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SCIENTIFIC OPINION

Commodity risk assessment of *Tilia cordata* and *Tilia platyphyllos* 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 *Tilia cordata* and *T. platyphyllos* imported from the United Kingdom (UK) as: (a) bundles of bud-wood/graftwood; (b) 1- to 2-year-old whips, seedlings or transplants; (c) bundles of 1- to 2-year-old cell grown plants; (d) 1- to 7-year-old bare root single plants; and (e) up to 25-year-old single plants in pots, taking into account the available scientific information provided by the UK. A list of pests potentially associated with the commodities was compiled. The relevance of any pest was assessed based on evidence following defined criteria. None of the pests on the list fulfilled all relevant criteria and therefore none were selected for further evaluation. As a result, risk mitigation measures proposed in the technical dossier from the UK were listed, but not further evaluated.

KEYWORDS

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

CONTENTS

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 asked EFSA to provide scientific opinion in the field of plant health for *Tilia cordata* and *T. platyphyllos* 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 *Tilia cordata* and *T. platyphyllos* 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 Protocol on Ireland/Northern Ireland in conjunction with Annex 2 to that Protocol, 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 provided 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, whenever applicable, 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 in June 2023 including the additional information provided by DEFRA of the UK in February 2024, after EFSA's request. The Dossier is managed by EFSA.

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

TABLE 1 Structure and overview of the dossier.

Dossier section	Overview of contents	Filename
1.1	Technical dossier for *Tilia cordata*	Tilia cordata commodity information final
1.2	Technical dossier for *Tilia platyphyllos*	Tilia platyphyllos commodity information final
2.0	Pest list	Copy of Tillia_pest_list_final
3.1	Producers sample product list	Tilia_producers_sample_product_list
3.2	Producers sample product list for up to 25-year-old plants	Nursery for up to 25 yr old trees plant list (2)

[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 (Continued)

Dossier section	Overview of contents	Filename
4.1	Distribution of *Tilia cordata* plants	Tilia_cordata (1)
4.2	Distribution of *Tilia platyphyllos* plants	Tilia_platyphyllos (1)
5.0	Additional information: answers	Tilias additional information 19 Dec 2023

Note: 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, 3.1, 3.2, 4.1, 4.2 and 5.0).

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

Database	Platform/link
3I Interactive Keys and Taxonomic Databases	https://dmitriev.speciesfile.org/index.asp
AHDB	https://ahdb.org.uk/
Aphids on the world's plants	https://www.aphidsonworldsplants.info/
Aphis Species File	https://aphid.archive.speciesfile.org/HomePage/Aphid/HomePage.aspx
British bugs	https://www.britishbugs.org.uk/index.html
British leafminers	https://www.leafmines.co.uk/
CABI CPC	https://www.cabi.org/cpc/
CABI Plantwise Plus	https://plantwiseplusknowledgebank.org/
Catalogue of Life	https://www.catalogueoflife.org/
Checklist of Diptera of the British Isles	https://dipterists.org.uk/checklist
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=3377&epi=155
EPPO Global Database	https://gd.eppo.int/
EU–NOMEN	https://www.eu-nomen.eu/portal/index.php
FLOW	https://flow.hemiptera-databases.org/flow/?db=flow&page=project&lang=en
GBIF	https://www.gbif.org/
Hantsmoths	https://www.hantsmoths.org.uk/
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
InfluentialPoints.com	https://influentialpoints.com/Sitemap.htm
Insects (Insecta) of the World	https://insecta.pro/
Key Search	https://keys.lucidcentral.org/search/
Lepidoptera and some other life forms	https://ftp.funet.fi/pub/sci/bio/life/intro.html
Lepidoptera and their ecology	https://www.pyrgus.de/index_en.php
Lepiforum e.V.	https://lepiforum.org/
MYCOBANK Database	https://www.mycobank.org/
NBN atlas	https://nbnatlas.org/
Norfolk Moths	https://www.norfolkmoths.co.uk/
On-line Systematic Catalog of Plant Bugs (Insecta: Heteroptera: Miridae)	https://research.amnh.org/pbi/catalog/index.php
Plant Parasites of Europe	https://bladmineerders.nl/
Scalenet	https://scalenet.info/catalogue/
Spider Mites Web	https://www1.montpellier.inra.fr/CBGP/spmweb/
The leaf and stem mines of British flies and other insects	https://www.ukflymines.co.uk/
The sawflies (Symphyta) of Britain and Ireland	https://www.sawflies.org.uk/
UK Beetle Recording	https://www.coleoptera.org.uk/home
UK moths	https://ukmoths.org.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 *Tilia cordata* and *T. platyphyllos*. The hybrid of the two species, i.e. *T.* × *europaea*, was included in the search in order to ensure completeness of the pests potentially associated with the commodities. The following searches were combined: (i) a general search to identify pests reported on *T. cordata*, *T. platyphyllos* and *T.* × *europaea* in the databases, (ii) a search to identify any EU quarantine pest reported on *Tilia* as genus and subsequently (iii) a tailored search to identify whether the above pests are present or not in the UK. The searches were run between November and December 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 *T. cordata* and *T. platyphyllos*. As for Web of Science, the literature search was performed using a specific, ad hoc established search string (see Appendix A). 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 *Tilia cordata* and *Tilia platyphyllos*.

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://fungi.ars.usda.gov/
Web of Science: All Databases (Web of Science Core Collection, CABI: CAB Abstracts, BIOSIS Citation Index, Chinese Science Citation Database, Current Contents Connect, Data Citation Index, FSTA, KCI-Korean Journal Database, Russian Science Citation Index, MEDLINE, SciELO Citation Index, Zoological Record)	https://www.webofknowledge.com
World Agroforestry	https://www.worldagroforestry.org/treedb2/speciesprofile.php?Spid=1749

Note: 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 and the relevant literature and legislation [e.g. Regulation (EU) 2016/2031; Commission Implementing Regulations (EU) 2018/2019; (EU) 2018/20186, (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, if applicable, 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, if any, was determined and uncertainties identified using expert judgements.

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 potentially associated with *Tilia cordata* and *T. platyphyllos* based on information provided in the Dossier Sections 1.1, 1.2, 2.0, 3.1, 3.2, 4.1, 4.2 and 5.0 and on searches performed by the Panel as indicated above in Section 2.2. 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. *Tilia cordata*, *T. platyphyllos, T.×europaea*) 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 *Tilia* spp. imported from the whole world from 1995 to May 2020 and TRACES-NT from May 2020 to 31 January 2024, 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 January 2024 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 A and they were run on 29 November 2023.

The titles and abstracts of the scientific papers retrieved were screened and the pests associated with *T. cordata*, *T. platyphyllos* and *T.×europaea* 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 E) includes all identified pests that use as host *T. cordata*, *T. platyphyllos* and *T.×europaea*.

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 D (List of pests that can potentially cause an effect not further assessed).

2.3.3 | Listing and evaluation of risk mitigation measures

As the panel did not identify any relevant pest for this opinion (see Sections 4.1, 4.2 and 4.5), the proposed risk mitigation measures were not further evaluated, and for the same reason, Expert Knowledge Elicitation on pest freedom was not performed.

3 | COMMODITY DATA

3.1 | Description of the commodity

The commodities of *T. cordata* and *T. platyphyllos* to be imported from the UK to the EU are budwood/graftwood, whips or transplants, bare root plants, cell grown plants and rooted plants in pots. Some of the nurseries expected to export to the EU are using grafting in the production of *T. cordata* and *T. platyphyllos*. There are various varieties of *T. cordata* and *T. platyphyllos* (Dossier Sections 1.1 and 1.2).

