Final Pest Risk Analysis for Cut Flower and Foliage Imports-Part 2 (Australian Department of Agriculture and Water Resources, 2021) – Pest categorisation of *Diaprepes abbreviatus* (EFSA PLH Panel, 2023)

(Continued)

Other relevant information for the assessment		
Biology		*Diaprepes abbreviatus* is a tropical root weevil (10–19 mm adult in lenght) native to the Caribbean region, where it is present in all the main islands except Cuba and Bahamas. It was introduced in 1964 in Florida (the USA) and is currently invading also California, Louisiana and Texas (CABI, online; EPPO, online_b) *Diaprepes abbreviatus* has four life stages: egg, larva (11 instars), pupa and adult. The weevil has one generation per year in central Florida (Beavers, 1982; Stansky, 2011), although overlapping generations with two emergence peaks (May–June and August–September) have been also observed (Mannion et al., 2003). The complete life cycle lasts from 5 to 18 months depending on temperature and soil moisture. In its native range, the adults are usually found throughout the year (Grafton-Cardwell et al., 2004; Stansky, 2011) Adult weevils feed on young leaves, opening small semicircular holes, only occasionally feeding also on fruits of papaya and citrus. They are long-lived (147 days – females; 135 days – males); great number of insects can be sometimes observed in a few trees. After mating, females lay eggs (1 mm in length) in clusters of 30–260 in a single layer between two leaves. A single female can deposit from 5000 to 29,000 eggs (Mannion et al., 2003). The egg stage lasts 7–10 days and hatch rate is 89% at 25°C and 80% relative humidity (Beavers, 1982). The newly hatched larvae drop to the ground and burrow into the soil in search of roots for feeding. Young larvae initially feed on small roots; larger structural roots are only attacked by developed larvae after 3rd or 4th stage. Damage to root system may cause plant weakness and mortality, often also due to secondary infections by root rot fungus *Phytophthora* spp. (Grafton-Cardwell et al., 2004, Serrano et al., 2010). Such association of root damage by larvae and root rot pathogens is common in citrus orchards in Florida, where it is known as the *Phytophthora-Diaprepes* complex (Dewdney and Johnson, 2022). Complete larval development lasts 8–15 months. Larvae mostly grow up to 6th instar stage; a diapause period lasting from 2 to 13 months has been observed (Stansky, 2011). Mature large larvae (up to 25 mm long) enter a prepupal quiescent stage, and then form a pupal chamber in the soil. Pupal stage lasts 15–30 days. Newly formed adults emerge with suitable moisture soil conditions, after extensive rainfall or irrigation. When no suitable conditions occur, larvae and adults stay longer in the soil, so that the total life cycle may last more than 2 years (Griffith, 1975). Adults usually move by walking and fly only on short distances (maximum 228–236 m); when they find a host plant they stay sedentary if not disturbed. The dispersal of *D. abbreviatus* probably occurs by a sequence of short flights or even by hitch-hiking of adults on transport trucks and machinery. However, live plants with soil are the main pathway (Beavers and Selhime, 1978). According to Beavers (1982), the long subterranean surviving period of *D. abbreviatus* highly increases the spreading probability of the pest by shipping of plants in pots with soil *Diaprepes abbreviatus* is a warm climate species, and temperature is a very important factor in determining its geographical range and establishment possibilities. Thermal threshold for eggs is a crucial factor, with 95% egg mortality between 4°C and 12°C (Lapointe et al., 2007). For oviposition and starting development of newly hatched larvae, threshold of 15°C is needed (Lapointe et al., 2007); more aged larvae require at least 26°C to develop in the soil, and pupae have a thermal lower limit of 15°C like the neo-hatched larvae (Lapointe, 2000). Soil moisture is also relevant: 60% is optimal for development, whereas 20%–40% and 80% rates both result in increased mortality of larvae (Lapointe and Shapiro, 1999). Low soil moisture can be tolerated when balanced with adequate moisture of root tissues feeding substrate (Stansky, 2011)
Symptoms	**Main type of symptoms**	The main symptom on leaves is the damage caused by feeding adults, consisting in semicircular erosions mostly along leaf edges. Adults and excrements may also be seen on foliage in spring and summer. Discolouring, wilting and dieback of whole plants may be observed when severe damage occurs on roots following larval feeding. All these symtoms are easy to detect Symptoms on the roots (girdling, channelling of outer bark and cambium) may be only observed after soil removal There is no information on specific symptoms to *Ligustrum* sp.
	Presence of asymptomatic plants	Plants may be asymptomatic or showing no significant signs if roots are not yet seriously damaged by larval feeding. Considering the potential long survival of subterranean stages of the pest, it is not possible to indicate a precise warning period for detection
	Confusion with other pests	Feeding symptoms on leaves and roots are not specific. Other defoliating insects and weevil species cause similar symptoms. In the Caribbean native range of the pest, many other species of *Diaprepes* are also present, sometimes showing similar shape/colour and feeding habits. In Europe, *Otiorhynchus* adults also produce similar damage. Identification of adult insects or larvae by a specialist is recommended
Host plant range		*Diaprepes abbreviatus* is a very polyphagous insect, feeding on the roots and foliage of more than 300 host species, in 59 plant families including fruit trees, ornamental and wild trees and shrubs, sugarcane and vegetables (Ascunce et al., 2008). More common and economically important hosts are all varieties of citrus (*Citrus*), peanut (*Arachis hypogea*) *Sorghum* sp., Surinam cherry (*Eugenia uniflora*), dragon tree (*Dracaena draco*), sweet potato (*Ipomaea batatas*), sugarcane (*Saccharum officinarum*), coffe weed (*Sesbania erbacea*) and Brazilian pepper (*Schinis terebinthiofilia*) (Grafton-Cardwell et al., 2004) Other hosts are: *Acacia* sp., *Acer rubrum, Albizzia* sp., *Brassica* sp., *Capsicum annuum, Carya* sp., *Coffea arabica, Cupressus sempervirens, Diospyros* sp., *Eriobotrya japonica, Ficus* sp., *Gossypium* sp., *Ilex* sp., *Juniperus* sp., *Lagerstroemia indica, Mangifera indica, Melia azedarach, Mimosa ceratonia, Musa* sp., *Nicotiana tabacum, Persea americana, Phaseolus* sp., *Phoenix dactylifera, Piper* sp., *Pittosporum tobira, Prunus* sp., *Quercus laurifolia, Rosa* sp., *Rubus argutus*, *Salix humboldtiana, Solanum melongea, S. tuberosum, Theobroma cacao, Ulmus parviflora, Zea mays* (Simpson et al, 1996); *Aloe barbadiensis, Ardisia crenata, Codiaeum variegatum, Hoya carnosa, Maranta leuconeura* (Schroeder et al., 1979); *Bauhinia* sp., *Bucida buseras, Cassia* sp., *Chrysobalanus icaco, Conocarpus erectus, Ligustrum* sp. and *Quercus virginiana* (Mannion et al., 2003) For a more detailed list of hosts, see Simpson et al. (1996)

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Reported evidence of impact	Adult weevils can cause moderate to severe defoliation. Young trees may be rapidly killed by larval girdling, while larger trees decline slowly and can die after severe root system damage, often also due to root diseases (Jetter and Godfrey, 2009) *Diaprepes abbreviatus* is a primary pest in the Caribbean islands, severely damaging a wide range of economically important crops, mostly *Citrus* and sugarcane (Mauleon and Mademba-Sy, 1988; EPPO, 2016). In the USA, it was estimated that *D. abbreviatus* infests more than 100,000 acres of citrus in Florida, causing damage of 70 million dollars annually (Weissling et al., 2019). According to Perry et al. (2022), *D. abbreviatus* is also a common pest in blackberry and pomegranate orchards in Florida No damage information on *Ligustrum* is available. *Ligustrum* is only listed as host plant of *D. abbreviatus* in the USA with negligible significance (Mannion et al., 2003). According to Schroeder et al. (1979), *Ligustrum lucidum* is not supporting larval development of *D. abbreviatus* (< 1% larvae recovered)
Pathways and evidence that the commodity is a pathway	Live plants with soil are pathways for all life stages of *D. abbreviatus*; cut branches or flowers can only carry eggs or adults. The pest has a broad host range and may be easily transported with plants; the frequent overlapping of life stages enhances the likelihood of introduction (DeNitto et al., 2015). *Diaprepes abbreviatus* is frequently intercepted in the USA on both live plants and nursery containers, where adults may be also found as hitchhikers (Grafton-Cardwell, 2004; Jetter and Godfrey, 2009)
Surveillance information	The site of production will be inspected to ensure freedom from *D. abbreviatus* during official inspections carried out at appropriate times, since the beginning of the last growing season. Immediately prior to export, consignments of the plants will be subjected to an official inspection for the presence of *D. abbreviatus* with such a sample size as to enable at least the detection of 1% level of infestation with a level of confidence of 99% (Dossier Sections 1.1 and 1.2)

A.2.2 | Possibility of pest presence in the nursery

A.2.2.1 | Possibility of entry from the surrounding environment

Diaprepes abbreviatus is listed as present-transient in the UK (CABI, online; Dossier Section 2.0) as introduced species on palm plants indoors (Smith et al., 1996). The pest was found in a single tropical glasshouse in SW England and the last reported finding dates back to 2014 (Dossier Section 2.0). There is no information about the possibility that *D. abbreviatus*, if still present, may exit from the glasshouse and survive in outdoor conditions, which could be possible in summer.

Diaprepes abbreviatus is very polyphagous and some host plants of the pest, like *Ilex* spp., *Prunus* spp., *Brassica* spp., *Sorghum* spp., *Solanum tuberosum* and *Zea mays* are present in the hedges and in the arable crops surrounding the nurseries (Dossier Sections 1.1 and 1.2). Adults can fly up to 236 m, but usually spread slowly with short flights (Beavers and Selhime, 1978). However, *D. abbreviatus* has never been found anywhere in natural environment in the UK, which climate conditions could not be suitable for its life cycle requirements (Lapointe et al., 2007).

Uncertainties:

- No information about the tropical glasshouse in SW England where the pest was recorded (name, location, aim of cultivation, cultivated species, pest surveillance protocols).
- The current status of the pest in the tropical glasshouse.
- The possibility of survival and spread of the pest outside the greenhouse.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is very unlikely for the pest to enter the nurseries from surrounding environment, since it was found only in a tropical glasshouse in SW England and is currently classified as present-transient (Dossier Section 2.0). Although in the surrounding area suitable hosts are present and the pest can actively spread, *D. abbreviatus* has never been found in natural environment of the UK, where the climate conditions are most likely not suitable for its survival outdoors (EFSA PLH Panel, 2023).

A.2.2.2 | Possibility of entry with new plants/seeds

The starting materials of *L. ovalifolium* and *L. vulgare* are either seeds or seedlings. Seeds are coming from the UK. Seedlings are either from the UK (certified with UK Plant Passports) or the EU (mostly the Netherlands) (certified with phytosanitary certificates) (Dossier Sections 1.1 and 1.2). Seeds are not a pathway for *D. abbreviatus*.

In the nurseries many other plants are cultivated (Dossier Section 2.0). Out of them *Acacia* spp., *Cupressus* spp., *Ilex* spp., *Juniperus* spp., *Pittosporum* spp., *Prunus* spp. and *Rosa* spp. are potential suitable hosts of the weevil. However, there is no information from where the plants are coming and how they are produced. Therefore, if the plants are first produced in another nursery, the weevil could possibly travel with them.

Except eggs and adults, all the living stages of *D. abbreviatus* may be found in the soil of host plants infested by the weevil. However, all the nurseries use virgin peat or peat-free compost as a growing media, which is a mixture of coir, tree bark, wood fibre, etc., heat-treated by commercial suppliers during production to eliminate pests and diseases.

Uncertainties:

- No information is available on the provenance of plants other than *Ligustrum* used for plant production in the nurseries.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible for the pest to enter the nurseries with new plants used for plant production in the area. The entry of the weevil with seeds and the growing media is considered as not possible by the Panel.

A.2.2.3 | Possibility of spread within the nursery

Ligustrum plants are grown both in containers outdoors and in fields. There are no mother plants present in the nurseries and none of the nurseries expected to export to the EU produce plants from grafting (Dossier Sections 1.1 and 1.2).

The weevil can attack other suitable hosts as *Acacia* spp., *Ilex* spp., *Prunus* spp., etc., present within the nurseries and spread both by adult walking and flight or infested soil.

There are greenhouses present in the nurseries (Dossier Sections 1.1 and 1.2).

Uncertainties:

- The possibility of survival of the weevil outdoors in the climate conditions of the UK.
- The possibility that greenhouses are used in a way that allows the pest to overwinter.

Taking into consideration the above evidence and uncertainties, the Panel considers that the spread of the pest within the nursery is possible by walking and active flight.

A.2.3 | Information from interceptions

In the EUROPHYT/TRACES-NT database, there are no records of notification of *Ligustrum*, *Ligustrum* sp., *L. ovalifolium* or *L. vulgare* plants for planting neither from the UK nor from other countries due to the presence of *D. abbreviatus* between the years 1995 and July 2023 (EUROPHYT, online; TRACES-NT, online).

A.2.4 | Evaluation of the risk mitigation measures

In the table below, all risk mitigation measures currently applied in the UK are listed and an indication of their effectiveness on *D. abbreviatus* is provided. The description of the risk mitigation measures currently applied in the UK is provided in Table 6.

