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SCIENTIFIC OPINION

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Commodity risk assessment of *Taxus baccata* plants from the UK

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

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 *Taxus baccata* imported from the United Kingdom (UK) as: (a) bundles of 2-year-old bare root plants (whips), (b) 2- to 7-year-old bare root plants, either exported as single plants or in bundles, (c) 2-year-old cell grown plants exported in bundles, and (d) 3- to 15-year-old plants in pots. The assessment was performed considering the available scientific information, including the technical information provided by the UK. All pests associated with the commodity were evaluated against specific criteria for their relevance for this opinion. One EU quarantine pest, *Phytophthora ramorum* (non-EU isolates) fulfilled all relevant criteria and was selected for further evaluation. For the selected pest, the risk mitigation measures implemented in the technical dossier from the UK were evaluated taking into account the possible limiting factors. An expert judgement was given on the likelihood of pest freedom taking into consideration the risk mitigation measures acting on the pest, including uncertainties associated with the assessment. The fact that *T. baccata* is an evergreen plant on which *P. ramorum* can cause foliar infection was considered a critical element in the risk assessment. In addition, the age of the plants was considered, reasoning that older trees are more likely to be infected mainly due to longer exposure time and larger size. The degree of pest freedom slightly differs between bare root plants (including whips) and plants in pots (including cell grown plants), with plants in pots being less likely pest free. The Expert Knowledge Elicitation (EKE) indicated with 95% certainty that between 9699 and 10,000 3- to 15-year-old plants in pots and bundles of 2-year-old cell grown plants per 10,000 will be free from *P. ramorum* (non-EU isolates).

KEYWORDS

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

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1 | INTRODUCTION

1.1 | Background and Terms of Reference as provided by European Commission

1.1.1 | Background

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

1.1.2 | Terms of reference

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

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

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

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

In view of the above and in accordance with Article 29 of Regulation (EC) No. 178/2002, the Commission asks EFSA to provide scientific opinion in the field of plant health for *Taxus baccata* 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 *Taxus baccata* 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.

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), Southern Federal District (Yuzhny federalny okrug), North Caucasian Federal District (Severo-Kavkazsky 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.

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. pest which were listed as quarantine pests in the Council Directive 2000/29/EC and were deregulated by Commission Implementing Regulation (EU) 2019/2072) were not considered for further evaluation. In case a pest is at the same time regulated as an RNQP and as a Protected Zone Quarantine pest, in this Opinion, it should be evaluated as quarantine pest.

In its evaluation, the Panel:

- Checked whether the provided information in the technical dossier (hereafter referred to as 'the Dossier') provided by the applicant (the United Kingdom, Department for Environment Food and Rural Affairs – hereafter referred to as 'DEFRA') was sufficient to conduct a commodity risk assessment. When necessary, additional information was requested to the applicant.
- Selected the relevant Union quarantine pests and protected zone quarantine pests (as specified in Commission Implementing Regulation (EU) 2019/2072, hereafter referred to as 'EU quarantine pests') and other relevant pests present in the UK and associated with the commodity.
- Did not assess the effectiveness of measures for Union quarantine pests for which specific measures are in place for the import of the commodity from the UK in Commission Implementing Regulation (EU) 2019/2072 and/or in the relevant legislative texts for emergency measures and if the specific country is in the scope of those emergency measures. The assessment was restricted to whether or not the applicant country implements those measures.
- Assessed the effectiveness of the measures described in the Dossier for those Union quarantine pests for which no specific measures are in place for the importation of the commodity from the UK and other relevant pests present in the UK and associated with the commodity.

Risk management decisions are not within EFSA's remit. Therefore, the Panel provided a rating based on expert judgement regarding the likelihood of pest freedom for each relevant pest given the risk mitigation measures proposed by DEFRA of the UK.

2 | DATA AND METHODOLOGIES

2.1 | Data provided by DEFRA of the UK

The Panel considered all the data and information (hereafter called 'the Dossier') provided by DEFRA of the United Kingdom (UK) in August 2023 including the additional information provided in August 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
1.0	Technical dossier	Taxus baccata commodity information final
2.0	Pest list	Taxus_final_list
3.0	Producers sample product list	Taxus_baccata_producers_sample_product_list
4.0	Distribution of *Taxus baccata* plants	Taxus_baccata_distribution
5.1	Additional information: answers	Taxus additional information 18 July 2024
5.2	Additional information: pests	Taxus_pest_query_2024

[5]In accordance with the Agreement on the withdrawal of the United Kindgdom of Great Britain and Northern Ireland from the European Union and the European Atomic Energy Community, and in particular Article 5(4) of the Windsor Framework in conjunction with Annex 2 to that Framework, for the purposes of this Opinion, references to the United Kingdom do not include Northern Ireland.