The commodities for both species are as follows:

- Bundles of budwood/graftwood: The budwood is up to 2 years old. The diameter is between 6 and 12 mm and the length is approximately 45 cm. Bundles contain 10–20 items. (Dossiers Sections 1.1 and 1.2). Budwood has no leaves (Dossier Section 5.0).
- Bundles of bare root plants: The age of plants is between 1 and 2 years with a diameter between 4 and 10 mm and the height is between 20 and 200 cm. Bundle sizes are 25 or 50 for seedlings or transplants; 5, 10 or 15 for whips. Whips are slender, unbranched trees. Seedlings are small plants, grown from seeds and usually less than 1 year old. Transplants are plants which have been transplanted 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 compared to whips (Dossier Sections 1.1, 1.2 and 5.0).
- Single bare root plants: The age of plants is between 1 and 7 years. The diameter is between 4 and 40 mm and the height is between 20 and 200 cm.

Bundles of bare root plants and single bare root plants may have some leaves at the time of export, particularly when exported in early winter (Dossier Sections 1.1 and 1.2).

- Cell grown plants: The age of plants is between 1 and 2 years. The diameter is between 4 and 10 mm and the height is between 20 and 200 cm. Cell grown plants can be traded as individuals or as bundles of 5–10 plants. Plants may be exported with leaves (Dossier Sections 1.1, 1.2 and 5.0).
- Single plants in pots: The age of plants is from less than 1 year to 25 years. The diameter range at the base of single stems is between 4 and 80 cm and the height is between 80 and 600 cm. The plants in pots may be exported with leaves, depending on the timing of the export. Large single trees grown initially in the field are lifted from the field, root washed and from that point on grown in EU-compliant growing media at no more than 6 years old and a minimum of one growing season prior to export (Dossier Sections 1.1, 1.2 and 5.0).

The growing media are virgin peat or peat-free compost (a mixture of coir, tree bark, wood fibre, etc.) (Dossier Sections 1.1 and 1.2) 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 'budwood/graftwood', 'bare root plants' and 'rooted plants in pots'.

According to the Dossier Section 1.1, the trade volume for *T. cordata* is up to 500 graftwood items, 10,000 bare root plants and 20,000 rooted plants in pots per year. According to the Dossier Section 1.2, the trade volume for *T. platyphyllos* is up to 500 graftwood items, 10,000 bare root plants and 20,000 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 *T. cordata* and *T. platyphyllos* 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 four known nurseries in the UK producing *T. cordata* and *T. platyphyllos* plants for the export to the EU (Dossier Sections 1.1 and 1.2). The locations of these nurseries are shown in Figure 1.

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, the Panel assumes that the application is made at the country-to-country level, unless explicitly stated otherwise. 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 Section 5.0).

FIGURE 1 Location of the nurseries in the UK producing *Tilia cordata* and *T. platyphyllos* plants for export to the EU (Source: Dossier Section 1.0).

Tilia 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 B. The minimum and maximum proportion of *T. cordata* and *T. platyphyllos* compared to the other plant species grown in the nurseries is between 1 and 2%. Most 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 Section 1.0).

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 hirsuta*), 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 (*C. 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 × eylandii*) (Dossier Sections 1.0 and 5.1).

The minimum distance in a straight line, between the growing area in the nurseries and the closest *T. cordata* and *T. platyphyllos* plants in the local surroundings is 500 m (Dossier Sections 1.1 and 1.2).

Woodland is present around the nurseries. 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 pseudo-platanus*), holly (*Ilex* spp.), Norway maple (*Acer platanoides*) and field maple (*Acer campestre*). The nearest woodland to one of the nurseries borders the boundary fence (Dossier Sections 1.1 and 1.2).

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

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

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

Based on the global Köppen–Geiger climate zone classification (Kottek et al., 2006), the climate of the production areas of *T. cordata* and *T. platyphyllos* 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).

Tilia cordata and *T. platyphyllos* seeds purchased in the UK are certified under The Forest Reproductive Material (Great Britain) Regulations 2002 (legislation.gov.uk); seedlings sourced in the UK are certified with UK Plant Passports. A small percentage of plants may be obtained from EU (the Netherlands). Seedlings from the EU countries are certified with phytosanitary certificates (Dossier Sections 1.1 and 1.2).

One nursery is producing plants by grafting. They have mother plants of *T. platyphyllos* and *T. cordata* present on the nursery.

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 *T. cordata* and *T. platyphyllos* can be grown in greenhouses; however, most plants will be field grown, or field grown in containers (Dossier Sections 1.1 and 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 and 1.2).

Plants for bare root plant production are planted from late autumn until early spring (November to March); 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 and 1.2).

The irrigation is done on the need basis and could be overhead, subirrigation 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 Section 1.0). Additional information on water used for irrigation is provided in Appendix C. 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 inspects 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; England and Wales) 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 *T. cordata* and *T. platyphyllos* producers, both in support of the Plant Passporting scheme (checks are consistent with EU legislation, with a minimum of 1 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).

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 Section 1.0).

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 for example 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 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 the 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, spider mites and weeds are detailed in the Dossier Sections 1.1 and 1.2. These would be applied at the manufacturers recommended rate and intervals (Dossier Sections 1.1 and 1.2).

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).

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).

Separate from 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

Budwood/graftwood is wrapped in plastic and packed in cardboard boxes or Dutch crates on ISPM 15 certified wooden pallets, or metal pallets, dependant on quantity. Budwood/graftwood may be exported in bundles of 10–20 items (Dossier Sections 1.1 and 1.2).

Bare-rooted plants are harvested from late autumn to early spring (November–March) 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 October–April. 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 seedlings and 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 dependent 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 553 species (see Microsoft Excel® file in Appendix E).

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.

Twenty-seven 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.

Out of the 27 EU-quarantine pest species evaluated, none are present in the UK. Therefore, no pest was selected for further evaluation.

There were three additional EU quarantine pests, i.e. the fungus *Entoleuca mammata*, and the insects *Margarodes vitis* and *Bemisia tabaci*, for which association with *Tilia* was found in some databases (EPPO, online; Farr & Rossman, online). However, the consultation of the original paper Miller, 1961, revealed that *Tilia* is not reported as a host of *E. mammata*. As for *M. vitis*, although Giliomee et al. (2022) listed Tiliaceae as hosts, there is no evidence of its association with *Tilia*. Although EPPO listed Malvaceae as hosts of *B. tabaci*, no source of information was provided on association with *Tilia*. Therefore, these three pests were not further considered.

TABLE 4 Overview of the evaluation of the 27 EU-quarantine pest species for which information was found in the dossier, databases and literature searches that use *Tilia* 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	*Tilia* confirmed as a host (reference)	Pest can be associated with the commodity	Pest relevant for the opinion
1	*Anoplophora chinensis*	ANOLCN	Insects	No	*Tilia platyphyllos* (Sabbatini Peverieri & Roversi, 2010)	Not assessed	No
2	*Anoplophora glabripennis*	ANOLGL	Insects	No	*Tilia cordata* (Özdikmen, 2023)	Not assessed	No
3	*Choristoneura rosaceana*	CHONRO	Insects	No	*Tilia*, *T. americana* (EPPO, online; Robinson et al., online)	Not assessed	No
4	*Clastoptera achatina*	CLASAC	Insects	No	*Tilia* sp. (EPPO, online; Doering, 1942)	Not assessed	No
5	*Euwallacea fornicatus* sensu lato	XYLBFO	Insects	No	*Tilia americana* (EPPO, online; Eskalen et al., 2013)	Not assessed	No
6	*Lopholeucaspis japonica*	LOPLJA	Insects	No	*Tilia* spp. (Shrewsbury et al., 2013), *T. miqueliana* (Murakami, 1970), *T. rubra* (Batsankalashvili et al., 2017), *T. tomentosa* (Shrewsbury et al., 2013)	Not assessed	No
7	*Lycorma delicatula*	LYCMDE	Insects	No	*Tilia americana* (Parra et al., 2017)	Not assessed	No
8	*Neocosmospora euwallaceae*	FUSAEW	Fungi	No	*Tilia americana* (EPPO, online; Eskalen et al., 2013)	Not assessed	No
9	*Oemona hirta*	OEMOHI	Insects	No	*Tilia cordata* (Sopow & Bain, 2017)	Not assessed	No
10	*Phymatotrichopsis omnivora*	PHMPOM	Fungi	No	*Tilia americana* (Crops Research Division United States, 1960)	Not assessed	No
11	*Popillia japonica*	POPIJA	Insects	No	*Tilia cordata* (Fleming, 1972)	Not assessed	No
12	*Xiphinema americanum* sensu stricto	XIPHAA	Nematodes	No	*Tilia*× *europaea* (Ruehle, 1967)	Not assessed	No
13	*Xiphinema rivesi* (non-EU populations)	XIPHRI	Nematodes	No	*Tilia americana* (Norton, 1989)	Not assessed	No
Scolytinae spp. (non-European)							
14	*Anisandrus maiche* as Scolytinae spp. (non-European)	ANIDMA	Insects	No	*Tilia amurensis* (Mandelshtam et al., 2018)	Not assessed	No
15	*Anisandrus sayi* as Scolytinae spp. (non-European)	ANIDSA	Insects	No	*Tilia* spp. (Wood & Bright, 1992)	Not assessed	No
16	*Euwallacea validus* as Scolytinae spp. (non-European)	XYLBVA	Insects	No	*Tilia americana* (Wood & Bright, 1992)	Not assessed	No
17	*Heteroborips seriatus* as Scolytinae spp. (non-European)	XYLBSE	Insects	No	*Tilia cordata japonica* (Wood & Bright, 1992)	Not assessed	No
18	*Hylastinus tiliae* as Scolytinae spp. (non-European)	–	Insects	No	*Tilia cordata*, *T.*× *europaea* (Wood & Bright, 1992)	Not assessed	No
19	*Hypothenemus atomus* as Scolytinae spp. (non-European)	–	Insects	No	*Tilia americana* (Atkinson, online)	Not assessed	No