N	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Registration of production sites	Yes	As the plant passport is very similar to the EU one, plants shall be free from quarantine pests. This should influence the presence of non-quarantine pests Uncertainties: – None
2	Physical separation	No	Not applied, there is no separation between production areas for the export and the local market
3	Certified plant material	Yes	Seeds are not a pathway for the pest Seedlings sourced in the UK are certified with the UK Plant Passports. This should have an effect on potential infestations of *Diaprepes* If plants other than *Ligustrum* are first produced in another nursery, the weevil could possibly travel with them Uncertainties: – No information is available on the provenance and type of production of plants other than *Ligustrum* used for plant production in the nurseries
4	Growing media	Yes	The measure is effective against the presence of the pest in the soil Uncertainties: – None
5	Surveillance, monitoring and sampling	Yes	Plant material is regularly monitored for plant health issues. They must meet the required national sanitary standards. Monitoring should be effective in finding infestation of *Diaprepes* if adults are present on the plant Uncertainties: – Difficulty of detecting low levels of infestation
6	Hygiene measures	No	Not relevant to the pest
7	Removal of infested plant material	Yes	Removal of leaves may reduce the risk that larvae are dropping in the pot Uncertainties: – The level at which the potential leaves carrying eggs are removed
8	Irrigation water	No	Not relevant to the pest

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N	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
9	Application of pest control products	Yes	Plant protection products are only used when necessary and records of all plant protection treatments are kept. It may have an effect on the pest Uncertainties: – No information about the specific treatments – The effect of the treatments against the pest
10	Measures against soil pests	Yes	The measure is effective against the presence of the pest in the soil Uncertainties: – None
11	Inspections and management of plants before export	Yes	Specific measures are taken to detect the presence of the pest Inspection before export should be effective in finding infestation of the pest. However, a low level of infestation by *D. abbreviatus* could go undetected. In addition, larvae present in the growing medium of containerised plants (plants in pots and cell grown plants) can go undetected Inspection is performed between 1 day and 2 weeks before the export, but a reinfestation can occur during this period Uncertainties: – Capacity of detection of low levels of infestation – Exact duration of the period between inspection and export – Whether the inspections are targeting the growing media, where larvae, pupae and adults can be present
12	Separation during transport to the destination	Yes	The adults could spread from infested plants to non-infested plants during transport to the destination Uncertainties: – None

A.2.5 | Overall likelihood of pest freedom for bare root plants

A.2.5.1 | Reasoning for a scenario which would lead to a reasonably low number of infested bare root plants

The scenario assumes that the pest was only established indoors in a tropical glasshouse in SW England, and it has not been found again since 2014. It also assumes that the pest is very unlikely to survive outdoors. Therefore, the scenario assumes that the pest is no longer present in the UK.

A.2.5.2 | Reasoning for a scenario which would lead to a reasonably high number of infested bare root plants

The scenario assumes that, although it is unlikely that the pest can survive or develop outdoors, other traded plants present in the surroundings of the nurseries might be a source of the pest. Polytunnels present in the nurseries could also host some plants that could be infested. The scenario also assumes that, although inspections are conducted very often, they will fail detection in case of low-level infestations.

A.2.5.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infested bare root plants (Median)

Median is very shifted to the left side (lower infestation rate) because of the very unlikely presence of the pest in the surroundings of the nurseries. Inspections will be successful because adults and signs of its present are easily visible and growing media are not present in the commodity.

A.2.5.4 | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/ interquartile range)

The low probability of performing of the pest outdoors results in high level of uncertainties for infestation rates below the median. Otherwise, this low probability of the presence of the pest in the surroundings gives less uncertainties for rates above the median. Potential effectivity of applied measures, lack of growing media in the commodity and inspections also results in a lower level of uncertainties for infestation rates above the median.

A.2.5.5 | Elicitation outcomes of the assessment of the pest freedom for *Diaprepes abbreviatus* on bare root plants

The following tables show the elicited and fitted values for pest infestation (Table A.3) and pest freedom (Table A.4).

TABLE A.3 Elicited and fitted values of the uncertainty distribution of pest infestation by *Diaprepes abbreviatus* per 10,000 consignments.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0.0					0.5		1.0		2.0					5.0
EKE	0.0209	0.0494	0.0952	0.186	0.310	0.472	0.646	1.05	1.59	1.95	2.42	2.98	3.66	4.28	5.00

Note: The EKE results are the BetaGeneral (1.0764, 6.8505, 0, 10) distribution fitted with @Risk version 7.6.

Based on the numbers of estimated infested consignments, the pest freedom was calculated (i.e. = 10,000 – number of infested consignments per 10,000). The fitted values of the uncertainty distribution of the pest freedom are shown in Table A.4.

TABLE A.4 The uncertainty distribution of consignments free of *Diaprepes abbreviatus* per 10,000 consignments calculated by Table A.3.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9995					9998		9999		10,000					10,000
EKE results	9995	9996	9996	9997.0	9997.6	9998.1	9998.4	9998.9	9999.35	9999.53	9999.69	9999.81	9999.90	9999.95	9999.98

Note: The EKE results are the fitted values.

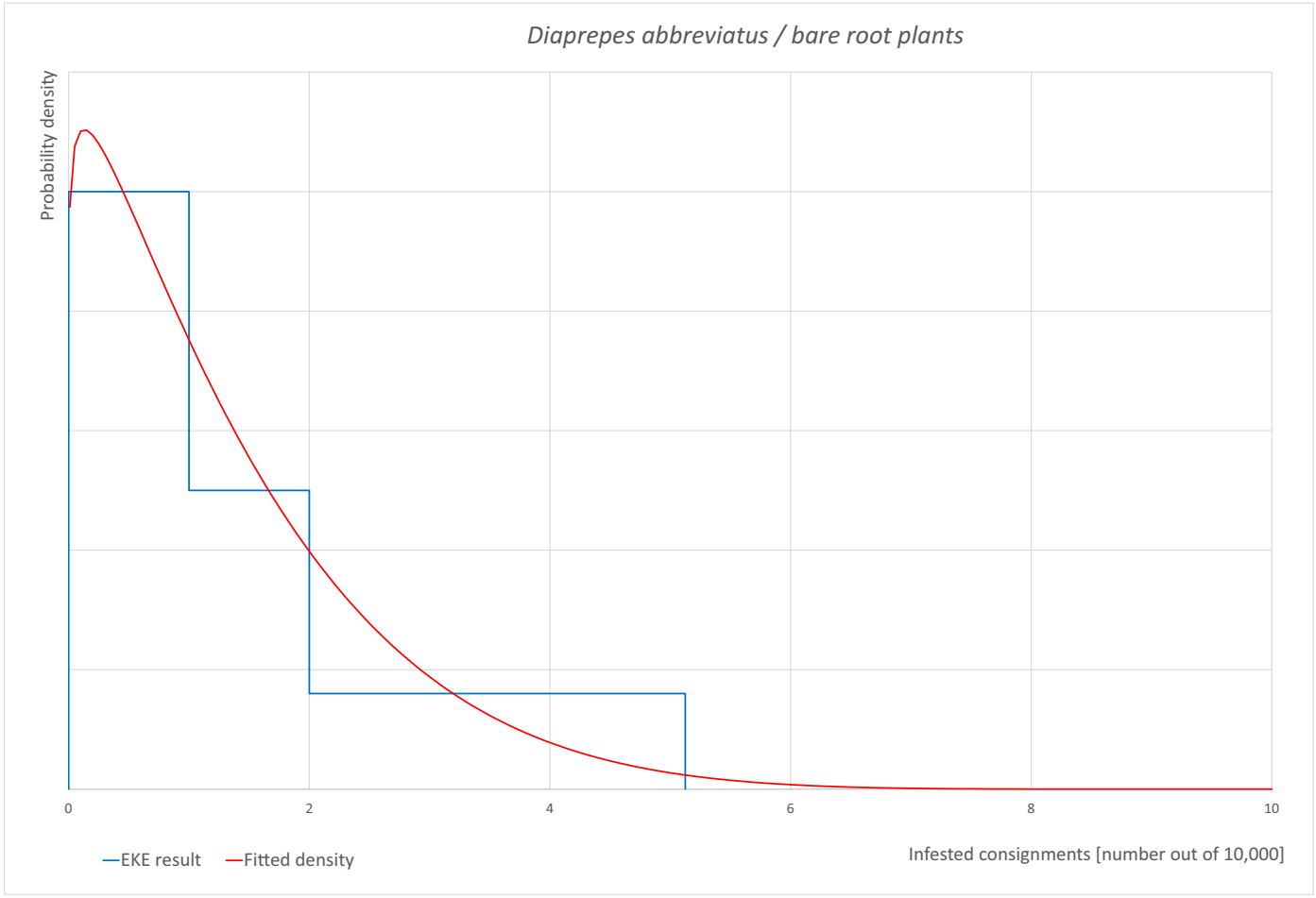
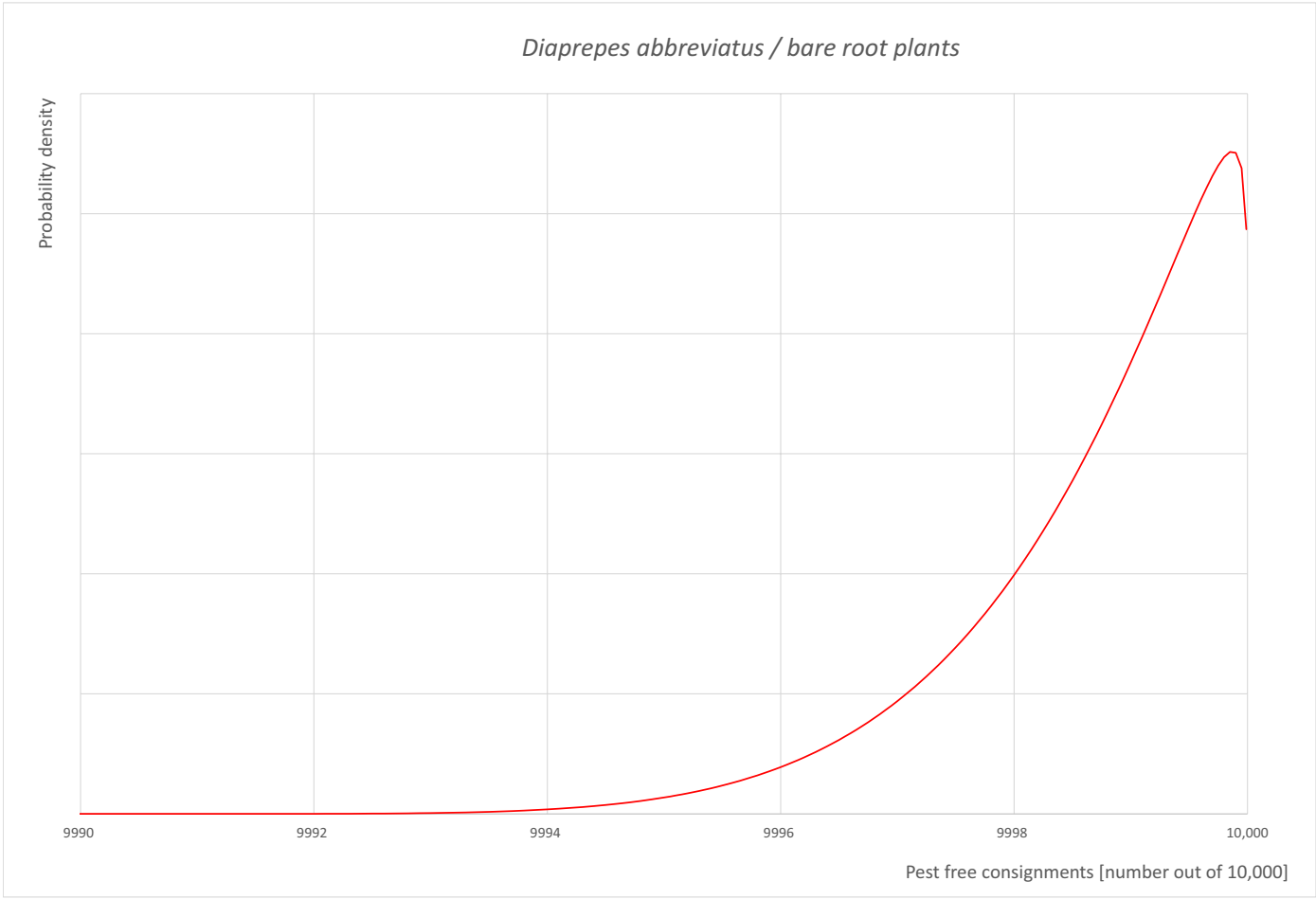


FIGURE A.2 (Continued)



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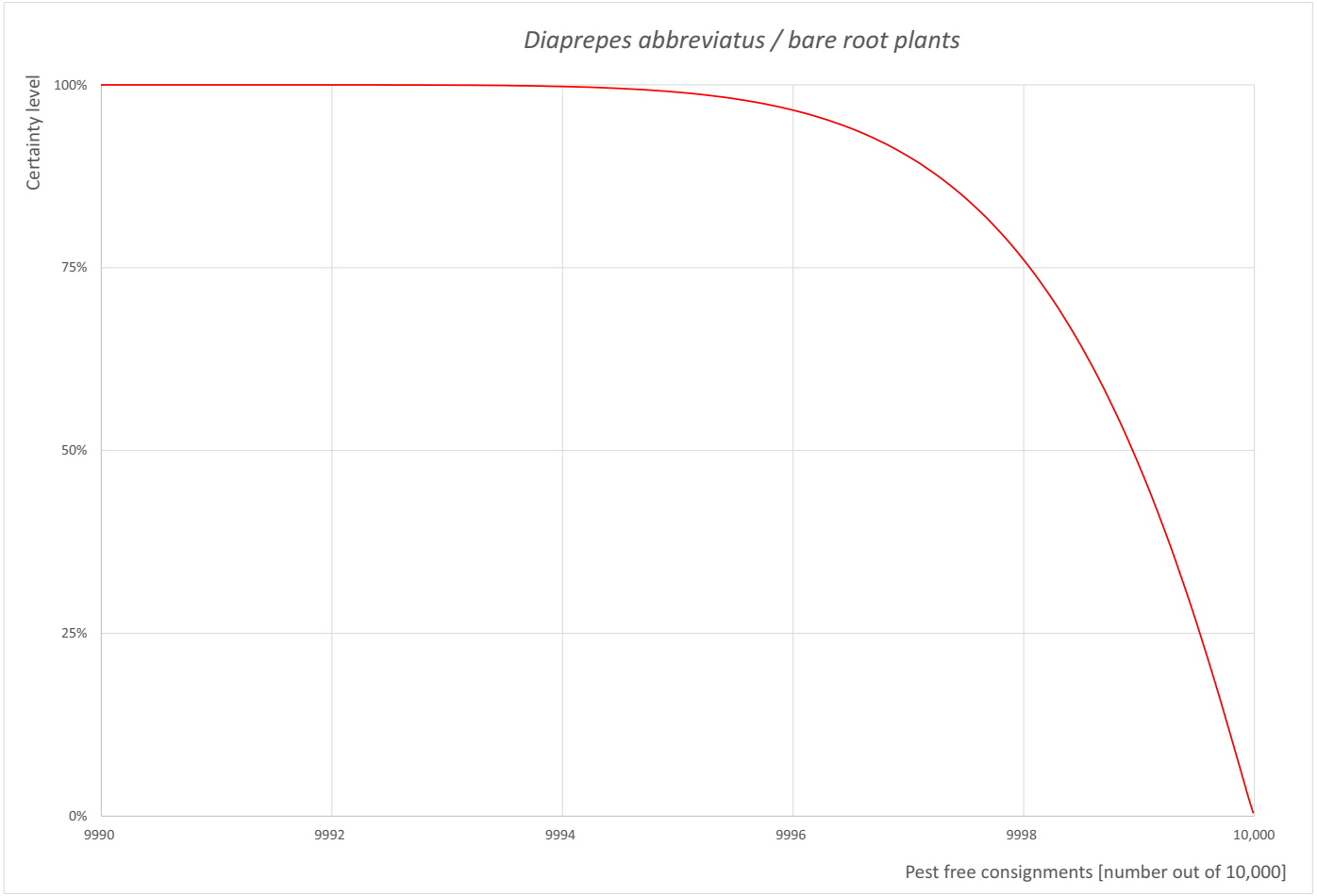


FIGURE A.2 (A) Elicited uncertainty of pest infestation per 10,000 consignments (histogram in blue–vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (B) uncertainty of the proportion of pest-free consignments per 10,000 (i.e. = 1 – pest infestation proportion expressed as percentage); (C) descending uncertainty distribution function of pest infestation per 10,000 consignments.