The data and supporting information provided by DEFRA formed the basis of the commodity risk assessment. Table 2 shows the main data sources used by DEFRA to compile the Dossier (Dossier Sections 1.0, 2.0, 3.0, 4.0, 5.1. and 5.2).

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

Database	Platform/link
CABI Crop Protection Compendium	https://www.cabi.org/cpc/
CABI Plantwise Plus	https://www.plantwise.org/KnowledgeBank/home.aspx
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/
EU - NOMEN	http://www.eu-nomen.eu/portal/index.php
Forest Research	https://www.forestresearch.gov.uk/
Hantsmoths	https://www.hantsmoths.org.uk/
Identification Technology Program	https://idtools.org/identify.cfm?sort=dateDesc
Index Fungorum	http://www.speciesfungorum.org/Names/Names.asp
MYCOBANK Database	https://www.mycobank.org/
NBN atlas	https://nbnatlas.org/
Norfolk Moths	https://www.norfolkmoths.co.uk/
Plant Parasites of Europe	https://bladmineerders.nl/
Royal Horticultural Society (RHS)	https://www.rhs.org.uk/
Scalenet	http://scalenet.info/catalogue/
The British Plant Gall Society	https://www.britishplantgallsociety.org/
The leaf and stem mines of British flies and other insects	http://www.ukflymines.co.uk/index.php
UK moths	https://ukmoths.org.uk/
UK Plant Health Risk Register	https://planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/index.cfm
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 *T. baccata*. The following searches were combined: (i) a general search to identify pests reported on *T. baccata* in the databases, (ii) a search to identify any EU quarantine pest reported on *Taxus* 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 May and June 2024. 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. baccata*. As for Web of Science, the literature search was performed using a specific, *ad hoc* established search string (see Appendix B). The string was run in 'All Databases' with no range limits for time or language filters. This is further explained in Section 2.3.2.

TABLE 3 Databases used by EFSA for the compilation of the pest list associated with *Taxus baccata*.

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 Parasites of Europe	https://bladmineerders.nl/
Plant Pest Information Network	https://www.mpi.govt.nz/news-and-resources/resources/registers-and-lists/plant-pest-information-network/
Scalenet	http://scalenet.info/associates/

TABLE 3 (Continued)

Database	Platform/link
Scolytinae hosts and distribution database	https://www.scolytinaehostsdatabase.eu/site/it/home/
Spider Mites Web	https://www1.montpellier.inra.fr/CBGP/spmweb/
USDA ARS Fungal Database	https://fungi.ars.usda.gov/
Web of Science: All Databases (Web of Science Core Collection, CABI: CAB Abstracts, BIOSIS Citation Index, Chinese Science Citation Database, Current Contents Connect, Data Citation Index, FSTA, KCI-Korean Journal Database, Russian Science Citation Index, MEDLINE, SciELO Citation Index, Zoological Record)	Web of Science https://www.webofknowledge.com
World Agroforestry	https://www.worldagroforestry.org/treedb2/speciesprofile.php?Spid=1749

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

2.3 | Methodology

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

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

In the second step, the implemented risk mitigation measures for each relevant pest were evaluated.

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

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

2.3.1 | Commodity data

Based on the information provided by DEFRA of the UK, the characteristics of the commodity were summarised.

2.3.2 | Identification of pests potentially associated with the commodity

To evaluate the pest risk associated with the importation of the commodity from the UK, a pest list was compiled. The pest list is a compilation of all identified plant pests reported as associated with *T. baccata* based on information provided in the Dossier Sections 1.0, 2.0, 3.0, 4.0, 5.1 and 5.2 and on further literature searches performed by the Panel. The search strategy and search syntax were adapted to each of the databases listed in Table 3, according to the options and functionalities of the different databases and CABI keyword thesaurus.

The scientific name of the host plant (i.e. *Taxus baccata*) was used when searching in the EPPO Global database and CABI Crop Protection Compendium. The same strategy was applied to the other databases excluding EUROPHYT and Web of Science.