TABLE 4 (Continued)

No.	Pest name according to EU legislation[a]	EPPO code	Group	Pest present in the UK	*Tilia* confirmed as a host (reference)	Pest can be associated with the commodity	Pest relevant for the opinion
20	*Hypothenemus columbi* as Scolytinae spp. (non-European)	HYOTCO	Insects	No	*Tilia americana* (Atkinson, online)	Not assessed	No
21	*Hypothenemus sapporoensis* as Scolytinae spp. (non-European)	–	Insects	No	*Tilia cordata japonica* (Wood & Bright, 1992)	Not assessed	No
22	*Monarthrum mali* as Scolytinae spp. (non-European)	MNTHMA	Insects	No	*Tilia* spp. (Wood & Bright, 1992)	Not assessed	No
23	*Pseudothysanoes multispinatus* as Scolytinae spp. (non-European)	–	Insects	No	*Tilia tomentosa* (Wood & Bright, 1992)	Not assessed	No
24	*Pseudothysanoes rigidus* as Scolytinae spp. (non-European)	–	Insects	No	*Tilia americana* (Wood & Bright, 1992)	Not assessed	No
25	*Pseudoxylechinus tiliae* as Scolytinae spp. (non-European)	–	Insects	No	*Tilia cordata* (Wood & Bright, 1992)	Not assessed	No
26	*Scolytus koltzei* as Scolytinae spp. (non-European)	–	Insects	No	*Tilia americana, T. mandshurica* (Wood & Bright, 1992)	Not assessed	No
27	*Xyloterinus politus* as Scolytinae spp. (non-European)	XYORPO	Insects	No	*Tilia americana* (Atkinson, online)	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 potentially 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 with a limited distribution (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 working group (e.g. recent evidence of presence).

Based on the information collected, 526 non-regulated potential pests known to be associated with species community were evaluated for their relevance to this opinion. Pests were excluded from further evaluation when at least one of the conditions listed above (1–5) was not met. Details can be found in Appendix E (Microsoft Excel® file). None of the pests not regulated in the EU was selected for further evaluation because none of them met all selection criteria.

4.3 | Overview of interceptions

Data on the interception of harmful organisms on plants of *Tilia* can provide information on some of the organisms that can be present on *Tilia* despite the current measures taken. According to EUROPHYT, online (accessed on 9 February 2024) and TRACES-NT, online (accessed on 9 February 2024), there were no interceptions of plants for planting of *Tilia* from the UK destined to the EU Member States due to the presence of harmful organisms between the years 1995 and 31 January 2024.

4.4 | List of potential pests not further assessed

The Panel highlighted one potentially relevant pest, i.e. *Winslowiella arboricola* (see Appendix D) for which, however, the impact and the association with *T. cordata* and *T. platyphyllos* are uncertain.

4.5 | Summary of pests selected for further evaluation

After a thorough analysis of the dossier on *T. cordata* and *T. platyphyllos* submitted by DEFRA of the UK and after evaluation of the compiled pest list, the Panel did not identify any pest relevant for this Opinion.

5 | RISK MITIGATION MEASURES

As the panel did not identify any relevant pest for this pinion, the proposed risk mitigation measures were not further evaluated and, for the same reason, Expert Knowledge Elicitation on pest freedom was not performed. However, an overview of the risk mitigation measures, as described in the Dossier Sections 1.1, 1.2 and 5.0, is reported in the following section.

5.1 | Risk mitigation measures applied in the UK

With the information provided by the UK (Dossier Sections Dossier Sections 1.1, 1.2 and 5.0), the Panel summarised the risk mitigation measures (see Table 5) that are implemented in the production nursery.

TABLE 5 Overview of implemented risk mitigation measures for *Tilia cordata* and *T. platyphyllos* 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	*Tilia cordata* and *T. platyphyllos* seeds purchased in the UK are certified under The Forest Reproductive Material (Great Britain) Regulations 2002 (legislation.gov.uk); seedlings sourced in the UK are certified with UK Plant Passports. A small percentage of plants may be obtained from EU (Netherlands). Seedlings from the EU countries are certified with phytosanitary certificates (Dossier Sections 1.1 and 1.2)
4	Growing media	The growing media is 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 and 1.2
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, and possibly other pests, 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)
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)
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, spider mites and weeds are detailed in the Dossier Sections 1.1 and 1.2. These would be applied at the manufacturers recommended rate and intervals (Dossier Sections 1.1 and 1.2)
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) 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)

(Continues)

TABLE 5 (Continued)

Number	Risk mitigation measure	Implementation in the UK
12	Separation during transport to the destination	According to the 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 and transplants; - 5, 10 or 15 for whips; - 10–20 items of graftwood. 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).

6 | CONCLUSIONS

After a thorough analysis of the Dossier on *T. cordata* and *T. platyphyllos* submitted by DEFRA from the UK and after evaluation of the compiled pest list, the Panel did not identify any pest relevant for this opinion. Therefore, the proposed risk mitigation measures were not further evaluated, and for the same reason, Expert Knowledge Elicitation on pest freedom was not performed.

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

European Commission

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MAP DISCLAIMER

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SUPPORTING INFORMATION

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

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APPENDIX A

Web of Science All Databases Search String

In Table A.1, the search string for *Tilia cordata* used in Web of Science is reported. Totally, 380 papers were retrieved. Titles and abstracts were screened, and 209 pests were added to the list of pests (see Appendix E).

In Table A.2, the search string for *Tilia platyphyllos* used in Web of Science is reported. Totally, 101 papers were retrieved. Titles and abstracts were screened, and 22 pests were added to the list of pests (see Appendix E).

In Table A.3, the search string for *Tilia* × *europaea* used in Web of Science is reported. Totally, 68 papers were retrieved. Titles and abstracts were screened, and 29 pests were added to the list of pests (see Appendix E).

TABLE A.1 String for *Tilia cordata*.