A.2.6 | Overall likelihood of pest freedom for plants in pots

A.2.6.1 | Reasoning for a scenario which would lead to a reasonably low number of infested plants in pots

The scenario assumes that the pest was only established indoors in a tropical glasshouse in SW England, and it has not been found again since 2014. It also assumes that the pest is very unlikely to survive outdoors. Therefore, the scenario assumes that the pest is no longer present in the UK.

A.2.6.2 | Reasoning for a scenario which would lead to a reasonably high number of infested plants in pots

The scenario assumes that, although it is unlikely that the pest can survive or develop outdoors, other traded plants present in the surroundings of the nurseries might be a source of the pest. Polytunnels present in the nurseries could also host some plants that could be infested. The scenario also assumes that, although inspections are conducted very often, they will fail detection of larvae inside the soil because inspection of roots may not be done thoroughly for the presence of them. Few individuals in the nurseries could be overlooked and cause late or low infestation without showing symptoms.

A.2.6.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infested plants in pots (Median)

Median is very shifted to the left side (lower infestation rate) because of the very unlikely presence of the pest in the surroundings of the nurseries. Finally, inspections will be successful because adults and signs of its present are easily visible.

A.2.6.4 | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/ interquartile range)

The low probability of performing of the pest outdoors results in high level of uncertainties for infestation rates below the median. Otherwise, this low probability of the presence of the pest in the surroundings gives less uncertainties for rates above the median. Potential effectivity of applied measures and inspections also results in a lower level of uncertainties for infestation rates above the median.

A.2.6.5 | Elicitation outcomes of the assessment of the pest freedom for *Diaprepes abbreviatus* on plants in pots

The following tables show the elicited and fitted values for pest infestation (Table A.5) and pest freedom (Table A.6).

TABLE A.5 Elicited and fitted values of the uncertainty distribution of pest infestation by *Diaprepes abbreviatus* per 10,000 consignments.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0.0					1.0		2.5		4.0					10.0
EKE	0.0515	0.1188	0.2251	0.432	0.710	1.07	1.45	2.33	3.46	4.19	5.16	6.27	7.61	8.77	10.1

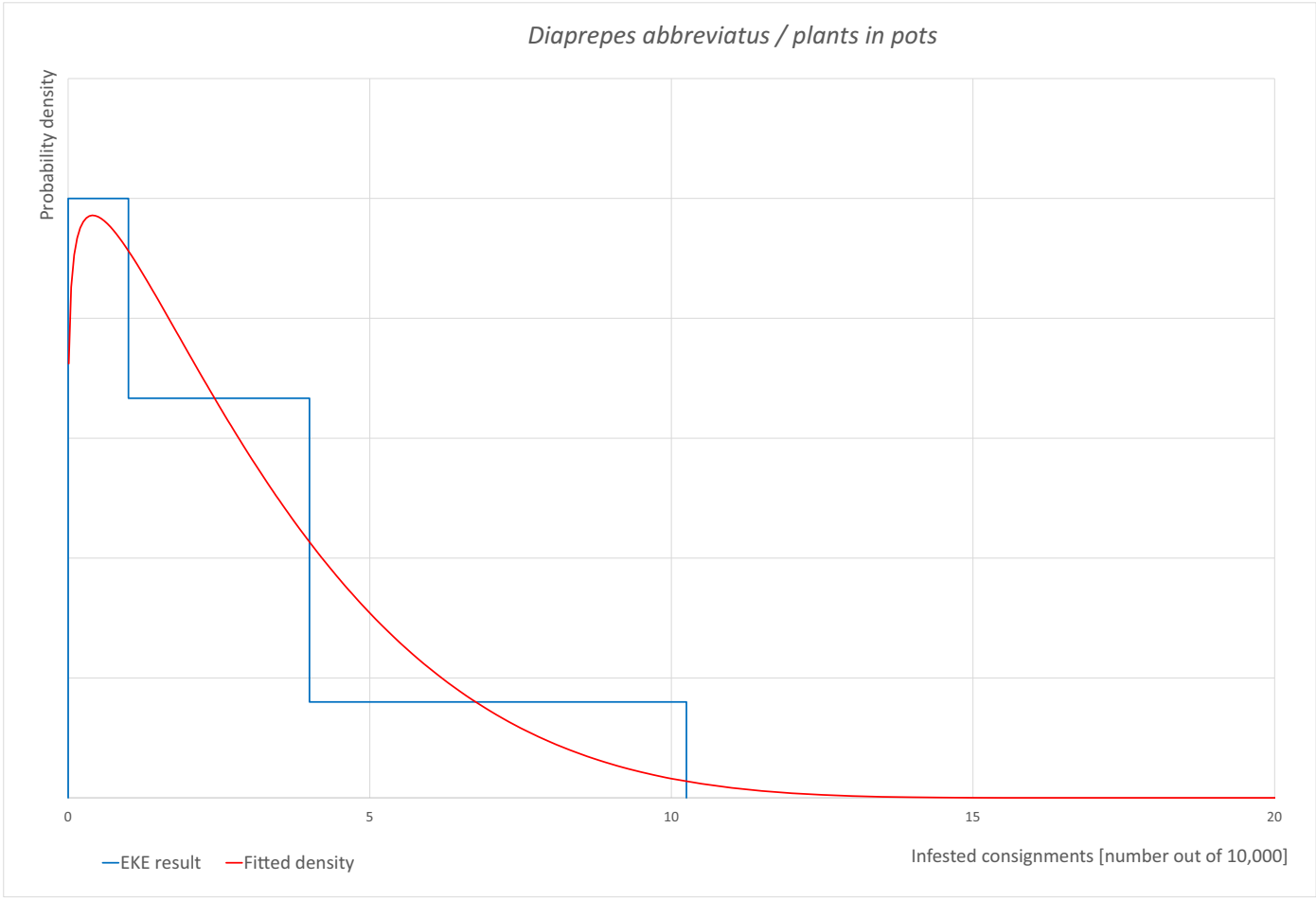
Note: The EKE results are the BetaGeneral (1.1072, 5.4335, 0, 17.2) distribution fitted with @Risk version 7.6.

Based on the numbers of estimated infested consignments, the pest freedom was calculated (i.e. = 10,000 – number of infested consignments per 10,000). The fitted values of the uncertainty distribution of the pest freedom are shown in Table A.6.

TABLE A.6 The uncertainty distribution of plants free of *Diaprepes abbreviatus* per 10,000 consignments calculated by Table A.5.

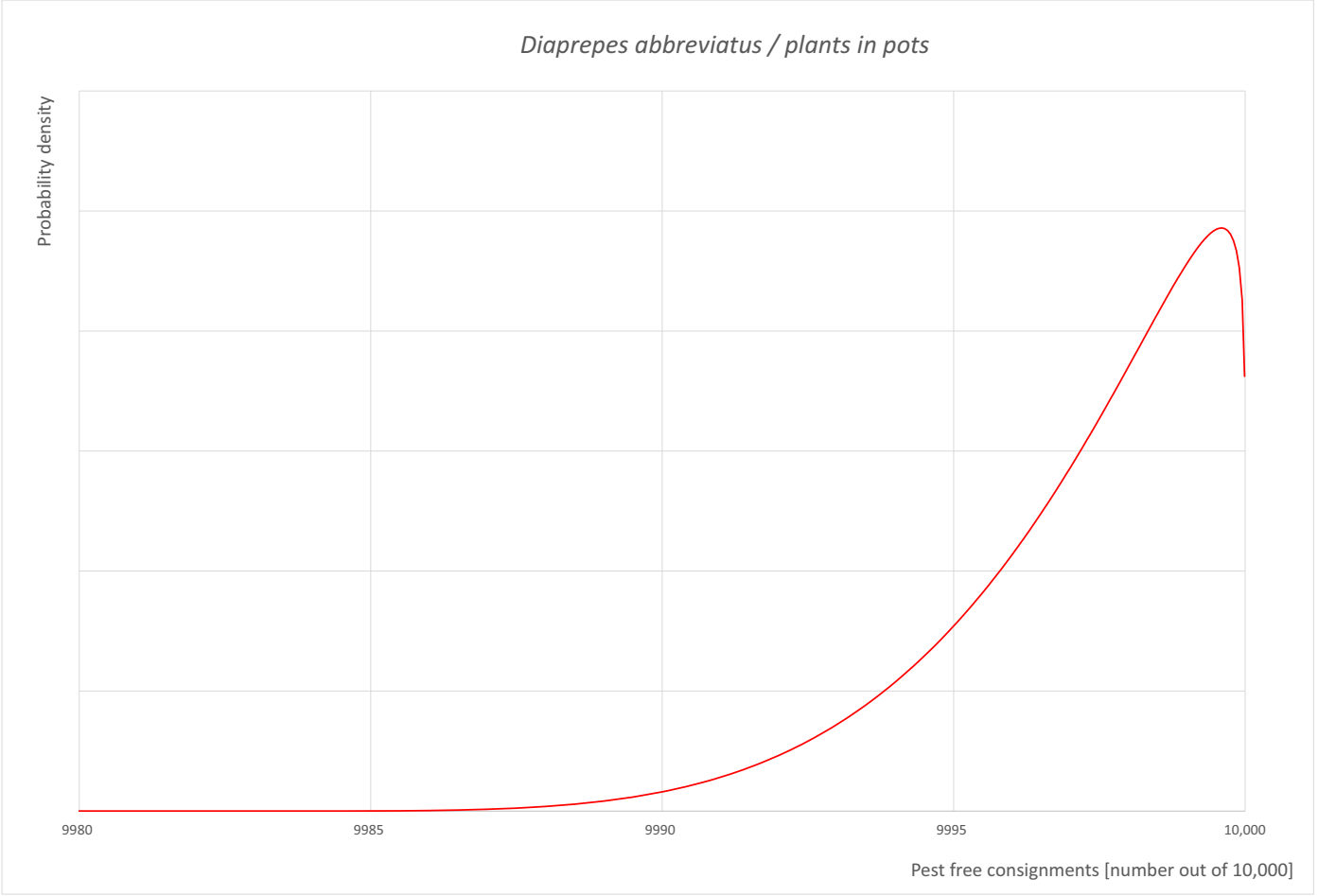
Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9990					9996		9998		9999					10,000
EKE results	9990	9991	9992	9994	9995	9996	9997	9997.7	9998.6	9998.9	9999.29	9999.57	9999.77	9999.88	9999.95

Note: The EKE results are the fitted values.