EUROPHYT was investigated by searching for the interceptions associated with *T. baccata* imported from the whole world from 1995 to May 2020 and TRACES-NT from May 2020 to 30 September 2024, respectively. For the pests selected for further evaluation, a search in the EUROPHYT and/or TRACES-NT was performed for the interceptions from the whole world, at species level, for all the available years until 30 September 2024.

The search query used for Web of Science Databases was designed combining English common names for pests and diseases, terms describing symptoms of plant diseases and the scientific and English common names of the commodity and excluding pests which were identified using searches in other databases. The established search strings are detailed in Appendix B and they were run on 21 May 2024.

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

The compiled pest list (see Microsoft Excel® in Appendix F) includes all pests reported as hosted by *T. baccata*.

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

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

2.3.3 | Listing and evaluation of risk mitigation measures

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

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

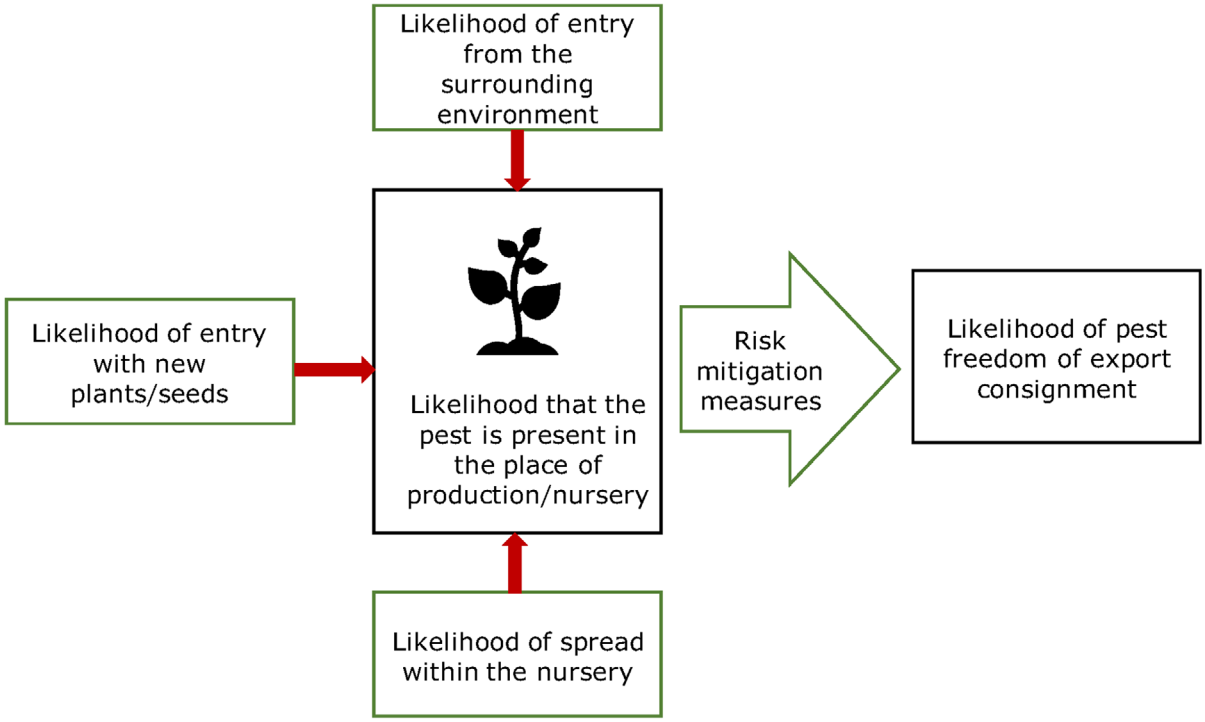

FIGURE 1 Conceptual framework to assess likelihood that plants are exported free from relevant pests (Source: EFSA PLH Panel, 2019).

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

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

2.3.4 | Expert Knowledge Elicitation

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

For the purpose of the EKE, the commodities (see Section 3.1) were grouped as follows:

1. Bare root plants which include 2- to 7-year-old plants and 2-year-old whips. These plants are exported as single plants or in bundles of 5–50 plants.

2. Plants in pots which include 3- to 15-year-old single plants in pots and 2-year-old cell grown plants in bundles of 10, 12 or 15.