Web of Science All databases	**TOPIC:** "Tilia cordata" OR "T. cordata" OR "Tilia parvifolia" OR "Tilia sylvestris" OR "Tilia ulmifolia" OR "small-leaved lime" OR "small-leaved linden" **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 **NOT** **TOPIC:** "Acanalonia conica" OR "Aceria exilis" OR "Aceria lateannulatus" OR "Acrogenospora sphaerocephala" OR "Acronicta alni" OR "Acronicta psi" OR "Actinocladium rhodosporum" OR "Aculus ballei" OR "Aglia tau" OR "Agrilus viridis" OR "Agriopis aurantiaria" OR "Agrobacterium radiobacter" OR "Agrochola helvola" OR "Aguriahana stellulata" OR "Alcis repandata" OR "Alebra wahlbergi" OR "Allygus modestus" OR "Alnetoidea alneti" OR "Alsophila aescularia" OR "Alternaria alternata" OR "Amphiporthe hracinensis" OR "Amphiporthe tiliae" OR "Amphipyra berbera" OR "Amphitetranychus viennensis" OR "Apiognomonia errabunda" OR "Apiognomonia tiliae" OR "Discula umbrinella" OR "Gloeosporium tiliae" OR "Apiognomonia petiolicola" OR "Aplosporella tiliacea" OR "Arboridia ribauti" OR "Archips crataegana" OR "Archips rosana" OR "Armillaria mellea" OR "Ascochyta tiliae" OR "Asterobemisia carpini" OR "Asteromella tiliicola" OR "Asteroscopus sphinx" OR "Aulacorthum solani" OR "Autographa gamma" OR "Biscogniauxia cinereolilacina" OR "Biscogniauxia mediterranea" OR "Bispora betulina" OR "Biston betularia" OR "Bjerkandera adusta" OR "Blepharidopterus angulatus" OR "Bombardia bombarda" OR "Brachionycha nubeculosa" OR "Brachionycha sphinx" OR "Brachysporium bloxami" OR "Brachysporium nigrum" OR "Brachysporium obovatum" OR "Cryptadelphia obovata" OR "Bryobia praetiosa" OR "Bryobia rubrioculus" OR "Bucculatrix thoracella" OR "Bursaphelenchus tiliae" OR "Bycticus betulae" OR "Cacumisporium capitulatum" OR "Caliciopsis tiliae" OR "Caliroa annulipes" OR "Calliteara pudibunda" OR "Candidatus phytoplasma aceris" OR "Capnodium tiliae" OR "Ceratocystis grandifoliae" OR "Ceratocystis piceae" OR "Cerioporus leptocephalus" OR "Cerioporus squamosus" OR "Chaetopsis grisea" OR "Chaetosphaeria inaequalis" OR "Chaetosphaeria myriocarpa" OR "Chaetosphaeria preussii" OR "Chaetosphaeria vermicularioides" OR "Chalara breviclavata" OR "Chionaspis salicis" OR "Chloridium virescens var. virescens" OR "Chloroclysta miata" OR "Chloroclysta siterata" OR "Chrysobothris femorata" OR "Chrysoclista linneella" OR "Chyliza leptogaster" OR "Cirrenalia lignicola" OR "Cladosporium agoseridis" OR "Cladosporium allicinum" OR "Cladosporium delicatulum" OR "Cladosporium fumago" OR "Cladosporium herbarum" OR "Coleophora anatipennella" OR "Coleophora siccifolia" OR "Coleophora violacea" OR "Colletotrichum dematium" OR "Colocasia coryli" OR "Coniothyrium australe" OR "Contarinia tiliarum" OR "Cordana pauciseptata" OR "Corynespora olivacea" OR "Sporidesmium olivaceum" OR "Corythucha arcuata" OR "Cosmia trapezina" OR "Cosmospora stegonsporii" OR "Crocallis elinguaria" OR "Cryptocephalus pusillus" OR "Cryptocoryneum condensatum" OR "Cryptosporella tiliae" OR "Cytospora chrysosperma" OR "Cytospora leucosperma" OR "Cytospora populina" OR "Dactylaria parvispora" OR "Daldinia concentrica" OR "Dasineura thomasiana" OR "Dasineura tiliae" OR "Dasineura tiliamvolvens" OR "Dematioscypha catenata" OR "Dendrostoma leiphaemia" OR "Dendrothrips degeeri" OR "Dendrothrips ornatus" OR "Denticollis linearis" OR "Diaporthe eres" OR "Diaporthe eres" OR "Diaporthe velata" OR "Phomopsis velata" OR "Diaspidiotus gigas" OR "Diaspidiotus ostreaeformis" OR "Diatrypella sordida" OR "Dicarpella dryina" OR "Dichomeris ustalella" OR "Didymomyia tiliacea" OR "Diplococcium spicatum" OR "Diplodia scheidweileri" OR "Discosia artocreas" OR "Diurnea lipsiella" OR "Echinosphaeria strigosa" OR "Edwardsiana lethierryi" OR "Edwardsiana plebeja" OR "Elasmucha grisea" OR "Electrophaes corylata" OR "Elsinoe tiliae" OR "Endromis versicolora"

(Continues)

(Continued)