(A)

FIGURE A.3 (Continued)



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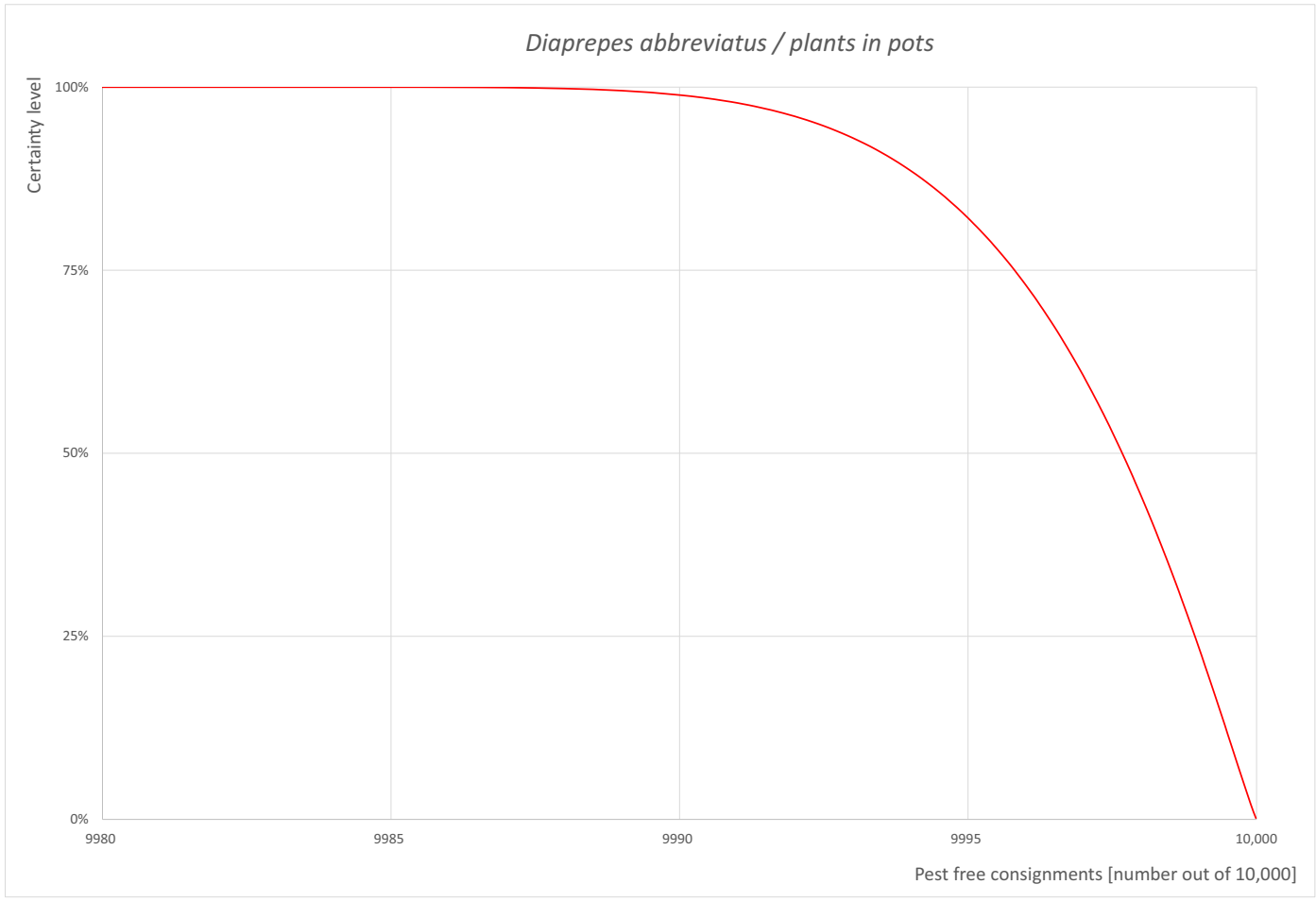

FIGURE A.3 (A) Elicited uncertainty of pest infestation per 10,000 consignments (histogram in blue–vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (B) uncertainty of the proportion of pest-free consignments per 10,000 (i.e. = 1 – pest infestation proportion expressed as percentage); (C) descending uncertainty distribution function of pest infestation per 10,000 consignments.

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A.3 | *Scirtothrips dorsalis*

A.3.1 | Organism information

Taxonomic information	Current valid scientific name: *Scirtothrips dorsalis* Synonyms: *Anaphothrips andreae, Anaphothrips dorsalis, Anaphothrips fragariae, Heliothrips minutissimus, Neophysopus fragariae, Scirtothrips andreae, Scirtothrips dorsalis padmae, Scirtothrips fragariae, Scirtothrips minutissimus, Scirtothrips padmae* Name used in the EU legislation: *Scirtothrips dorsalis* Hood [SCITDO] Order: Thysanoptera Family: Thripidae Common name: Assam thrips, chilli thrips, flower thrips, strawberry thrips, yellow tea thrips, castor thrips Name used in the dossier: *Scirtothrips dorsalis*
Group	Insects
EPPO code	SCITDO
Regulated status	The pest is listed in Annex II of Commission Implementing Regulation (EU) 2019/2072 as *Scirtothrips dorsalis* Hood [SCITDO] *Scirtothrips dorsalis* is included in the EPPO A2 list (EPPO, online_a) The species is a quarantine pest in Israel, Mexico, Morocco and Tunisia. It is on A1 list of Brazil, Chile, Egypt, Kazakhstan, Russia, Switzerland, Türkiye, Ukraine, the UK and EAEU (Eurasian Economic Union – Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia). It is on A2 list of Bahrain (EPPO, online_b)
Pest status in the UK	*Scirtothrips dorsalis* was found for the first time in the UK in December 2007 in a greenhouse (Palm House) at Royal Botanic Garden Kew in South England (Scott-Brown et al., 2018). Since 2008, the discovered population has been under official control by the plant health authorities with the objective of achieving complete eradication (Collins, 2010). Eradication measures were applied, and since 2019, the pest was no longer found (EPPO, online_c) In the Dossier Sections 1.1, 1.2 and 2.0, it is stated that: '*Scirtothrips dorsalis* has been found in one tropical glasshouse at Kew, and at no other location. It has been subject to control measures for many years, and there have been no recent records – last official records are from 2012. It is possible that this pest has been eradicated, but we are unable to officially confirm this at this time – ref UK plant health risk register. UK Status: Present, not widely distributed and under official control' Therefore, the Panel cannot exclude that the pest is still present in the UK
Pest status in the EU	*Scirtothrips dorsalis* is present, with restricted distribution in Spain and transient in the Netherlands (EPPO, online_c) *Scirtothrips dorsalis* is continuously intercepted in the EU points-of-entry on different commodities: plants for planting; cut flowers and branches with foliage; fruits and vegetables (EUROPHYT, online; TRACES-NT, online)
Host status on *Ligustrum*	*Ligustrum japonicum* is reported as a host of *S. dorsalis* (CABI, online; EPPO, online_d; Kumar et al., 2013; Ohkubo, 1995) *Ligustrum* sp. is reported as a reproductive host for *S. dorsalis* in Florida (Klassen et al., 2008) There is no information on whether *S. dorsalis* can also attack *Ligustrum ovalifolium*, *L. vulgare* or other *Ligustrum* species. However, considering the documented polyphagy of *S. dorsalis*, the Panel considers very likely that *L. ovalifolium* and *L. vulgare* can host *S. dorsalis*
PRA information	Available Pest Risk Assessments: – CSL pest risk analysis for *Scirtothrips dorsalis* (MacLeod and Collins, 2006) – Pest Risk Assessment *Scirtothrips dorsalis* (Vierbergen and van der Gaag, 2009) – Scientific Opinion on the pest categorisation of *Scirtothrips dorsalis* (EFSA PLH Panel, 2014) – UK Risk Register Details for *Scirtothrips dorsalis* (DEFRA, online)
Other relevant information for the assessment	
Biology	*Scirtothrips dorsalis* is a thrips present in Africa (Cote d'Ivoire, Kenya, Uganda), Asia (Bangladesh, Brunei Darussalam, China, India, Indonesia, Iran, Israel, Japan, Malaysia, Myanmar, North Korea, Pakistan, Philippines, South Korea, Sri Lanka, Taiwan, Thailand, Vietnam), Europe (the Netherlands, Spain, Türkiye, the UK), North America (Alabama, Caribbean, California, Florida, Georgia, Hawaii, Louisiana, Mexico, New York, Texas), Oceania (Australia, Papua New Guinea, Solomon Islands) and South America (Brazil, Colombia, French Guiana, Peru, Suriname, Venezuela) (CABI, online; EPPO, online_c). In the literature its origin is contradictory, it is reported as either native to Asia, Australasia or South Africa. For more details refer to Mound and Palmer (1981), Seal et al. (2006), Hoddle et al. (2008), Kumar et al. (2013) and CABI (online) According to Dickey et al. (2015), *S. dorsalis* is a species complex that includes at least nine cryptic species and two morphologically distinguishable species (*S. oligochaetus* and *S. aff. dorsalis*) *Scirtothrips dorsalis* develops through five life stages: egg, larva (two instars), prepupa, pupa and adult (Dev, 1964; Kumar et al., 2013). They can be found on all the aboveground plant parts (Kumar et al., 2014), and they damage young leaves, buds, tender stems and fruits by sucking tender tissues with their stylets (Kumar et al., 2013) Temperature thresholds for development are 9.7°C and 32°C, with 265 degree-days required for development from egg to adult (Tatara, 1994). Adults can live up to 13–15 days (Kumar et al., 2013, citing others). *Scirtothrips dorsalis* can have annually up to eight generations in Japan (Tatara, 1994). In the USA, it was estimated by a degree day model that, in some of the southern states, the thrips can potentially have up to 18 generations (Nietschke et al., 2008) *Scirtothrips dorsalis* can reproduce both sexually and by haplodiploid parthenogenesis, with females developing from fertilised and males from unfertilised eggs (Dev, 1964). Female can lay between 60 and 200 eggs (Seal and Klassen, 2012), which are inserted into soft plant tissues of buds and young leaves near the mid rib or into the veins. But sometimes they are also laid into older leaves (Dev, 1964). The eggs hatch in 6–8 days (Seal and Klassen, 2012). They are glassy white about 0.25 mm long and 0.1 mm wide. First- and second-instar larvae are white, yellow to light orange and their length size ranges between 0.29–0.32 and 0.48–0.59 mm, respectively (Dev, 1964). Prepupa is yellowish and pupa dark yellow (CABI, online) with 0.59–0.63 mm in length (Dev, 1964). Adults are pale yellow to greyish white in colour (Seal and Klassen, 2012). Female is approximately 1.05 mm long and 0.19 mm wide. Males are smaller 0.71 mm long and 0.14 mm wide (Dev, 1964). Larvae and adults tend to gather near the mid-vein or near the damaged part of leaf tissue. Pupae are found in the leaf litter, on the axils of the leaves, in curled leaves or under the calyx of flowers and fruits (MacLeod and Collins, 2006; Kumar et al., 2013). Prepupa and pupa stages never feed (Tatara, 1994)

(Continues)

(Continued)

		Adults fly actively for short distances – tens of metres (Masui, 2007a) and passively on wind currents, which enables long-distance spread (EFSA PLH Panel, 2014). They overwinter as adults (Okada and Kudo, 1982) in bark, litter, soil and protected in plant parts (Shibao, 1991; Holtz, 2006). The thrips cannot survive if the temperature remains below – 4°C for 5 or more days (Nietschke et al., 2008) *Scirtothrips dorsalis* is reported to be a vector of plant viruses including capsicum chlorosis virus (CaCV), chilli leaf curl virus (CLC), melon yellow spot virus (MYSV), peanut chlorotic fan virus (PCFV), peanut yellow spot virus (PYSV), tobacco streak virus (TSV) and watermelon silver mottle virus (WsMoV) (Satyanarayana et al., 1996; Rao et al., 2003; Seal et al., 2010; Kumar et al., 2013). However, these viruses are not reported to infect *Ligustrum* species. Among these viruses, TSV has been reported in the UK. However, this virus is already present in several EU Member States and is not under official control in the EU Possible pathways of entry for *S. dorsalis* are plants for planting, cut flowers, fruits, vegetables, soil and growing media (EFSA PLH Panel, 2014) *Scirtothrips dorsalis* causes economic loses to chilli (*Capsicum annuum*) in India with yield loss estimated between 61% and 74% (Kumar et al., 2013, citing others), mango in Malaysia (Aliakbarpour et al., 2010), vegetables in China and the USA (Reitz et al., 2011), tea, grapevine and citrus in Japan (Tatara, 1994, citing others; Masui, 2007b) No information is available about damage on *Ligustrum* species
Symptoms	**Main type of symptoms**	According to Dev (1964) and Kumar et al. (2013; 2014) main symptoms caused by *S. dorsalis* are: – 'sandy paper lines' on the epidermis of the leaves – leaf crinkling and upwards leaf curling – leaf size reduction – discoloration of buds, flowers and young fruits – silvering of the leaf surface – linear thickenings of the leaf lamina – brown frass markings on the leaves and fruits – corky tissues on fruits – grey to black markings on fruits – fruit distortion – early senescence of leaves – defoliation When the population is high, thrips may feed on the upper surfaces of leaves and cause defoliation and yield loss (Kumar et al., 2013) There is no information on the symptoms caused to *Ligustrum* plants
	Presence of asymptomatic plants	Plant damage might not be obvious in early infestation or during dormancy (due to partial absence of leaves in semi-evergreen *L. vulgare*)
	Confusion with other pests	Plants infested by *S. dorsalis* appear similar to plants damaged by the feeding of broad mites (Kumar et al., 2013) Due to small size and morphological similarities within the genus, the identification of *S. dorsalis*, using traditional taxonomic keys, is difficult. The most precise identification of the pest is combination of molecular and morphological methods (Kumar et al., 2013)
Host plant range		*Scirtothrips dorsalis* is a polyphagous pest with more than 100 reported hosts (Kumar et al., 2013). The pest can infect many more plant species, but they are not considered to be true hosts, since the pest cannot reproduce on all of them (EFSA PLH Panel, 2014) Some of the many hosts of *S. dorsalis* are (alphabetically): *Abelmoschus esculentus*, *Acacia auriculiformis*, *Acacia brownii*, *Actinidia deliciosa*, *Allium cepa*, *Allium sativum*, *Anacardium occidentale*, *Arachis hypogaea*, *Asparagus officinalis*, *Beta vulgaris*, *Camellia sinensis*, *Capsicum annuum*, *Capsicum frutescens*, *Citrus* spp., *Citrus aurantiifolia*, *Citrus sinensis*, *Cucumis melo*, *Cucumis sativus*, *Cucurbita pepo*, *Dahlia pinnata*, *Dimocarpus longan*, *Diospyros kaki*, *Fagopyrum esculentum*, *Ficus* spp., *Ficus carica*, *Fragaria* spp., *Fragaria ananassa*, *Fragaria chiloensis*, *Glycine max*, *Gossypium* spp., *Gossypium hirsutum*, *Hedera helix*, *Helianthus annuus*, *Hevea brasiliensis*, *Hydrangea* spp., *Ipomoea batatas*, *Lablab purpureus*, *Ligustrum japonicum, Litchi chinensis*, *Mangifera indica*, *Melilotus indica*, *Mimosa* spp., *Morus* spp., *Nelumbo* spp., *Nelumbo lutea*, *Nelumbo nucifera*, *Nephelium lappaceum*, *Nicotiana tabacum*, *Passiflora edulis*, *Persea americana*, *Phaseolus vulgaris*, *Populus deltoides*, *Portulaca oleracea*, *Prunus* spp., *Prunus persica*, *Punica granatum*, *Pyrus* spp., *Ricinus communis*, *Rosa* spp., *Rubus* spp., *Saraca* spp., *Solanum* spp., *Solanum lycopersicum*, *Solanum melongena*, *Solanum nigrum*, *Syzygium samarangense*, *Tamarindus indica*, *Viburnum* spp., *Vigna radiata*, *Vitis* spp., *Vitis vinifera*, *Zea mays* subsp. *mays* and *Ziziphus mauritiana* (Ohkubo, 1995; Hodges et al., 2005; Kumar et al., 2014; CABI, online) For a full host list refer to Ohkubo (1995), Hodges et al. (2005), Kumar et al. (2014), CABI (online)
Reported evidence of impact		*Scirtothrips dorsalis* is EU quarantine pest
Evidence that the commodity is a pathway		*Scirtothrips dorsalis* is continuously intercepted in the EU on different commodities including plants for planting (EUROPHYT, online; TRACES-NT, online) and according to EFSA PLH Panel (2014), *S. dorsalis* can travel with plants for planting. Therefore, the commodities are possible pathways of entry for *S. dorsalis*
Surveillance information		*Scirtothrips dorsalis* has been found in one tropical glasshouse at Kew (Botanic Gardens, Richmond, London), and at no other location. This pest has been subject to control measures for many years, and there have been no recent records. FERA diagnostics records show that sticky trap surveys at Kew were carried out in November 2007; January 2008; September 2022; October 2022; and November 2022 – all proved negative for the presence of this pest. It is possible that this pest has been eradicated, but the UK is unable to officially confirm this at this time (Dossier Sections 1.1 and 1.2)