Singles plants and bundles of plants were considered together during the EKE. The following reasoning is given for not distinguishing bundles of bare root plants and bundles of cell grown plants from single plants:

i) There is no quantitative information available regarding clustering of plants during production.
ii) Single plants are grouped in bundles after sorting.
iii) For the pests under consideration, a cross-contamination during transport is possible.
iv) Bundles of small plants resemble in their risk larger single plants.

The following reasoning is given for distinguishing bare root plants from plants in pots:

i) Infected needles could fall and be incorporated in the growing media; therefore, a higher risk is expected for plants in pots than for bare root plants, where leaves incorporated in the growing media are washed away.
ii) Infected needles could be more easily overlooked in larger trees with a bigger canopy as is the case for plants in pots up to 15 years old.

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

3 | COMMODITY DATA

3.1 | Description of the commodity

The commodities to be imported from the UK to the EU are plants of *T. baccata* (common names: Yew, English yew, European yew, common yew; Family: Taxaceae) as bare root plants, including whips, and rooted plants in pots, including cell grown plants (Dossier Sections 1.0 and 5.1).

The commodities are as follows:

- **Bare root plants (whips)**: The plants are 2 years old, with a diameter between 3.5 and 4 mm and height between 30 and 80 cm. Whips are slender, unbranched trees that are exported in bundles.
- **Bare root plants**: The age of the plants is between 2 and 7 years. The diameter is between 3.5 and 20 mm and the height between 30 and 200 cm. Bare root plants are exported as single trees or in bundles of 5–50 plants, depending on their size.
- **Cell-grown plants**: The plants are 2 years old, with a diameter between 3.5 and 4 mm and height between 30 and 45 cm. Prior to export, cell grown plants are extracted from their cells and bundled into 10, 12 or 15 according to the nursery choice.
- **Rooted plants in pots:** The age of the plants is between 3 and 15 years. The diameter is between 7 and 100 mm and the height between 45 and 300 cm.

The growing media are virgin peat or peat-free compost (a mixture of coir, tree bark, wood fibre, etc.) (Dossier Section 1.0) complying with the requirements for growing media as specified in the Annex VII of the Commission Implementing Regulation 2019/2072.

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

The trade volume of *T. baccata* according to the Dossier Section 1.0 is 10,000 bare root plants and 25,000 rooted plants in pots per year (see Table 4). The trade of these plants will mainly be to Northern Ireland and the Republic of Ireland.

TABLE 4 Trade volumes of *Taxus baccata* commodities.

Type of plant	Number of items per year	Seasonal timing of export
Bare root plants (including whips)	10,000	November to April
Rooted plants in pots (including cell grown plants)	25,000	Mainly September to May

According to the Dossier Section 1.0, the intended use of the commodities is as follows. Plants are supplied directly to professional operators and traders. Uses may include propagation, growing-on, onward trading or onward sales to final customers but will generally fall into the following categories:

- Tree production and further growing-on by professional operators;
- Direct sales to final users as ornamentals;
- Landscapers, mainly for woodland and ornamental/landscape planting.

3.2 | Description of the production areas

There are two known nurseries in the UK that are producing *T. baccata* plants for export to the EU (Dossier Section 1.0). The locations of these nurseries are provided in Table 5. However, the applicant pointed out in Dossier Section 5.1 that these are the two nurseries which contributed with information to the Dossier and that this does not preclude that other nurseries may wish to export this product to the EU in future.

TABLE 5 Coordinates of *T. baccata* nurseries according to Dossier Section 5.1.

Nursery	Longitude	Latitude
1	–1.32179	53.99612
2	–2.62551	52.30226

T. baccata is 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 Section 1.0).

The size of the nurseries is between 8 and 150 ha for container grown stock (plants in pots) and up to 325 ha for field grown stock (Dossier Section 1.0).

The nurseries also grow other plant species such as *Castanea, Larix* and *Viburnum*. A full list of plants is provided in Appendix C. The minimum and maximum proportion of *T. baccata* compared to the other plant species grown in the nurseries is between 0.2% and 3%. There are nurseries which also produce *T. baccata* plants for the local market, and there is no distancing between production areas for the export and the local market (Dossier Section 1.0).

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 Section 1.0). In access areas, non-cultivated herbaceous plants are kept to a minimum and only exist at nursery boundaries.