OR "Ennomos alniaria" OR "Ennomos erosaria" OR "Ennomos quercinaria" OR "Eotetranychus populi" OR "Eotetranychus pruni" OR "Eotetranychus tiliarium" OR "Eotetranychus uncatus" OR "Epirrita autumnata" OR "Epirrita christyi" OR "Epirrita dilutata" OR "Eriogaster lanestris" OR "Eriophyes exilis" OR "Eriophyes leiosoma" OR "Eriophyes nervalis" OR "Eriophyes rudis" OR "Eriophyes tiliae" OR "Ernoporus tiliae" OR "Erthesina fullo" OR "Erysiphe oleosa" OR "Eucallipterus tiliae" OR "Eulecanium tiliae" OR "Eupithecia egenaria" OR "Eupsilia transversa" OR "Eutypa lata" OR "Exobasidium tiliae" OR "Exophiala calicioides" OR "Exosporium tiliae" OR "Helminthosporium tiliae" OR "Fagocyba carri" OR "Fagocyba cruenta" OR "Fomes fomentarius" OR "Fomitopsis pinicola" OR "Ganoderma applanatum" OR "Garnaudia elegans" OR "Gomphinaria amoena" OR "Gonytrichum chlamydosporium var. chlamydosporium" OR "Halyomorpha halys" OR "Harmonia axyridis" OR "Helicogloea sebacea" OR "Helicoma fumosum" OR "Helicosporium vegetum" OR "Coryneum oligosporum" OR "Hemithea aestivaria" OR "Phorcys tiliae" OR "Rabenhorstia tiliae" OR "Herminia grisealis" OR "Heterodera avenae" OR "Heterogenea asella" OR "Heteroradulum deglubens" OR "Holwaya mucida" OR "Crinula caliciiformis" OR "Hydropisphaera peziza" OR "Nectria peziza" OR "Hyphantria cunea" OR "Hypomecis punctinalis" OR "Hypoxylon ferrugineum" OR "Idiocerus vitreus" OR "Immersiella caudata" OR "Immersiella immersa" OR "Incurvaria pectinea" OR "Irpex tiliaceus" OR "Kretzschmaria deusta" OR "Lamproconium desmazieri" OR "Lamproconium desmazieri" OR "Melanconium desmazieri" OR "Lasiosphaeria glabrata" OR "Lasiosphaeria ovina" OR "Lasiosphaeria racodium" OR "Lasiosphaeris hirsuta" OR "Lentinus substrictus" OR "Lepidosaphes conchiformis" OR "Lepidosaphes ulmi" OR "Lepteutypa fuckelii" OR "Lithophane hepatica" OR "Lithophane socia" OR "Longidorus euonymus" OR "Lycia hirtaria" OR "Lygocoris pabulinus" OR "Lymantria dispar" OR "Lymantria monacha" OR "Macrolabis floricola" OR "Margarodes vitis" OR "Massaria heterospora" OR "Massarina micacea" OR "Melanconis juglandis" OR "Melanomma pulvis-pyrius" OR "Melanopsamma pomiformis" OR "Meloidogyne incognita" OR "Menispora caesia" OR "Menispora ciliata" OR "Menispora glauca" OR "Microdiplodia tiliae" OR "Mimas tiliae" OR "Moniliopsis foliicola" OR "Monodictys castaneae" OR "Monodictys levis" OR "Mycosphaerella microsora" OR "Mycosphaerella millegrana" OR "Mycosphaerella punctiformis" OR "Naemospora tiliae" OR "Nectria cinnabarina" OR "Nectria cinnabarina" OR "Tubercularia vulgaris" OR "Nemania aenea var. aenea" OR "Nemania serpens" OR "Neofusicoccum ribis" OR "Neolygus viridis" OR "Neonectria ditissima" OR "Neonectria ditissima" OR "Neonectria punicea" OR "Neonetria coccinea" OR "Neopulvinaria innumerabilis innumerabilis" OR "Nitschkia parasitans" OR "Nola confusalis" OR "Odontopera bidentata" OR "Oemona hirta" OR "Oidiodendron tenuissimum" OR "Operophtera brumata" OR "Ophiognomonia melanostyla" OR 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OR "Phalera bucephala" OR "Phellinus igniarius" OR "Phenacoccus aceris" OR "Phigalia pilosaria" OR "Phyllobius glaucus" OR "Phyllobius maculicornis" OR "Phyllobius oblongus" OR "Phyllobius pyri" OR "Phyllobius viridiaeris" OR "Phyllonorycter issikii" OR "Phyllonorycter messaniella" OR "Phyllosticta tiliae" OR "Physemocecis hartigi" OR "Phytocoptella tetratrichus" OR "Phytophthora cactorum" OR "Phytophthora cambivora" OR "Phytophthora citricola" OR "Phytophthora drechsleri" OR "Phytophthora gonapodyides" OR "Phytophthora megasperma" OR "Phytophthora plurivora" OR "Phytophthora pseudosyringae" OR "Phytophthora syringae" OR "Phytoptus tetratrichus" OR "Phytoptus tiliae" OR "Picipes melanopus" OR "Pinalitus cervinus" OR "Placosphaeria tiliae" OR "Plagodis dolabraria" OR "Pleotrichocladium opacum" OR "Plum pox virus" OR "Poecilocampa populi" OR "Polia hepatica" OR "Polydrusus cervinus" OR "Polydrusus mollis" OR "Polyscytalum fecundissimum" OR "Popillia japonica" OR "Pratylenchus crenatus" OR "Protocrea farinosa" OR "Psallus perrisi" OR "Psallus variabilis" OR "Psallus wagneri" OR "Pseudomassaria chondrospora" OR "Pseudospiropes obclavatus" OR "Pseudoxylechinus tiliae" OR "Ptilodon capucina" OR "Pucciniastrum tiliae" OR "Pulvinaria kuwacola" OR "Pulvinaria regalis" OR "Pulvinaria vitis" OR "Pyrenochaeta filarszkyi" OR "Ramichloridium anceps" OR "Ramularia tiliae" OR "Rhinocladiella atrovirens" OR "Ribautiana debilis" OR "Ribautiana ulmi" OR "Roeslerstammia erxlebella" OR "Sabra harpagula" OR "Salebriopsis albicilla" OR "Scolytus intricatus" OR "Selenia dentaria" OR "Selenia tetralunaria" OR "Semioscopis avellanella" OR "Septonema secedens" OR "Septoria tiliae" OR "Spadicoides atra" OR "Spadicoides bina" OR "Splanchospora ampullacea" OR "Sporoschismopsis angustata" OR "Sporothrix fusiformis" OR "Sporothrix prolifera" OR "Stauropus fagi" OR "Stenostola dubia" OR "Stigmella tiliae" OR "Stomaphis wojciechowskii" OR "Taenothrips inconsequens" OR "Tetranychus turkestani" OR "Tetranychus urticae" OR "Tetrops praeustus" OR "Thrips calcaratus" OR "Thyrostroma compactum" OR "Thyrostroma tiliae" OR "Thysanorea rousseliana" OR "Tiliacea citrago" OR "Xanthia citrago" OR "Tiliaphis shinae" OR "Tortricodes alternella" OR "Tortrix viridana" OR "Torula herbarum" OR "Trametes hirsuta" OR "Trametes versicolor" OR "Trematosphaeria pertusa" OR "Trichoderma crystalligenum" OR "Trichoderma strictipile" OR "Trichodorus obtusus" OR "Trichoferus campestris" OR "Trimmatostroma betulinum" OR "Trypodendron domesticum" OR "Tyromyces kmetii" OR "Ustulina deusta" OR "Valsa proximella" OR "Valsaria insitiva" OR "Verticillium albo-atrum" OR "Verticillium dahliae" OR "Violella fucata" OR "Virgariella atra" OR "Xenocriconemella macrodora" OR "Xestia triangulum" OR "Xiphinema americanum sensu stricto" OR "Xiphinema rivesi" OR "Xyleborinus attenuatus" OR "Xyleborus dryographus" OR "Xylena exsoleta" OR "Xylococcus filiferus" OR "Zygina suavis" OR "Zygina tiliae"

TABLE A.2 String for *Tilia platyphyllos*.