A.3.2 | Possibility of pest presence in the nursery

A.3.2.1 | Possibility of entry from the surrounding environment

Scirtothrips dorsalis was found in a greenhouse at Kew Gardens in South England in 2007 (Scott-Brown et al., 2018) and since then it has been under official control (Dossier Sections 1.1, 1.2 and 2.0), although last official records are from 2012. However, there is no information of the thrips being able to spread beyond the greenhouse.

The possible entry of *S. dorsalis* from surrounding environment to the nurseries may occur through adult dispersal and passively on wind currents (EFSA PLH Panel, 2014).

Scirtothrips dorsalis is polyphagous species that can infest number of different plants. Suitable hosts of *S. dorsalis* like *Populus* spp., *Solanum* spp. and *Zea mays* are present within 2 km from the nurseries (Dossier Sections 1.1 and 1.2).

Uncertainties:

- Presence of the thrips in the UK.
- Possibility of spread beyond the infested greenhouse.
- Possibility of the thrips to survive the UK outdoor conditions.

Taking into consideration the above evidence and uncertainties, the Panel cannot exclude that the pest is present in the surrounding environment and can enter the nurseries, even though it was found only in one greenhouse. In the surrounding area, suitable hosts are present and the pest can spread by wind and adult flight.

A.3.2.2 | Possibility of entry with new plants/seeds

The starting materials of *L. ovalifolium* and *L. vulgare* are either seeds or seedlings. Seeds are coming from the UK. Seedlings are either from the UK (certified with UK Plant Passports) or the EU (mostly the Netherlands) (certified with phytosanitary certificates) (Dossier Sections 1.1 and 1.2). Seeds are not a pathway for the thrips.

In the nurseries, many other plants are cultivated (Dossier Section 3.0). Out of them *Acacia* spp., *Alium* spp., *Dahlia* spp., *Hedera* spp., *Populus* spp., *Prunus* spp., *Pyrus* spp., *Rosa* spp. and *Viburnum* spp. are potential suitable hosts of the thrips. However, there is no information on how and where the plants are produced. Therefore, if the plants are first produced in another nursery, the thrips could possibly travel with them.

According to Shibao (1991) and Holtz (2006) adults overwinter in leaf litter and potting soil. The nurseries are using virgin peat or peat-free compost as a growing media, which is a mixture of coir, tree bark, wood fibre, etc., heat-treated by commercial suppliers during production to eliminate pests and diseases (Dossier Sections 1.1 and 1.2).

Uncertainties:

- No information is available on the provenance of plants other than *Ligustrum* used for plant production in the nurseries.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible for the pest to enter the nurseries with new seedlings of *Ligustrum* and new plants of other species used for plant production in the area. The entry of the pest with seeds and the growing media the Panel considers as not possible.

A.3.2.3 | Possibility of spread within the nursery

Ligustrum plants are grown both in containers outdoors and in fields. There are no mother plants present in the nurseries and none of the nurseries expected to export to the EU produce plants from grafting (Dossier Sections 1.1 and 1.2).

The thrips can attack other suitable plants (such as *Acacia* spp., *Alium* spp., *Dahlia* spp., etc.) and hedges surrounding the nurseries (*Hedera* spp. and *Prunus* spp.).

There are greenhouses within the nurseries (Dossier Sections 1.1 and 1.2).

The thrips within the nurseries can spread by adult flight, wind or infested soil. Spread within the nurseries through equipment and tools is not relevant.

Uncertainties:

- Possibility of the thrips to survive the UK winter in outdoor conditions.
- Possibility that greenhouses are heated which allows the pest to overwinter.

Taking into consideration the above evidence and uncertainties, the Panel considers that the spread of the pest within the nurseries is possible either by wind, active flight or infested soil.

A.3.3 | Information from interceptions

In the EUROPHYT/TRACES-NT database, there are no records of notification of *Ligustrum*, *Ligustrum* sp., *L. ovalifoilum* or *L. vulgare* plants for planting neither from the UK nor from other countries due to the presence of *S. dorsalis* between the years 1995 and July 2023 (EUROPHYT, online; TRACES-NT, online).

A.3.4 | Evaluation of the risk mitigation measures

In the table below, all risk mitigation measures currently applied in the UK are listed and an indication of their effectiveness on *S. dorsalis* is provided. The description of the risk mitigation measures currently applied in the UK is provided in Table 6.

N	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Registration of production sites	Yes	As the plant passport is very similar to the EU one, plants shall be free from quarantine pests Uncertainties: – None
2	Physical separation	No	Not applied, there is no separation between production areas for the export and the local market
3	Certified plant material	Yes	Seeds are not a pathway for *S. dorsalis* As the plant passport is very similar to the EU one, seedlings shall be free from quarantine pests. Phytosanitary certificates should ensure that seedlings are free from quarantine pests Uncertainties: – None
4	Growing media	Yes	The measure is effective against the presence of the pest in the soil Uncertainties: – None
5	Surveillance, monitoring and sampling	Yes	Plant material is regularly monitored for plant health issues. They must meet the required national sanitary standards. Monitoring should be affective in finding infestation of *S. dorsalis* Uncertainties: – Difficulty of detecting low levels of infestation
6	Hygiene measures	Yes	Weeding can have some effect on the reduction of *S. dorsalis* populations. The other measures are not relevant Uncertainties: – None
7	Removal of infested plant material	Yes	Removing infested plant material can have some effect on the reduction of *S. dorsalis* populations Uncertainties: – None
8	Irrigation water	No	Not relevant, water is not a pathway of *S. dorsalis*
9	Application of pest control products	Yes	Plant protection products are only used when necessary and records of all plant protection treatments are kept. It may have an effect on the pest Uncertainties: – No information about the specific treatments – No information on the effect of treatments against the pest
10	Measures against soil pests	No	Not applicable
11	Inspections and management of plants before export	Yes	Exporting plants should meet phytosanitary certificate requirements. Inspection before export should be affective in finding infestation of *S. dorsalis*. However, a low level of infestation of the thrips could go undetected, especially if they are in the soil Inspection is performed between 1 day and 2 weeks before the export, but a reinfestation can occur during this period Uncertainties: – Capacity of detection of low levels of infestation – Exact duration of the period between inspection and export
12	Separation during transport to the destination	Yes	The pest could spread from infested plants to non-infested plants during transport to the destination Uncertainties: – None

A.3.5 | Overall likelihood of pest freedom for bare root plants

A.3.5.1 | Reasoning for a scenario which would lead to a reasonably low number of infested bare root plants

There is only one current outbreak of the pest in the UK. This outbreak might have been currently eradicated. The scenario assumes that it is very unlikely that the pest can survive outdoors. Therefore, it also assumes that the presence of the pest in the surroundings of the nurseries is very unlikely. Finally, the scenario assumes that the inspections, insecticide treatments, weeding could have an effect against the pest.

A.3.5.2 | Reasoning for a scenario which would lead to a reasonably high number of infested bare root plants

The scenario assumes that, although it is unlikely that the pest can survive or develop outdoors, polytunnels present in the nurseries could host some plants that could be hosts of the pest. The scenario also assumes that, although inspections are conducted very often, they will fail detection of the pest on the commodity, also because of the potential confusion with spider mites symptoms.

A.3.5.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infested bare root plants (Median)

Median is very shifted to the left side (lower infestation rate) because of the low likelihood of the presence of the pest in the surroundings. The commodity is produced outdoors and the pest is unlikely to develop out of the greenhouses.

A.3.5.4. | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/ interquartile range)

The low probability of establishment of the pest outdoors results in high level of uncertainties for infestation rates below the median. Otherwise, unlikely presence of the pest in the surroundings gives less uncertainties for rates above the median.

A.3.5.5. | Elicitation outcomes of the assessment of the pest freedom for *Scirtothrips dorsalis* on bare root plants

The following tables show the elicited and fitted values for pest infestation (Table A.7) and pest freedom (Table A.8).

TABLE A.7 Elicited and fitted values of the uncertainty distribution of pest infestation by *Scirtothrips dorsalis* per 10,000 consignments.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0.0					1.0		2.0		3.5					7.0
EKE	0.0535	0.120	0.221	0.414	0.665	0.981	1.31	2.04	2.92	3.47	4.15	4.89	5.70	6.35	7.02

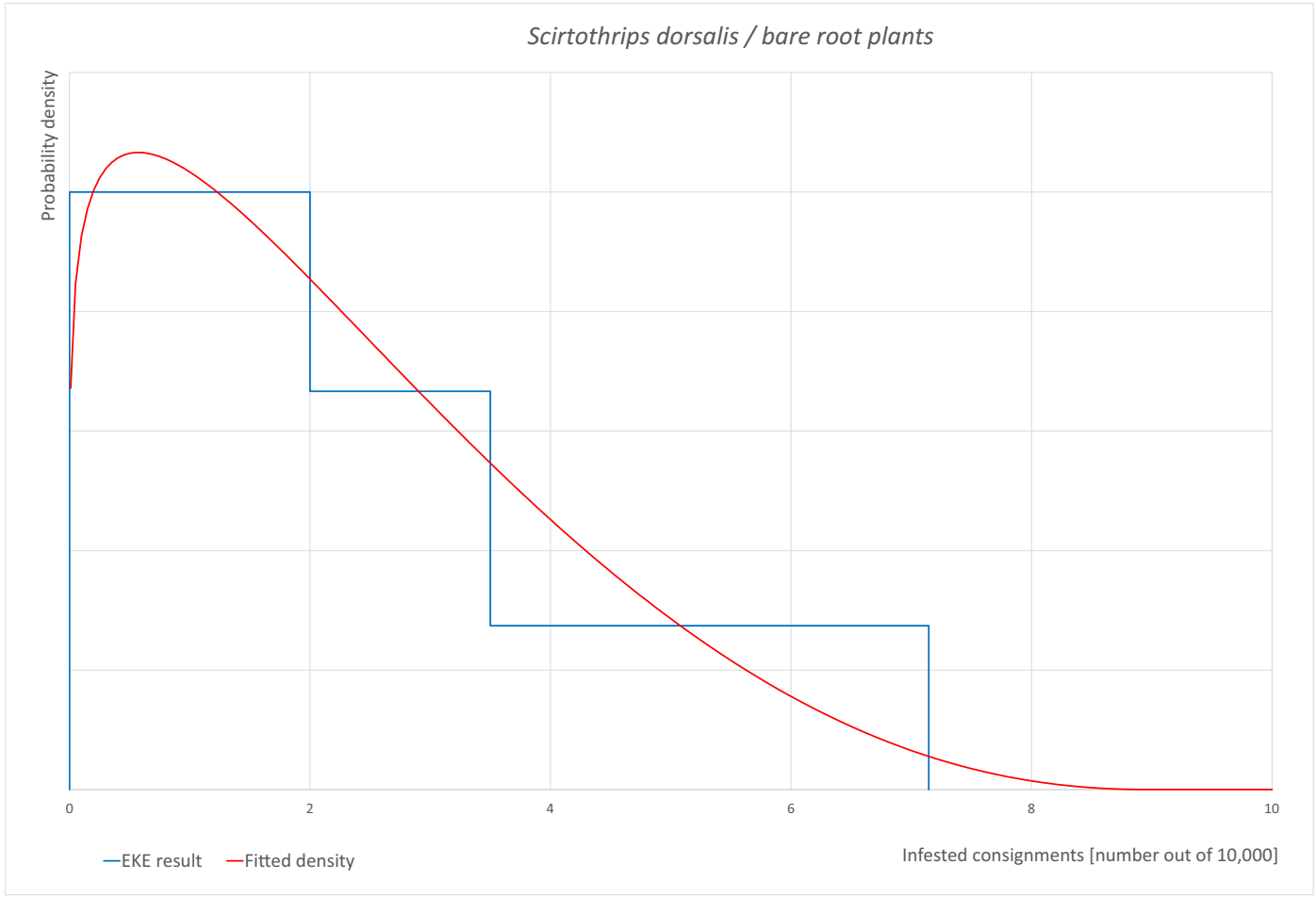
Note: The EKE results are the BetaGeneral (1.1493, 3.2004, 0, 9) distribution fitted with @Risk version 7.6.

Based on the numbers of estimated infested consignments the pest freedom was calculated (i.e. = 10,000 – number of infested consignments per 10,000). The fitted values of the uncertainty distribution of the pest freedom are shown in Table A.8.