There are hedges surrounding the export nurseries made up of a range of species including hazel (*Corylus avellana*), yew (*T. baccata*), holly (*Ilex* spp.), ivy (*Hedera* spp.), alder (*Alnus glutinosa*), cherry laurel (*Prunus laurocerasus*), hawthorn (*Crataegus* spp.), blackthorn (*Prunus spinosa*) and leylandii (*Cupressus* × *leylandii*) (Dossier Section 1.0).

The minimum distance in a straight line, between the growing area in the nurseries and the closest *T. baccata* plants in the local surroundings is approximately 3 m (Dossier Section 5.1).

Nurseries are predominately situated in rural areas. The surrounding land tends to be arable farmland with some pasture for animals and small areas of woodland. Hedges are often used to define field boundaries and grown along roadsides (Dossier Section 1.0).

Arable crops present around the nurseries are rotated in line with good farming practices and could include oilseed rape (*Brassica napus*), wheat (*Triticum* spp.), barley (*Hordeum vulgare*), turnips (*Brassica rapa* subsp. *rapa*), potatoes (*Solanum tuberosum*) and maize (*Zea mays*) (Dossier Section 1.0).

Pastures present around the nurseries are predominantly ryegrass (*Lolium* spp.) (Dossier Section 1.0).

Woodland is present around the nurseries. Woodlands tend to be a standard UK mixed woodland, with a range of native trees such as oak (*Quercus robur*), pine (*Pinus* spp.), poplar (*Populus* spp.), ash (*Fraxinus* spp.), sycamore (*Acer pseudoplatanus*), holly (*Ilex* spp.), Norway maple (*Acer platanoides*) and field maple (*Acer campestre*). The nearest woodland to one of the nurseries borders the boundary fence (Dossier Section 1.0).

It is not possible to identify the plant species growing within the gardens of private dwellings around the nurseries (Dossier Section 1.0). The following plant species may be grown in some of the nurseries: *Acer* spp., *Castanea sativa*, *Castanea* spp., conifers, *Dryopteris filix mas*, *Fagus sylvatica*, *Larix* spp., *Morus* spp., *Prunus* spp., *Quercus robur*, *Sorbus aucuparia*, *Syringa vulgaris* and *Ulmus glabra* (Dossier Section 5.1).

The following plant species may be grown within a 2-km zone surrounding the nurseries: *Acer* spp., *Apium* spp., *Brassica* spp., *Camellia* spp., *Castanea sativa*, *Castanea* spp., conifers, *Dryopteris filix mas*, *Fagus sylvatica*, *Geranium robertianum*, *Larix kaempferi*, *Larix* spp., *Malus domestica*, *Morus* spp., *Pieris* spp., *Prunus* spp., *Quercus robur*, *Rhododendron* spp., *Rubus* spp., *Solanum lycopersicum*, *Sorbus aucuparia*, *Syringa vulgaris*, *Taraxacum officinale*, *Trifolium repens*, *Ulmus glabra*, *Urtica dioica*, *Vaccinium* spp., *Viburnum* spp. and *Vitis vinifera* (Dossier Section 5.1).

[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. baccata* 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 Section 1.0).

T. baccata seeds purchased in the UK may be certified under the Forestry Commission's Voluntary Scheme for the Certification of Native Trees and Shrubs. This allows certification of seeds not covered by The Forest Reproductive Material (Great Britain) Regulations 2002. Seedlings sourced in the UK are certified with UK Plant Passports. A small percentage of seedlings are obtained from EU countries, such as the Netherlands, Belgium, France and they are certified with phytosanitary certificates (Dossier Section 1.0).

None of the nurseries expected to export to the EU produce plants from grafting; they use only seed and seedlings; therefore, there are no mother plants of *T. baccata* present in the nurseries (Dossier Section 1.0).

3.3.2 | Production cycle

Plants are either grown in containers (cells, pots, tubes, etc.) or in the field. Cell-grown plants can be grown in greenhouses; however, most plants will be field grown, or field-grown in containers (Dossier Section 1.0).

As the plants are intended for outdoor cultivation, it is normally only the early growth stages that are maintained under protection, such as young plants 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 1.0 and 5.1).

Rooted plants in pots may either be grown in pots in EU-compliant media their whole life or be initially grown in the field, lifted at no more than 6 years old, root-washed to remove any soil and subsequently grown from that point on in pots in EU-compliant growing media. Trees will be lifted from the field at least one growing season before export (Dossier Sections 1.0 and 5.1).