Web of Science All databases	**TOPIC:** "Tilia platyphyllos" OR "T. platyphyllos" OR "Tilia grandifolia" OR "broad-leaved lime" OR "large-leaved lime" OR "large-leaved linden" **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 **NOT** **TOPIC:** "Aceria exilis" OR "Aceria lateannulatus" OR "Acronicta aceris" OR "Acronicta alni" OR "Acronicta psi" OR "Aculus ballei" OR "Agrilus viridis" OR "Agriopis aurantiaria" OR "Agrobacterium radiobacter" OR "Rhizobium radiobacter" OR "Aguriahana stellulata" OR "Alebra wahlbergi" OR "Allygus modestus" OR "Alnetoidea alneti" OR "Alsophila aescularia" OR "Alternaria alternata" OR "Amphiporthe hracinensis" OR "Amphipyra berbera" OR "Amphitetranychus viennensis" OR "Anthostomella appendiculosa" OR "Apiognomonia errabunda" OR "Discula umbrinella" OR "Gloeosporium tiliae" OR "Aposphaeria polonica" OR "Arboridia ribauti" OR "Archips crataegana" OR "Archips rosana" OR "Armillaria cepistipes" OR "Armillaria mellea" OR "Ascochyta tiliae" OR "Asterobemisia carpini" OR "Asteromella praetervisa" OR "Asteromella tiliicola" OR "Asteroscopus sphinx" OR "Aulacorthum solani" OR "Autographa gamma" OR "Biscogniauxia cinereolilacina" OR "Biscogniauxia mediterranea" OR "Biston betularia" OR "Bjerkandera adusta" OR "Blepharidopterus angulatus" OR "Brachionycha nubeculosa" OR "Brachionycha sphinx" OR "Bryobia praetiosa" OR "Bryobia rubrioculus" OR "Bucculatrix thoracella" OR "Bursaphelenchus tiliae" OR "Byctiscus betulae" OR "Caliroa annulipes" OR "Calliteara pudibunda" OR "Candidatus phytoplasma aceris" OR "Ceratocystis piceae" OR "Cerioporus leptocephalus" OR "Cerioporus squamosus" OR "Chionaspis salicis" OR "Chloroclysta miata" OR "Chloroclysta siterata" OR "Chrysoclista linneella" OR "Chyliza leptogaster" OR "Cladosporium fumago" OR "Cladosporium herbarum" OR "Coleophora anatipennella" OR "Coleophora siccifolia" OR "Coleophora violacea" OR "Comstockaspis perniciosa" OR "Contarinia tiliarum" OR "Corythucha arcuata" OR "Cosmia trapezina" OR "Cryptocephalus pusillus" OR "Cytospora chrysosperma" OR "Cytospora leucosperma" OR "Dasineura thomasiana" OR "Dasineura tiliae" OR "Dasineura tiliamvolvens" OR "Dendrostoma leiphaemia" OR "Dendrothrips degeeri" OR "Dendrothrips ornatus" OR "Denticollis linearis" OR "Diaporthe eres" OR "Diaporthe eres" OR "Diaporthe farinosa" OR "Diaspidiotus ostreaeformis" OR "Dichomeris ustalella" OR "Didymomyia tiliacea" OR "Discosia artocreas" OR "Diurnea lipsiella" OR "Edwardsiana lethierryi" OR "Edwardsiana plebeja" OR "Elasmucha grisea" OR "Electrophaes corylata" OR "Elsinoe tiliae" OR "Endromis versicolora" OR "Ennomos alniaria" OR "Ennomos erosaria" OR "Ennomos quercinaria" OR "Eotetranychus cumtiliarium" OR "Eotetranychus pruni" OR "Eotetranychus tiliarium" OR "Epirrita christyi" OR "Epirrita dilutata" OR "Erannis defoliaria" OR "Eriogaster lanestris" OR "Eriophyes exilis" OR "Eriophyes leiosoma" OR "Eriophyes nervalis" OR "Eriophyes rudis" OR "Eriophyes tiliae" OR "Eucallipterus tiliae" OR "Eulecanium tiliae" OR "Eupithecia egenaria" OR "Eupsilia transversa" OR "Eutetranychus citri" OR "Eutypa lata" OR "Exosporium tiliae" OR "Helminthosporium tiliae" OR "Fagocyba carri" OR "Fagocyba cruenta" OR "Fomes fomentarius" OR "Ganoderma applanatum" OR "Helminthosporium oligosporum" OR "Hemithea aestivaria" OR "Hercospora tiliae" OR "Rabenhorstia tiliae" OR "Heterogenea asella" OR "Hyalophora cecropia" OR "Hyphantria cunea" OR "Idiocerus vitreus" OR "Incurvaria pectinea" OR "Kretzschmaria deusta" OR "Lamproconium desmazieri" OR "Lepidosaphes conchiformis" OR "Lepidosaphes conchyformis" OR "Lepidosaphes ulmi" OR "Lithophane socia" OR "Lycia hirtaria" OR "Lygocoris pabulinus" OR "Lymantria dispar" OR "Lymantria monacha" OR "Macrolabis floricola" OR "Margarodes vitis" OR "Massaria heterospora" OR "Melanconis juglandis" OR "Mimas tiliae" OR "Mycosphaerella microsora" OR "Cercospora exitiosa" OR "Nectria cinnabarina" OR "Nectria cinnabarina" OR "Neofusicoccum australe" OR "Neofusicoccum luteum" OR "Neofusicoccum ribis" OR "Neolygus viridis" OR "Neonectria ditissima" OR "Nola confusalis" OR "Odontopera bidentata" OR "Operophtera brumata" OR "Ophiostoma sparsiannulatum" OR "Orgyia antiqua" OR "Orgyia leucostigma" OR "Orthosia gothica" OR "Orthosia incerta" OR "Orthotylus nassatus" OR "Ossiannilssonola callosa" OR "Oxycarenus lavaterae" OR "Pandemis cerasana" OR "Panonychus ulmi" OR "Paracercosporidium microsorum" OR "Paracercosporidium microsorum" OR "Cercospora microsora" OR "Cercospora microsora var. tiliae-platyphyllae" OR "Passalora microsora" OR "Paraconiothyrium tiliae" OR "Asteromella tiliae" OR "Paratylenchus nanus" OR "Paratylenchus projectus" OR "Paratylenchus straeleni" OR "Parectropis similaria" OR "Parna apicalis" OR "Parna tenella" OR "Parthenolecanium corni" OR "Parthenolecanium corni corni" OR "Patchiella reaumuri" OR "Pealius quercus" OR "Pediopsis tiliae" OR "Pezicula ericae" OR "Pezicula sporulosa" OR "Phalera bucephala" OR "Phellinus igniarius" OR "Phenacoccus aceris" OR "Phigalia pilosaria" OR "Phyllactinia guttata" OR "Phyllactinia suffulta" OR "Phyllobius glaucus" OR "Phyllobius maculicornis" OR "Phyllobius oblongus" OR "Phyllobius pyri" OR "Phyllobius viridiaeris" OR "Phyllonorycter issikii" OR "Phyllonorycter messaniella" OR "Phyllosticta tiliae" OR "Physemocecis hartigi" OR "Phytocoptella tetratrichus" OR "Phytophthora cactorum" OR "Phytophthora cambivora" OR "Phytophthora citricola" OR "Phytophthora gonapodyides" OR "Phytophthora megasperma" OR "Phytophthora plurivora" OR "Phytophthora pseudosyringae" OR "Phytophthora syringae" OR "Phytoptus bursarius" OR "Phytoptus stenoporus" OR "Phytoptus tetratrichus" OR "Phytoptus tiliae" OR "Picipes melanopus" OR "Pinalitus cervinus" OR "Placosphaeria tiliae" OR "Plagodis dolabraria" OR "Pleurocolla tiliae" OR "Plum pox virus" OR "Poecilocampa populi" OR "Polia hepatica" OR "Polydrusus cervinus" OR "Polydrusus mollis" OR "Pratylenchus crenatus" OR "Psallus perrisi" OR "Psallus variabilis" OR "Psallus wagneri" OR "Pseudomassaria chondrospora" OR "Ptilodon capucina" OR "Pucciniastrum tiliae" OR "Pulvinaria kuwacola" OR "Pulvinaria regalis" OR "Pulvinaria vitis" OR "Rhizobium rhizogenes" OR "Ribautiana debilis" OR "Ribautiana ulmi" OR "Roeslerstammia erxlebella" OR "Sabra harpagula" OR "Salebriopsis albicilla" OR "Selenia tetralunaria" OR "Semioscopis avellanella" OR "Septoria tiliae" OR "Sporothrix prolifera" OR "Stauropus fagi" OR "Stenostola dubia" OR "Stigmella tiliae" OR "Stomaphis wojciechowskii" OR "Taenothrips inconsequens" OR "Tetranychus urticae" OR "Tetrops praeustus" OR "Thrips calcaratus" OR "Tiliacea citrago" OR "Xanthia citrago" OR "Tiliaphis shinae" OR "Titaea tamerlan" OR "Tortricodes alternella" OR "Tortrix viridana" OR "Trametes hirsuta" OR "Trametes versicolor" OR "Trichoferus campestris" OR "Trypodendron domesticum" OR "Verticillium albo-atrum" OR "Verticillium dahliae" OR "Xenocriconemella macrodora" OR "Xestia triangulum" OR "Xiphinema americanum sensu stricto" OR "Xiphinema rivesi" OR "Xyleborus dryographus" OR "Xylena exsoleta" OR "Xylococcus filiferus" OR "Zygina suavis" OR "Zygina tiliae"

TABLE A.3 String for *Tilia* × *europaea*.

Web of Science All databases	**TOPIC:** "Tilia × europaea" OR "Tilia × platyphylla" OR "Tilia cordata × T. platyphyllos" OR "Tilia europaea" OR "Tilia intermedia" OR "Tilia vulgaris" OR "Tilia × intermedia" OR "Tilia × vulgaris" OR "common lime" OR "European linden" **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 **NOT** **TOPIC:** "Acronicta alni" OR "Acronicta psi" OR "Agriopis aurantiaria" OR "Alsophila aescularia" OR "Alternaria arborescens" OR "Aphis fabae" OR "Apiognomonia tiliae" OR "Apocheima pilosaria" OR "Arctia caja" OR "Arctornis l-nigrum" OR "Autographa gamma" OR "Biston betularia" OR "Brachionycha sphinx" OR "Cerococcus parrottii" OR "Chloroclysta siterata" OR "Contarinia tiliarum" OR "Cosmia pyralina" OR "Dasineura thomasiana" OR "Dasineura tiliae" OR "Dasineura tiliamvolvens" OR "Diaporthe rudis" OR "Didymomyia tiliacea" OR "Electrophaes corylata" OR "Ennomos alniaria" OR "Ennomos erosaria" OR "Ennomos quercinaria" OR "Eotetranychus tiliarium" OR "Eriophyes leiosoma" OR "Eriophyes tiliae" OR "Eucallipterus tiliae" OR "Eulecanium tiliae" OR "Eupithecia egenaria" OR "Hemithea aestivaria" OR "Icerya purchasi" OR "Lepidosaphes ulmi" OR "Lithophane hepatica" OR "Lycia hirtaria" OR "Lymantria monacha" OR "Margarodes vitis" OR "Mimas tiliae" OR "Neofusicoccum parvum" OR "Operophtera brumata" OR "Orgyia antiqua" OR "Orgyia leucostigma" OR "Orthosia gothica" OR "Oxycarenus lavaterae" OR "Parna apicalis" OR "Patchiella reaumuri" OR "Phalera bucephala" OR "Physemocecis hartigi" OR "Phytocoptella tetratrichus" OR "Phytoptus tiliae" OR "Plum pox virus" OR "Poecilocampa populi" OR "Ptilodon capucina" OR "Pulvinaria kuwacola" OR "Pulvinaria regalis" OR "Selenia tetralunaria" OR "Stauropus fagi" OR "Stigmella tiliae" OR "Thrips calcaratus" OR "Coriolus hirsutus" OR "Trichoferus campestris" OR "Xylena exsoleta" OR "Xylococcus filiferus" OR "Xylotoles humeratus"