TABLE A.8 The uncertainty distribution of consignments free of *Scirtothrips dorsalis* per 10,000 plants calculated by Table A.7.

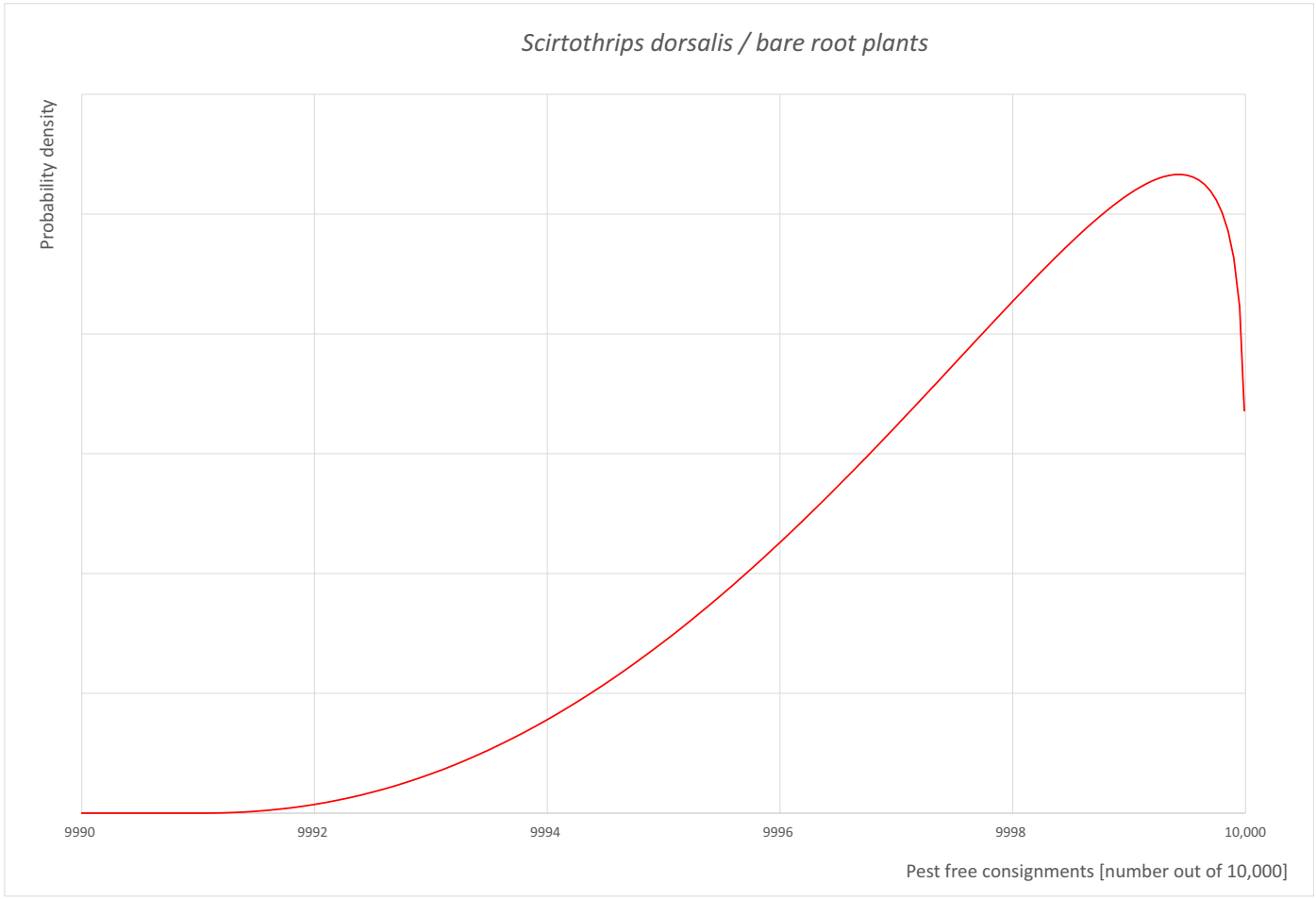
Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9993					9997		9998		9999					10,000
EKE results	9993	9994	9994	9995	9996	9997	9997	9998.0	9998.7	9999.0	9999.3	9999.6	9999.78	9999.88	9999.95

Note: The EKE results are the fitted values.



(A)

FIGURE A.4 (Continued)



(B)

FIGURE A.4 (Continued)

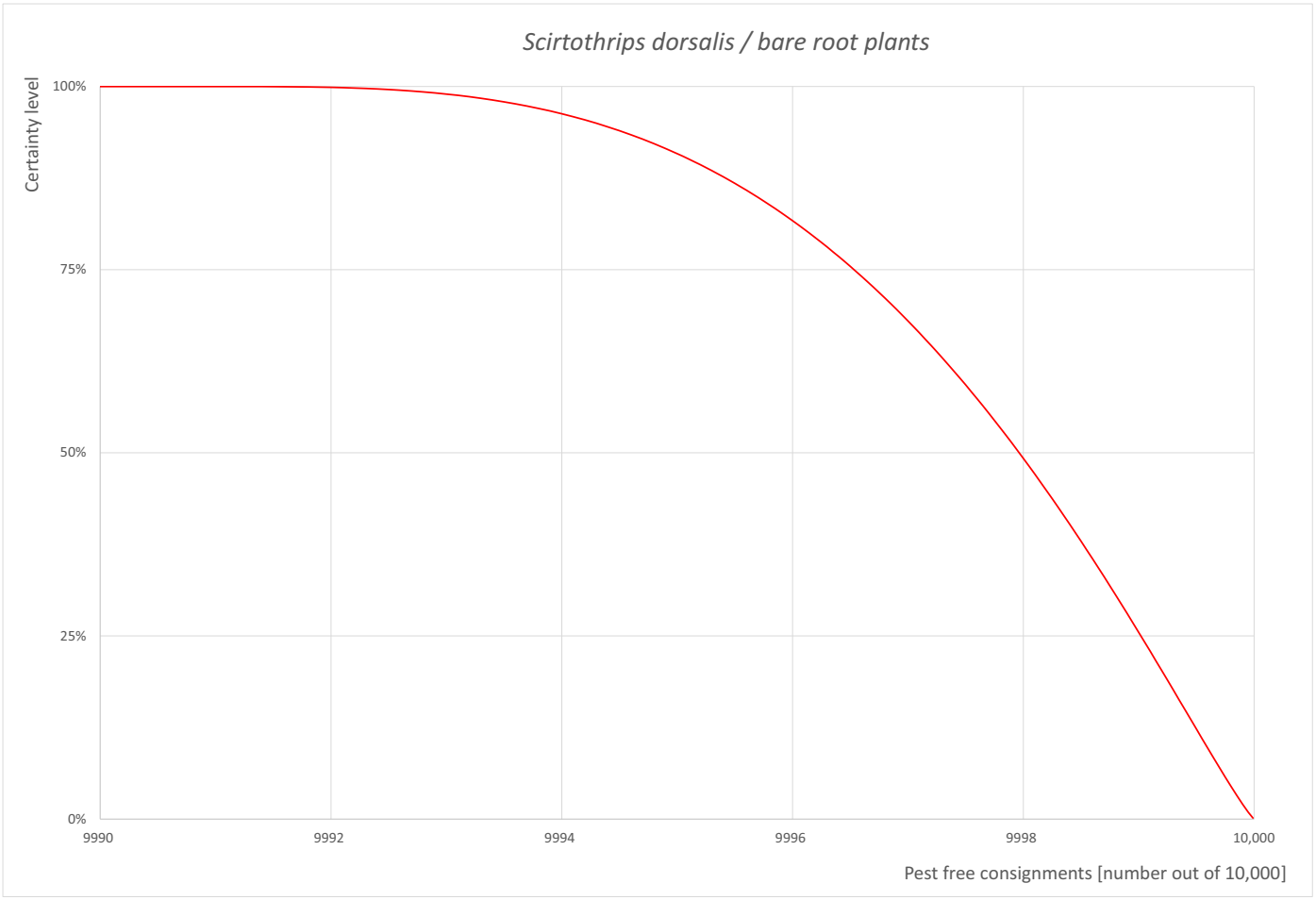


FIGURE A.4 (A) Elicited uncertainty of pest infestation per 10,000 consignments (histogram in blue–vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (B) uncertainty of the proportion of pest free consignments per 10,000 (i.e. = 1 – pest infestation proportion expressed as percentage); (C) descending uncertainty distribution function of pest infestation per 10,000 consignments.

A.3.6 | Overall likelihood of pest freedom for plants in pots

A.3.6.1 | Reasoning for a scenario which would lead to a reasonably low number of infested plants in pots

There is only one current outbreak of the pest in the UK. This outbreak might have been currently eradicated. The scenario assumes that it is very unlikely that the pest can survive outdoors. Therefore, it also assumes that the presence of the pest in the surroundings of the nurseries is very unlikely. Finally, the scenario assumes that the inspections, insecticide treatments, weeding could have an effect against the pest.

A.3.6.2 | Reasoning for a scenario which would lead to a reasonably high number of infested plants in pots

The scenario assumes that, although it is unlikely that the pest can survive or develop outdoors, polytunnels present in the nurseries could host some plants that could be hosts of the pest. The scenario also assumes that, although inspections are conducted very often, they will fail detection of the pest on the commodity, also because the potential confusion with spider mites symptoms and the presence of adults and pupae in the growing medium.

A.3.6.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infested plants in pots (Median)

Median is very shifted to the left side (lower infestation rate) because of the low likelihood of the presence of the pest in the surroundings. The commodity is produced outdoors and the pest is unlikely to develop out of the greenhouses.

A.3.6.4 | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/ interquartile range)

The low probability of establishment of the pest outdoors results in high level of uncertainties for infestation rates below the median. Otherwise, unlikely presence of the pest in the surroundings gives less uncertainties for rates above the median.

A.3.6.5 | Elicitation outcomes of the assessment of the pest freedom for *Scirtothrips dorsalis* on plants in pots

The following tables show the elicited and fitted values for pest infestation (Table A.9) and pest freedom (Table A.10).

TABLE A.9 Elicited and fitted values of the uncertainty distribution of pest infestation by *Scirtothrips dorsalis* per 10,000 consignments.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0.0					1.5		3.0		6.0					10.0
EKE	0.0285	0.0846	0.193	0.443	0.823	1.35	1.93	3.27	4.87	5.81	6.89	7.94	8.92	9.55	10.1

Note: The EKE results are the BetaGeneral (0.84254, 1.5561, 0, 10.7) distribution fitted with @Risk version 7.6.

Based on the numbers of estimated infested consignments, the pest freedom was calculated (i.e. = 10,000 – number of infested consignments per 10,000). The fitted values of the uncertainty distribution of the pest freedom are shown in Table A.10.

TABLE A.10 The uncertainty distribution of consignments free of *Scirtothrips dorsalis* per 10,000 consignments calculated by Table A.9.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9990					9994		9997		9999					10,000
EKE results	9990	9990	9991	9992	9993	9994	9995	9997	9998.1	9998.7	9999.2	9999.6	9999.8	9999.92	9999.97

Note: The EKE results are the fitted values.

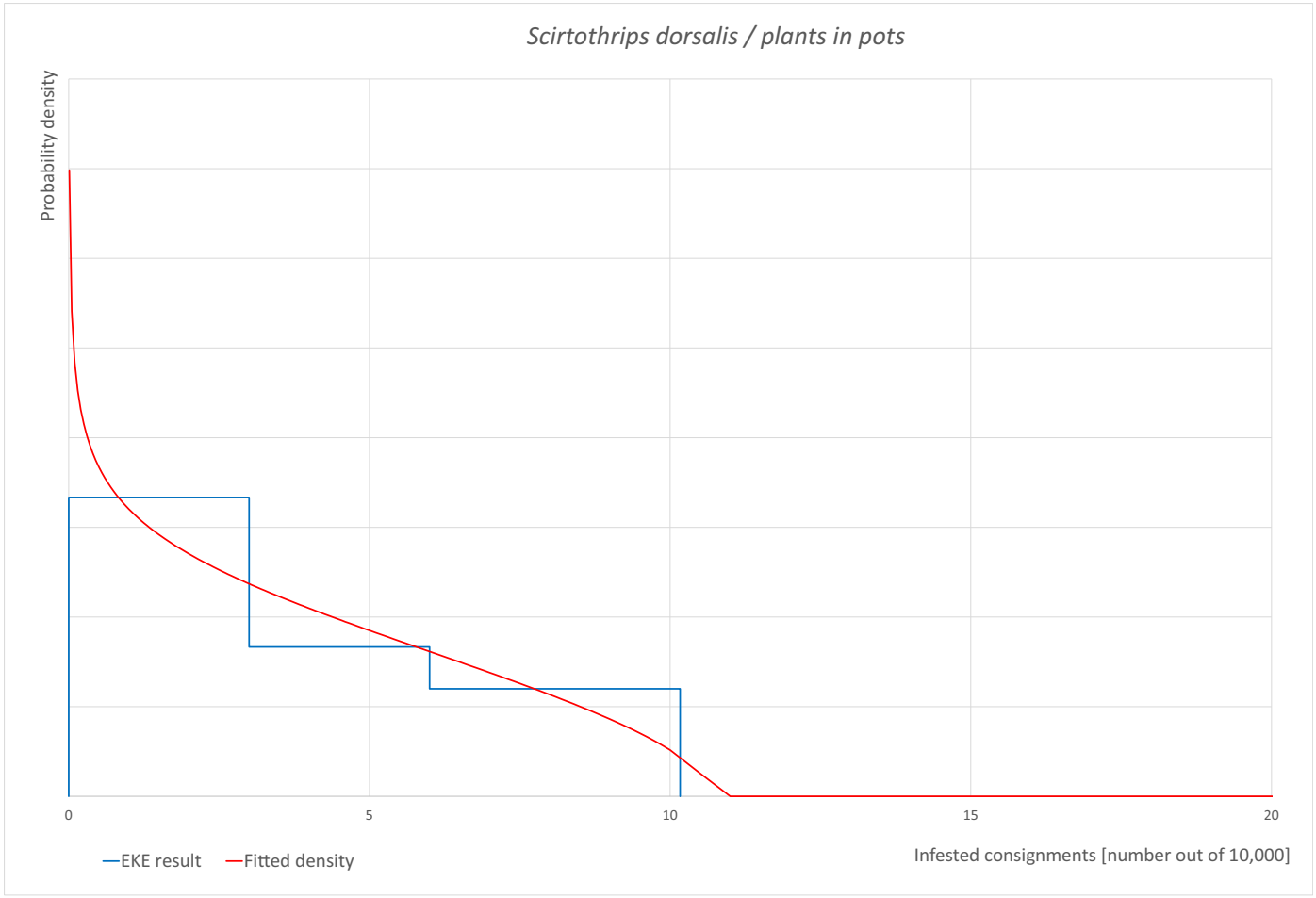


FIGURE A.5 (Continued)

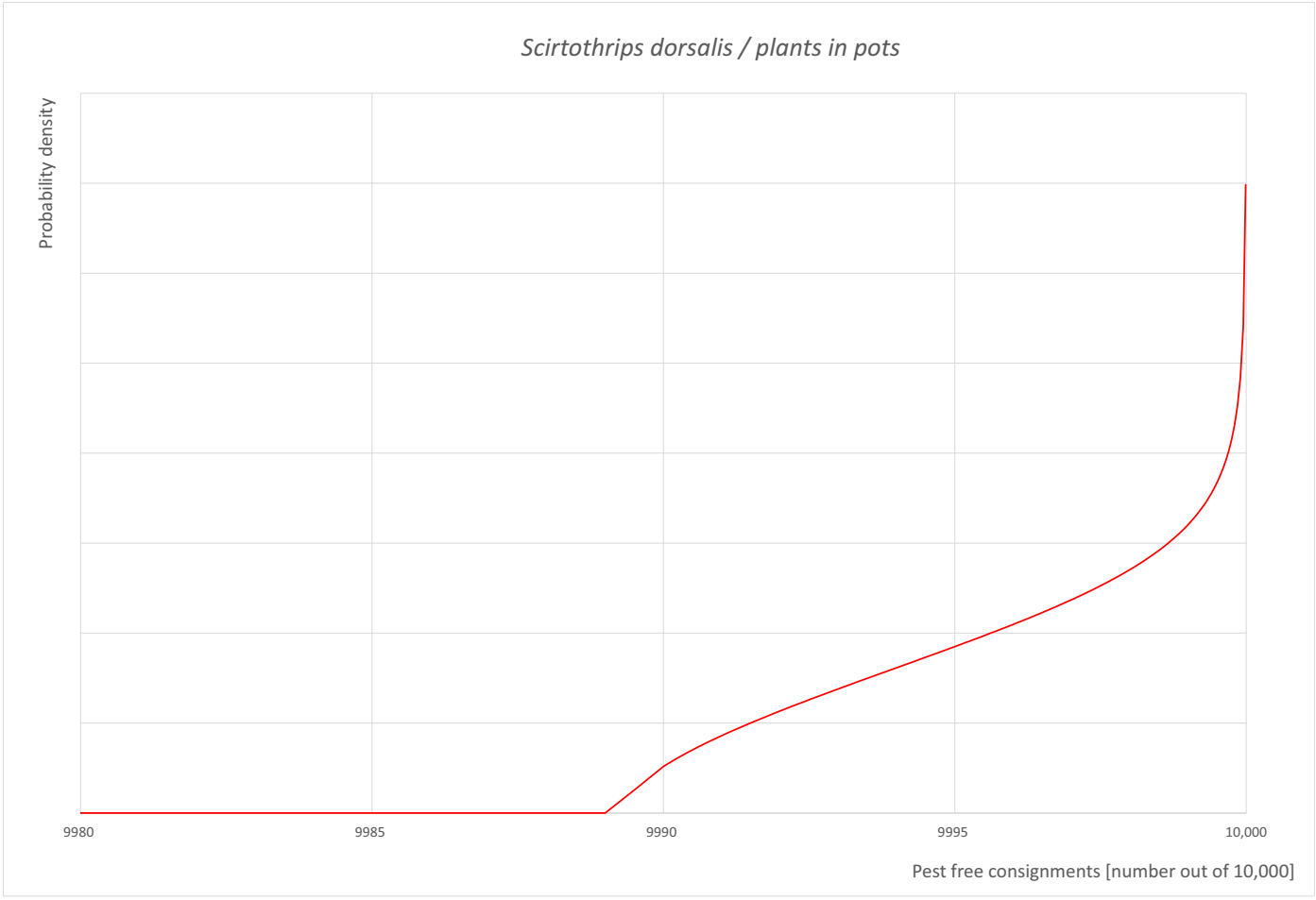


FIGURE A.5 (Continued)

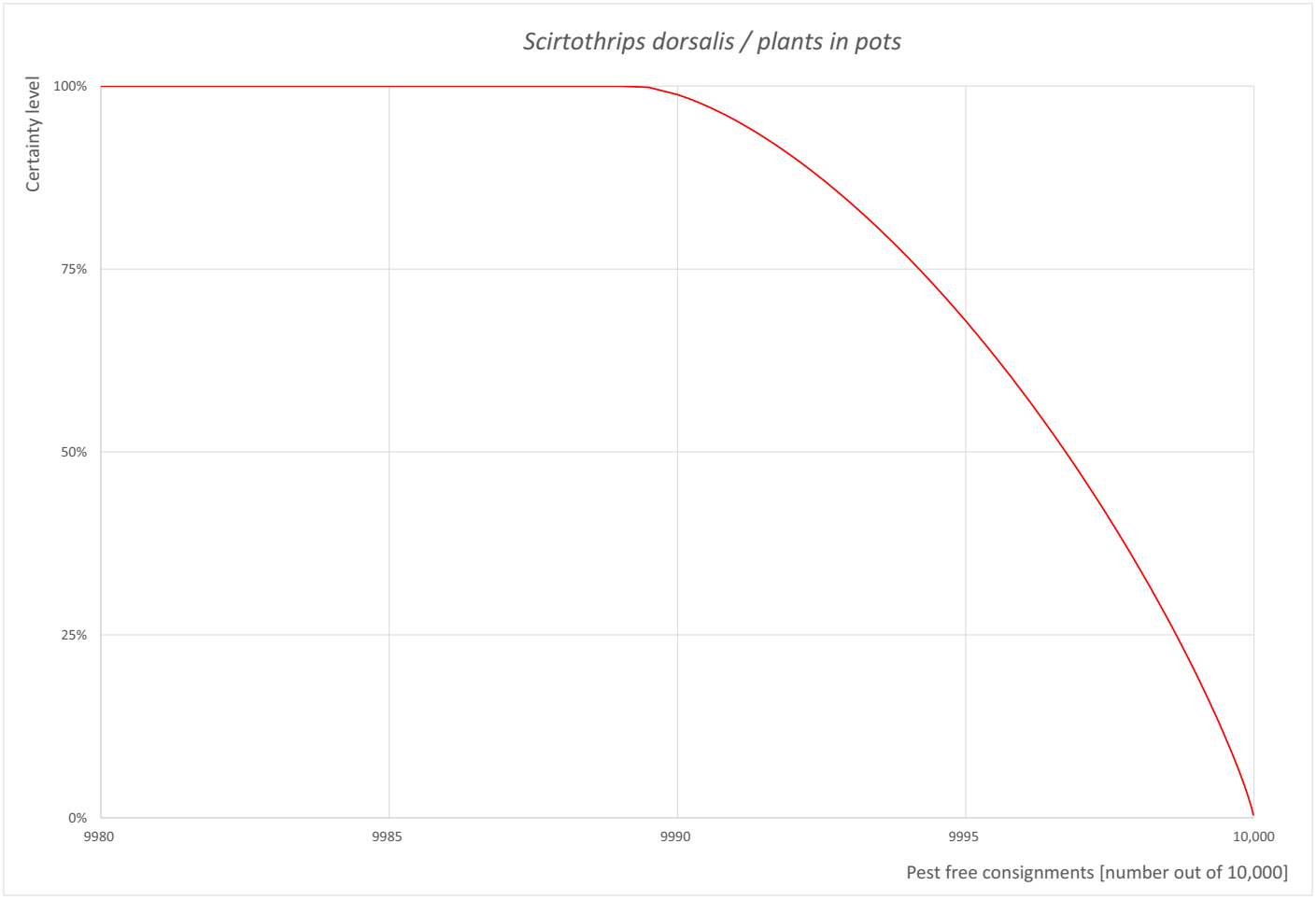


FIGURE A.5 (A) Elicited uncertainty of pest infestation per 10,000 consignments (histogram in blue–vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (B) uncertainty of the proportion of pest free consignments per 10,000 (i.e. = 1 – pest infestation proportion expressed as percentage); (C) descending uncertainty distribution function of pest infestation per 10,000 consignments.

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APPENDIX B

Web of science all databases search string

In Tables B.1, B.2, the search string for *Ligustrum ovalifolium* and *L. vulgare* used in Web of Science is reported. Totally, 71 + 185 papers were retrieved. Titles and abstracts were screened, and 34 pests were added to the list of pests (see Appendix F).

TABLE B.1 String for *Ligustrum ovalifolium*.

Web of Science All databases	**TOPIC:** "Ligustrum ovalifolium" OR "Ligustrum ciliatum var. heterophyllum" OR "Ligustrum foliosum f. ovale" OR "Ligustrum japonicum var. ovalifolium" OR "broad-leaved privet" OR "California privet" OR "garden privet" OR "oval-leaf privet" **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$" OR virosis OR viroses OR blight$ 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 mold OR "damping syndrome$" OR mildew OR scald$ OR "root knot" OR "root-knot" OR rootknot OR cyst$ OR "dagger" OR "plant parasitic" OR "parasitic plant" OR "plant$parasitic" OR "root feeding" OR "root$feeding" **NOT** **TOPIC:** "winged seeds" OR metabolites OR *tannins OR climate OR "maple syrup" OR syrup OR mycorrhiz* OR "carbon loss" OR pollut* OR weather OR propert* OR probes OR spectr* OR antioxidant$ OR transformation OR RNA OR DNA OR "Secondary plant metabolite$" OR metabol* OR "Phenolic compounds" OR Quality OR Abiotic OR Storage OR Pollen* OR fertil* OR Mulching OR Nutrient* OR Pruning OR drought OR "human virus" OR "animal disease*" OR "plant extracts" OR immunological OR "purified fraction" OR "traditional medicine" OR medicine OR mammal* OR bird* OR "human disease*" OR biomarker$ OR "health education" OR bat$ OR "seedling$ survival" OR "anthropogenic disturbance" OR "cold resistance" OR "salt stress" OR salinity OR "aCER method" OR "adaptive cognitive emotion regulation" OR nitrogen OR hygien* OR "cognitive function$" OR fossil$ OR *toxicity OR Miocene OR postglacial OR "weed control" OR landscape

TABLE B.2 String for *Ligustrum vulgare*.

Web of Science All databases	**TOPIC:** "Ligustrum vulgare" OR"Ligustrum album" OR "Ligustrum angustifolium" OR "Ligustrum decipiens" OR "Ligustrum insulare" OR "Ligustrum insulense" OR "Ligustrum italicum" OR "Ligustrum lodense" OR "Ligustrum oviforme" OR "Ligustrum sempervirens" OR "Ligustrum vicinum" OR "Olea humilis" OR "common privet" OR "wild privet" **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$" OR virosis OR viroses OR blight$ 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 rootknot OR cyst$ OR "dagger" OR "plant parasitic" OR "parasitic plant" OR "plant$parasitic" OR "root feeding" OR "root$feeding" **NOT** **TOPIC:** "winged seeds" OR metabolites OR *tannins OR climate OR "maple syrup" OR syrup OR mycorrhiz* OR "carbon loss" OR pollut* OR weather OR propert* OR probes OR spectr* OR antioxidant$ OR transformation OR RNA OR DNA OR "Secondary plant metabolite$" OR metabol* OR "Phenolic compounds" OR Quality OR Abiotic OR Storage OR Pollen* OR fertil* OR Mulching OR Nutrient* OR Pruning OR drought OR "human virus" OR "animal disease*" OR "plant extracts" OR immunological OR "purified fraction" OR "traditional medicine" OR medicine OR mammal* OR bird* OR "human disease*" OR biomarker$ OR "health education" OR bat$ OR "seedling$ survival" OR "anthropogenic disturbance" OR "cold resistance" OR "salt stress" OR salinity OR "aCER method" OR "adaptive cognitive emotion regulation" OR nitrogen OR hygien* OR "cognitive function$" OR fossil$ OR *toxicity OR Miocene OR postglacial OR "weed control" OR landscape

APPENDIX C

Plant taxa reported to be present in the nurseries of *Ligustrum ovalifolium* and *L. vulgare*

TABLE C.1 Plant taxa reported in the Dossier Sections 3.0 to be present in the nurseries of *Ligustrum ovalifolium* and *L. vulgare*.