APPENDIX B

Plant taxa reported to be present in the nurseries of *Tilia cordata* and *T. platyphyllos*

TABLE B.1 Plant taxa reported in the Dossier Sections 3.1 and 3.2 to be present in the nurseries of *Tilia cordata* and *T. platyphyllos*.

Number	Plant taxa	Number	Plant taxa
1	*Abies alba*	159	*Malus hupehensis*
2	*Abies fraserii*	160	*Malus* 'Mokum'
3	*Abies grandis*	161	*Malus sylvestris*
4	*Abies nobilis*	162	*Malus trilobata*
5	*Abies nordmanniana*	163	*Malus tschonoskii*
6	*Acer campestre*	164	*Maytenus boaria*
7	*Acer campestre* 'Elsrijk'	165	*Metasequoia glyptostroboides*
8	*Acer campestre fastigiata*	166	*Nothofagus antarctica*
9	*Acer campestre* 'Streetwise'	167	*Nothofagus*
10	*Acer cappodocicum* 'Rubrum'	168	*Olea europea*
11	*Acer davidii* 'George Forrest'	169	*Ostrya carpinifolia*
12	*Acer griseum*	170	*Parrotia persica* 'Vanessa'
13	*Acer lobelii*	171	*Paulownia tomentosa*
14	*Acer macrocarpa*	172	*Photinia* × *fraseri* 'Red Robin'
15	*Acer palmatum* 'Red Wings'	173	*Picea abies*
16	*Acer platanoides* 'Columnare'	174	*Picea orientalis*
17	*Acer platanoides* 'Crimson King'	175	*Picea ormorika*
18	*Acer platanoides* 'Crimson Sentry'	176	*Picea sitchensis*
19	*Acer platanoides* 'Deborah'	177	*Pinus nigra*
20	*Acer platanoides* 'Emerald Queen'	178	*Pinus peuce*
21	*Acer platanoides* 'Globosum'	179	*Pinus pinaster*
22	*Acer platanoides* 'Perfect Upright'	180	*Pinus pungens glauca*
23	*Acer platanoides* 'Princeton Gold'	181	*Pinus sylvestris*
24	*Acer platanoides*	182	*Platanus orientalis digitalis*
25	*Acer pseudoplatanus*	183	*Platanus* × *hispanica* 'Louisa Lead'
26	*Acer pseudoplatanus* 'Erectum'	184	*Platanus*
27	*Acer pseudoplatanus purpurea*	185	*Populus nigra* 'Italica'
28	*Acer rubrum*	186	*Populus nigra*
29	*Acer rubrum* 'Karpick'	187	*Populus tremula*
30	*Acer rubrum* 'October Glory'	188	*Prunus* 'Accolade'
31	*Acer saccharum*	189	*Prunus* 'Amanogawa'
32	*Acer tataricum* subsp. *ginnala*	190	*Prunus armeniaca*
33	*Acer* × *freemanii* 'Armstrong'	191	*Prunus avium* 'Landscape Bloom'
34	*Acer* × *freemanii* 'Autumn Blaze'	192	*Prunus avium* 'Plena'
35	*Aesculus hippocastanum* 'Baumannii'	193	*Prunus avium*
36	*Aesculus indica*	194	*Prunus campanulata*
37	*Aesculus parviflora*	195	*Prunus cera*
38	*Aesculus* × *carnea* 'Briotii'	196	*Prunus cerasifega*
39	*Albizia julibrissin* 'Chocolate Fountain'	197	*Prunus cerasifera* 'Nigra'
40	*Albizia julibrissin* 'Evys Pride'	198	*Prunus cerasifera* 'Pissardii'
41	*Albizia julibrissin* 'Ombrella'	199	*Prunus domestica*
42	Albizia julibrissin 'Shidare'	200	*Prunus* 'Ichiyo'
43	*Albizia julibrissin* 'Summer Chocolate'	201	*Prunus incisa*
44	*Alnus cordata*	202	*Prunus* 'Kanzan'
45	*Alnus glutinosa*	203	*Prunus* 'Kursar'

(Continues)

TABLE B.1 (Continued)

Number	Plant taxa	Number	Plant taxa
46	*Alnus glutinosa* 'Laciniata'	204	*Prunus laurocerasus* 'Magnoliifolia'
47	*Alnus incana*	205	*Prunus laurocerasus*
48	*Alnus incana* 'Aurea'	206	*Prunus* 'Litigiosa'
49	*Alnus rubra*	207	*Prunus lusitanica*
50	*Alnus spaethii*	208	*Prunus maackii* 'Amber Beauty'
51	*Amelanchier alnifolia* 'Obelisk'	209	*Prunus* 'Mount Fuji'
52	*Amelanchier canadensis* 'Rainbow Pillar'	210	*Prunus padus* 'Select'
53	*Amelanchier* 'Edelweiss'	211	*Prunus padus*
54	*Amelanchier grandiflora* 'Ballerina'	212	*Prunus* 'Pandora'
55	*Amelanchier* 'La Paloma'	213	*Prunus persica*
56	*Amelanchier laevis* 'R J Hilton'	214	*Prunus sargentii*
57	*Amelanchier laevis* 'Snowflakes'	215	*Prunus sargentii* 'Rancho'
58	*Amelanchier lamarckii*	216	*Prunus serrula*
59	*Amelanchier lamarckii* 'Robin Hill'	217	*Prunus* 'Shirofugen'
60	*Amelanchier* × *grandiflora* 'Ballerina'	218	*Prunus* 'Snow Goose'
61	*Amelanchier* × *grandiflora* 'Robin Hill'	219	*Prunus spinosa*
62	*Ammonophylla*	220	*Prunus* 'Spire'
63	*Arbutus unedo*	221	*Prunus* 'Sunset Boulevard'
64	*Betula albosinensis* 'Fascination'	222	*Prunus* 'Tai-haku'
65	*Betula albosinensis* 'Hillier'	223	*Prunus* × *schmittii*
66	*Betula albosinensis* 'Red Panda'	224	*Prunus* × *subhirtella* 'Autumnalis Rosea'
67	*Betula* 'Edinburgh'	225	*Prunus* × *subhirtella* 'Autumnalis'
68	*Betula ermanii*	226	*Prunus yedoensis*
69	*Betula lenta*	227	*Pseudotsuga menziesii*
70	*Betula nigra*	228	*Pterocarya stenoptera* 'Fern Leaf'
71	*Betula papyrifera* var. *kenaica*	229	*Pyrus*
72	*Betula pendula*	230	*Pyrus calleryana* 'Chanticleer'
73	*Betula pendula* 'Dalecarlica'	231	*Pyrus calleryana* 'Red Spire'
74	*Betula pendula fastigiata* 'Obelisk'	232	*Quercus castaneifolia* 'Green Spire'
75	*Betula pendula* 'Zwitsers Glory'	233	*Quercus cerris*
76	*Betula pubescens*	234	*Quercus frainetto* 'Hungarian Crown'
77	*Betula utilis* 'Jermyns'	235	*Quercus ilex*
78	*Betula utilis* var. *jacquemontii*	236	*Quercus palustris*
79	*Buxus sempervirens*	237	*Quercus palustris* 'Green Pillar'
80	*Callicarpa bodinieri* 'Profusion'	238	*Quercus petraea*
81	*Calluna*	239	*Quercus robur*
82	*Calycanthus* 'Aphrodite'	240	*Quercus robur* 'Fastigiata Koster'
83	*Carpinus betulus*	241	*Quercus rubra*
84	*Carpinus betulus* 'Fastigiata'	242	*Quercus* × *bimundorum* 'Crimson Spire'
85	*Carpinus betulus* 'Lucas'	243	*Rhamnus*
86	*Carpinus betulus* 'Streetwise'	244	*Ribes*
87	*Castanea sativa*	245	*Robinia pseudoacacia* 'Casque Rouge'
88	*Castanea sativa* 'Anny's Summer Red'	246	*Robinia pseudoacacia* 'Bessoniana'
89	*Catalpa bignoniodes*	247	*Robinia*
90	*Cedrus atlantica* 'Glauca'	248	*Rosa canina*
91	*Cedrus atlantica*	249	*Rosa rugosa*
92	*Cedrus deodara*	250	*Rubus*
93	*Cedrus libani*	251	*Salix alba*
94	*Celtis australis*	252	*Salix alba* 'Britzensis'