Number	Plant taxa	Number	Plant taxa
1	*Abelia*	205	*Juniperus communis*
2	*Abies alba*	206	*Knautia*
3	*Abies concolor*	207	*Kniphofia*
4	*Abies fraseri*	208	*Laburnum*
5	*Abies grandis*	209	*Laburnum anagyroides*
6	*Abies koreana*	210	*Lamium*
7	*Abies nobilis*	211	*Larix*
8	*Abies nordmanniana*	212	*Larix decidua*
9	*Abies procera*	213	*Larix kaempferi*
10	*Acacia*	214	*Larix × decidua*
11	*Acanthus*	215	*Larix × eurolepsis*
12	*Acer*	216	*Lavandula*
13	*Acer campestre*	217	*Lavatera*
14	*Acer capillipes*	218	*Leucanthemum*
15	*Acer davidii*	219	*Leucothoe*
16	*Acer griseum*	220	*Leycesteria*
17	*Acer macrocarpa*	221	*Leymus*
18	*Acer palmatum*	222	*Liatris*
19	*Acer palmatum* 'Atropurpureum'	223	*Ligularia*
20	*Acer pensylvanicum*	224	*Ligustrum*
21	*Acer platanoides*	225	*Ligustrum ovalifolium*
22	*Acer pseudoplatanus*	226	*Ligustrum ovalifolium* 'Aureum'
23	*Achillea*	227	*Ligustrum vulgare*
24	*Acorus*	228	*Liquidambar*
25	*Actaea*	229	*Liquidambar styraciflua*
26	*Agapanthus*	230	*Liriodendron tulipifera*
27	*Agastache*	231	*Liriope*
28	*Ajuga*	232	*Lithodora*
29	*Akebia*	233	*Lobelia*
30	*Alchemilla*	234	*Lonicera*
31	*Allium*	235	*Lonicera nitida*
32	*Alnus*	236	*Lonicera periclymenum*
33	*Alnus cordata*	237	*Lupinus*
34	*Alnus glutinosa*	238	*Luzula*
35	*Alnus incana*	239	*Lysimachia*
36	*Alnus rubra*	240	*Magnolia*
37	*Alstroemeria*	241	*Magnolia kobus*
38	*Amelanchier*	242	*Mahonia*
39	*Amelanchier canadensis*	243	*Malus*
40	*Ammonophylla*	244	*Malus sylvestris*
41	*Anemanthele*	245	*Matteuccia*
42	*Anemone*	246	*Meconopsis*
43	*Aquilegia*	247	*Metasequoia glyptostroboides*
44	*Araucaria araucana*	248	*Miscanthus*

(Continues)

(Continued)

Number	Plant taxa	Number	Plant taxa
45	*Arbutus*	249	*Molinia*
46	*Arbutus unedo*	250	*Monarda*
47	*Armeria*	251	*Myrtus*
48	*Artemisia*	252	*Nandina*
49	*Arum*	253	*Nemesia*
50	*Aruncus*	254	*Nepeta*
51	*Asplenium*	255	*Nothofagus*
52	*Astelia*	256	*Nyssa sylvatica*
53	*Aster*	257	*Olearia*
54	*Astilbe*	258	*Ophiopogon*
55	*Astrantia*	259	*Osmanthus*
56	*Athyrium*	260	*Osmunda*
57	*Aucuba*	261	*Pachysandra*
58	*Baptisia*	262	*Pachystegia*
59	*Berberis*	263	*Paeonia*
60	*Berberis darwinii*	264	*Panicum*
61	*Berberis thunbergii*	265	*Pennisetum*
62	*Berberis thunbergii* f. *atropurpurea*	266	*Penstemon*
63	*Bergenia*	267	*Perovskia*
64	*Betula*	268	*Persicaria*
65	*Betula pendula*	269	*Philadelphus*
66	*Betula pubescens*	270	*Phlomis*
67	*Betula utilis* var. *jacquemontii*	271	*Phlox*
68	*Blechnum*	272	*Phormium*
69	*Brachyglottis*	273	*Photinia*
70	*Brunnera*	274	*Photinia* x *fraseri* 'Red Robin'
71	*Buddleja*	275	*Phygelius*
72	*Buxus*	276	*Physocarpus*
73	*Buxus sempervirens*	277	*Physostegia*
74	*Calamagrostis*	278	*Picea abies*
75	*Calluna*	279	*Picea omorika*
76	*Campanula*	280	*Picea orientalis*
77	*Carex*	281	*Picea ormorika*
78	*Carpinus*	282	*Picea pungens glauca*
79	*Carpinus betulus*	283	*Picea sitchensis*
80	*Caryopteris*	284	*Pinus*
81	*Castanea*	285	*Pinus nigra* var. *austriaca*
82	*Castanea sativa*	286	*Pinus peuce*
83	*Ceanothus*	287	*Pinus pinaster*
84	*Cedrus atlantica*	288	*Pinus pungens glauca*
85	*Cedrus deodara*	289	*Pinus radiata*
86	*Centaurea*	290	*Pinus sylvestris*
87	*Centranthus*	291	*Pittosporum*
88	*Ceratostigma*	292	*Platanus*
89	*Cercidiphyllum japonicum*	293	*Polemonium*
90	*Cercis canadensis*	294	*Polygonatum*
91	*Chaenomeles*	295	*Polypodium*
92	*Chamaecyparis*	296	*Polystichum*
93	*Chamaecyparis lawsoniana*	297	*Populus*
94	*Choisya*	298	*Populus nigra*

(Continued)

Number	Plant taxa	Number	Plant taxa
95	*Cistus*	299	*Populus tremula*
96	*Clematis*	300	*Potentilla*
97	*Convolvulus*	301	*Primula*
98	*Coprosma*	302	*Prunus*
99	*Coreopsis*	303	*Prunus avium*
100	*Cornus*	304	*Prunus cera*
101	*Cornus kousa* var. *chinensis*	305	*Prunus cerasifera*
102	*Cornus sanguinea*	306	*Prunus laurocerasus* 'Rotund'
103	*Cortaderia*	307	*Prunus laurocerasus*
104	*Corydalis*	308	*Prunus lusitanica*
105	*Corylus*	309	*Prunus padus*
106	*Corylus avellana*	310	*Prunus spinosa*
107	*Cosmos*	311	*Pseudotsuga menziesii*
108	*Cotinus*	312	*Pulmonaria*
109	*Cotoneaster*	313	*Pyracantha*
110	*Cotoneaster bullatus*	314	*Pyrus*
111	*Cotoneaster franchettii*	315	*Pyrus communis*
112	*Cotoneaster horizontalis*	316	*Quercus*
113	*Cotoneaster lacteus*	317	*Quercus ilex*
114	*Cotoneaster simonsii*	318	*Quercus palustris*
115	*Crataegus*	319	*Quercus petraea*
116	*Crataegus monogyna*	320	*Quercus robur*
117	*Crocosmia*	321	*Quercus rubra*
118	*Cryptomeria japonica*	322	*Rhamnus*
119	*Cupressocyparis*	323	*Rhamnus cathartica*
120	*Cupressocyparis leylandii*	324	*Rhamnus frangula*
121	*Cupressus*	325	*Rhus*
122	*Cupressus macrocarpa*	326	*Ribes*
123	*Cynoglossum*	327	*Robinia*
124	*Cytisus*	328	*Robinia pseudoacacia*
125	*Dahlia*	329	*Rosa*
126	*Daphne*	330	*Rosa arvensis*
127	*Davidia involucrata*	331	*Rosa canina*
128	*Delosperma*	332	*Rosa rubiginosa*
129	*Delphinium*	333	*Rosa rugosa*
130	*Deschampsia*	334	*Rosa rugosa* 'Alba'
131	*Deutzia*	335	*Rosa rugosa rubra*
132	*Dicentra*	336	*Rosa spinosissima*
133	*Diervilla*	337	*Rosmarinus*
134	*Digitalis*	338	*Rudbeckia*
135	*Doronicum*	339	*Salix*
136	*Dryopteris*	340	*Salix aurita*
137	*Echinacea*	341	*Salix caprea*
138	*Echinops*	342	*Salix cinerea*
139	*Elaeagnus*	343	*Salix pentandra*
140	*Epimedium*	344	*Salix viminalis*
141	*Eremurus*	345	*Salvia*
142	*Erigeron*	346	*Sambucus*
143	*Eriophorum*	347	*Sambucus nigra*
144	*Eriostemon*	348	*Sanguisorba*

(Continues)

(Continued)

Number	Plant taxa	Number	Plant taxa
145	*Eryngium*	349	*Santolina*
146	*Erysimum*	350	*Sarcococca confusa*
147	*Escallonia*	351	*Scabiosa*
148	*Eucalyptus*	352	*Schizostylis*
149	*Eucalyptus glaucescens*	353	*Sedum*
150	*Eucalyptus gunnii*	354	*Senecio*
151	*Euonymous*	355	*Sequoia sempervirens*
152	*Euonymus*	356	*Sequoiadendron giganteum*
153	*Euonymus europaeus*	357	*Sesleria*
154	*Euonymus japonicus* 'Bravo'	358	*Sorbaria*
155	*Euphorbia*	359	*Sorbus*
156	*Exochorda*	360	*Sorbus aria*
157	*Fagus*	361	*Sorbus aucuparia*
158	*Fagus sylvatica*	362	*Sorbus intermedia*
159	*Fagus sylvatica* 'Atropurpurea'	363	*Sorbus torminalis*
160	*Fargesia*	364	*Spiraea*
161	*Fatsia*	365	*Stachys*
162	*Festuca*	366	*Stachyurus*
163	*Filipendula*	367	*Stewartia pseudocamellia*
164	*Foeniculum*	368	*Stipa*
165	*Forsythia*	369	*Symphiocarpus*
166	*Fuchsia*	370	*Symphoricarpos*
167	*Galium*	371	*Symphytum*
168	*Garrya*	372	*Syringa*
169	*Gaultheria procumbens*	373	*Taxodium distichum*
170	*Gaultheria shallon*	374	*Taxus*
171	*Gaura*	375	*Taxus baccata*
172	*Genista*	376	*Tellima*
173	*Geranium*	377	*Thalictrum*
174	*Geum*	378	*Thuja*
175	*Ginkgo biloba*	379	*Thuja plicata*
176	*Griselinia*	380	*Thymus*
177	*Hakonechloa*	381	*Tiarella*
178	*Halesia carolina*	382	*Tilia*
179	*Halimium*	383	*Tilia cordata*
180	*Hebe*	384	*Tilia platanoides*
181	*Hedera*	385	*Tilia platyphyllos*
182	*Helenium*	386	*Trachelospermum*
183	*Helichrysum*	387	*Trachycarpus fortunei*
184	*Helleborus*	388	*Tradescantia*
185	*Hemerocallis*	389	*Tricyrtis*
186	*Heuchera*	390	*Trollius*
187	*Heucherella*	391	*Tsuga heterophylla*
188	*Hippophae*	392	*Ulex*
189	*Hippophae rhamnoides*	393	*Ulex europaeus*
190	*Hosta*	394	*Ulmus*
191	*Houttuynia*	395	*Ulmus glabra*
192	*Hydrangea*	396	*Uncinia*
193	*Hypericum*	397	*Verbena*
194	*Iberis*	398	*Veronica*

(Continued)

Number	Plant taxa	Number	Plant taxa
195	*Ilex*	399	*Viburnum*
196	*Ilex aquifolium*	400	*Viburnum lantana*
197	*Ilex crenata*	401	*Viburnum opulus*
198	*Ilex* × *altaclerensis* 'Golden King'	402	*Vinca*
199	*Imperata*	403	*Weigela*
200	*Iris*	404	*Wisteria sinensis*
201	*Jasminum*	405	× *Cupressocyparis leylandii*
202	*Juglans nigra*	406	*Yucca*
203	*Juglans regia*	407	*Yucca filamentosa*
204	*Juniperus*		

APPENDIX D

Water used for irrigation

All mains water used meets the UK standard Water Supply (Water quality) regulation 2016 and the WHO/EU potable water standards Drinking water Directive (98/83/EC and the revised Drinking Water Directive 2020/2184) which includes a total freedom from both human and plant pathogens (Article 2-(7)). All mains water conducting pipework fully complies with the UK Water Supply (Water Fittings) regulations of 1999 and the amendments of 2019. Irrigation water used is not stored in any open tanks where airborne contamination could take place and is entirely isolated from any outside exposure (Dossier Sections 1.1 and 1.2).

Bore hole water supply: In some cases, where the underlying geology permits, nurseries can draw water directly from bore holes drilled into underground aquafers. The water that fills these aquafers is naturally filtered through the layers of rock (e.g. limestone) over long periods of time, many millennia in some cases. The water from such supplies is generally of such high quality that it is fit for human consumption with little to no further processing and is often bottled and sold as mineral water (Dossier Sections 1.1 and 1.2).

Rainwater or freshwater watercourse supply: Some nurseries contributing to this application for both environmental and efficiency reasons use a combination of rain capture systems or abstract directly from available watercourses. All water is passed through a sand filtration system to remove contaminants and is contained in storage tanks prior to use. One nursery that operates this approach is currently in the process of installing additional nanobubble technology to treat the water (Dossier Sections 1.1 and 1.2).

APPENDIX E

List of pests that can potentially cause an effect not further assessed

TABLE E.1 List of potential pests not further assessed.

N	Pest name	EPPO code	Group	Pest present in the UK	Present in the EU	*Ligustrum* confirmed as a host (reference)	Pest can be associated with the commodity	Impact	Justification for inclusion in this list
1	*Cytospora pruinosa* var. *ligustri*	–	Fungi	Yes	Restricted (only single report from Austria in 1910)	*Ligustrum vulgare* (Shaw et al., 2018)	Yes	No data	Doubtful taxonomic identity[1] and uncertainty about impact
2	*Phomopsis brachyceras*	–	Fungi	Yes	Restricted (Belgium, Denmark, Romania)	*Ligustrum vulgare* (Shaw et al., 2018)	Yes	No data	Uncertainty about impact

[1]The taxonomic identity of the variety is already doubted in Grove (1923): 'Strasser places this variety under '*Dendrophoma pruinosa*', which is what Tulasne states to be the spermogone of his *Valsa cypri* on *Ligustrum*. *Valsa cypri* also occurs on *Fraxinus*, but the British specimens on *Ligustrum* may not belong to that species'. No further information is available to assess this taxonomic issue. The 1923 text does not include a bibliography to help trace back these assessments, probably refers to Tulasne and Tulasne (1863) and the Strasser's (1910) description of the variety.

In the previous Scientific Opinion on commodity risk assessment of *Ligustrum delavayanum* topiary plants grafted on *Ligustrum japonicum* from the UK (EFSA PLH Panel, 2022), three more species were listed (*Caeoma ligustri*, *Leucostoma auerswaldi* f. *ligustrina* and *Tubercularia ligustri*). The Panel decided to discard them from this list of this opinion based on the answers provided by the applicant that the three species are absent from the UK.

APPENDIX F

Excel file with the pest list of *Ligustrum*

Appendix F is available under the Supporting Information section on the online version of the scientific output.