TABLE B.1 (Continued)

Number	Plant taxa	Number	Plant taxa
95	*Cercidiphyllum japonicum* 'Pendulum'	253	*Salix aurita*
96	*Cercidiphyllum japonicum*	254	*Salix babylonica pendula*
97	*Cercis silaquastrum*	255	*Salix caprea*
98	*Cornus florida*	256	*Salix cinerea*
99	*Cornus kousa*	257	*Salix pentandra*
100	*Cornus*	258	*Salix viminalis*
101	*Corylus avellana*	259	*Sambucus*
102	*Corylus colurna*	260	*Sequoia sempervirens*
103	*Cotoneaster lacteus*	261	*Sequoiadendron giganteum*
104	*Crataegus laevigata* 'Pauls Scarlet'	262	*Sorbus aria* 'Majestica'
105	*Crataegus lavallei* 'Carreri'	263	*Sorbus aria*
106	*Crataegus monogyna*	264	*Sorbus arnoldiana* 'Golden Wonder'
107	*Crataegus persimilis* 'Prunifolia'	265	*Sorbus aucuparia*
108	*Cryptomeria japonica*	266	*Sorbus aucuparia* 'Aspleniifolia'
109	*Cupressocyparis leylandii*	267	*Sorbus aucuparia* 'Cardinal Royal'
110	*Cydonia*	268	*Sorbus aucuparia* 'Sheerwater Seedling'
111	*Cytisus*	269	*Sorbus aucuparia* 'Streetwise'
112	*Eriophorum*	270	*Sorbus* 'Autumn Spire'
113	*Eucalyptus glaucescens*	271	*Sorbus commixta* 'Embley'
114	*Euonymous*	272	*Sorbus commixta* 'Olympic Flame'
115	*Euonymus europaeus* 'Red Cascade'	273	*Sorbus* 'Glowing Pink'
116	*Fagus aspelenifolia*	274	*Sorbus hemsleyi* 'John Bond'
117	*Fagus sylvatica*	275	*Sorbus intermedia* 'Browers'
118	*Fagus sylvatica* 'Dawyck'	276	*Sorbus* 'John Mitchell'
119	Fagus sylvatica 'Dawyck Gold'	277	*Sorbus* 'Sunshine'
120	*Fagus sylvatica* 'Dawyck Purple'	278	*Sorbus torminalis*
121	*Fagus sylvatica* 'Purpurea'	279	*Sorbus* × *thuringiaca* 'Fastigiata'
122	*Fagus sylvatica* 'Atropurpurea'	280	*Symphiocarpus*
123	*Ficus*	281	*Syringa*
124	*Fraxinus angustifolia*	282	*Taxodium distichum* 'Nutans'
125	*Fraxinus americana*	283	*Taxodium distichum*
126	*Ginkgo biloba*	284	*Taxus baccata*
127	*Ginkgo biloba* 'Globosum'	285	*Taxus*
128	*Ginkgo biloba* 'Saratoga'	286	*Thuja plicata*
129	*Gleditsia triacanthos* 'Skyline'	287	*Thuja plicata* 'Fastigiata'
130	*Hippophae salicifolia* 'Streetwise'	288	*Tilia cordata*
131	*Ilex aquifolium* 'Marijo'	289	*Tilia cordata* 'Corzam'
132	*Ilex* × *altaclarensis* 'James G. Esson'	290	*Tilia cordata* 'Greenspire'
133	*Ilex* × *koehneana* 'Chestnut Leaf'	291	*Tilia cordata* 'Streetwise'
134	*Ilex*	292	*Tilia cordata* 'Winter Orange'
135	*Juglans nigra*	293	*Tilia* 'Harold Hillier'
136	*Juglans regia*	294	*Tilia henryana*
137	*Juniperus communis*	295	*Tilia oliveri*
138	*Koelreuteria paniculata*	296	*Tilia petolaris* 'Chelsea Sentinel'
139	*Larix* × *decidua*	297	*Tilia platanoides*
140	*Larix* × *eurolepsis*	298	*Tilia platyphyllos*
141	*Ligustrum*	299	*Tilia platyphyllos* 'Aurea'
142	*Liquidambar*	300	*Tilia platyphyllos* 'Princes Street'
143	*Liquidambar styraciflua* 'Slender Silhouette'	301	*Tilia platyphyllos* 'Streetwise'

(Continues)

TABLE B.1 (Continued)

Number	Plant taxa	Number	Plant taxa
144	*Liquidambar styraciflua*	302	*Tilia tomentosa* 'Brabant'
145	*Liquidambar styraciflua* 'Lane Roberts'	303	*Tilia*×*euchlora*
146	*Liquidambar styraciflua* 'Worplesdon'	304	*Tilia*×*europaea* 'Pallida'
147	*Liriodendron tulipifera*	305	*Tsuga heterophylla*
148	*Lonicera nitida*	306	*Ulex*
149	*Lonicera periclymenum*	307	*Ulmus* 'Columnella'
150	*Magnolia*	308	*Ulmus* 'Fiorente'
151	Magnolia 'Galaxy'	309	*Ulmus glabra*
152	*Magnolia grandiflora* 'Ferruginea'	310	*Ulmus* 'New Horizon'
153	*Magnolia kobus*	311	*Ulmus* 'Rebona'
154	*Malus* 'Adirondack'	312	*Ulmus* 'San Zenobi'
155	*Malus* 'Comtesse de Paris'	313	*Vaccinium*
156	*Malus domestica*	314	*Viburnum opulus*
157	*Malus* 'Evereste'	315	*Vitis*
158	*Malus* 'Freja'	316	*Zelkova serrata* 'Green Vase'

APPENDIX C

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 air borne 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 D

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

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

N	Pest name	EPPO code	Group	Pest present in the UK	Present in the EU	*Tilia* confirmed as a host (reference)	Pest can be associated with the commodity	Impact	Justification for inclusion in this list
1	*Winslowiella arboricola*	–	Bacteria	Yes	No data	*Tilia* × *europaea* (Brady et al., 2022)	Uncertain	No data	There is an uncertainty on the impact and the association with *T. platyphyllos* and/or *T. cordata*

APPENDIX E

Excel file with the pest list of *Tilia cordata* and *T. platyphyllos*

Appendix E can be found in the online version of this output (in the 'Supporting information section'): https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2024.8803#support-informationsection