Whips and cell grown plants are not pruned. Bare root plants and rooted plants in pots will be pruned as required. Pruning of roots takes place during transplanting every 2 years in the field and during re-potting every 2–3 years (Dossier Sections 1.0 and 5.1).

According to the Dossier Section 1.0, bare root plants will be harvested in winter (November–March) 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, but more usually September to May.

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 Section 1.0).

Overhead, sub-irrigation, or drip irrigation is applied. 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 D. Regardless of the source of the water used to irrigate, none of the nurseries are known to have experienced the introduction of a pest/disease because of contamination of the water supply (Dossier Section 1.0).

Growers are required to assess whether water sources, irrigation and drainage systems used in plant production could harbour and transmit plant pests. Water is routinely sampled and sent for analysis (Dossier Section 1.0).

Growers must have an appropriate programme of weed management in place in the nursery (Dossier Section 1.0).

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 viral 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 1.0).

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 Section 1.0).

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 Science and Advice for Scottish Agriculture (SASA) for Scotland and are authorised to issue 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. The UK surveillance is based on visual inspection with samples taken from symptomatic material, and where appropriate, samples are also taken from asymptomatic material (e.g. plants, tubers, soil, watercourses). (Dossier Section 1.0).

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 Section 1.0).

Plant material is regularly monitored for plant health issues. Pest monitoring is carried out visually by trained nursery staff via regular crop walking and records are kept of this monitoring. Qualified agronomists also undertake crop walks to verify the producer's assessments. Curative or preventative actions as described below 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. All plants are also carefully inspected by nurseries on arrival and dispatch for any plant health issues (Dossier Section 1.0).

The nurseries follow the Plant Health Management Standard issued by the Plant Healthy Certification Scheme which DEFRA, the Royal Horticultural Society (Dossier Section 1.0).

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 Section 1.0).

In the Dossier, it is reported that, in the last 3 years, there has been a substantial level of inspection of registered *Taxus* producers, both in support of the Plant Passporting scheme (checks are consistent with EU legislation, with a minimum of one a year for authorised operators) and as part of the Quarantine Surveillance programme (Great Britain uses the same framework for its surveillance programme as the EU). The number of inspected nurseries was 4 in 2020 and up to 16 in 2022. Inspections targeted *P. ramorum* but plants were also inspected for symptoms and signs of other pests including quarantine pests. No positive findings of quarantine or provisional quarantine pest have been reported on *T. baccata* over that period (Dossier Section 1.0). All residues or waste materials are reported to be assessed for the potential to host, harbour and transmit pests (Dossier Section 1.0).

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 Section 1.0).

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 Section 1.0).

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 reported to be used to control outbreaks, rather than using chemical treatments (Dossier Section 1.0).

Examples of typical treatments used against Botrytis, root rots, aphids and weeds are listed in the Dossier Sections 1.0 and 5.1. These would be applied at the manufacturers recommended rate and intervals (Dossier Sections 1.0 and 5.1).

There are no specific measures/treatments against 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 Section 1.0).

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 overwintering sites for pests and diseases (Dossier Section 1.0).

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 Section 1.0).

Separate to any official inspection, plant material is checked by growers for plant health issues prior to dispatch (Dossier Section 1.0).

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 Section 1.0).

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 Section 1.0).

3.3.6 | Export procedure

Bare root plants, harvested from November to March, 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 for up to 5 months after harvesting prior to export (Dossier Section 1.0).

Cell grown plants are bundled into 10, 12 or 15 according to nursery choice (Dossier Section 5.1).

Prior to export bare root plants may be placed in bundles of 5–50 plants, depending on their size, 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 Section 1.0).

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 Section 1.0).

The preparation of the commodities for export is carried out inside the nurseries in a closed environment, e.g. packing shed (Dossier Section 1.0).

Plants are transported by lorry (size dependent on load quantity). Cold-sensitive plants are occasionally transported by temperature-controlled lorry if weather conditions during transit are likely to be very cold (Dossier Section 1.0).

4 | IDENTIFICATION OF PESTS POTENTIALLY ASSOCIATED WITH THE COMMODITY

The search for potential pests associated with the commodity rendered 352 species (see Microsoft Excel® file in Appendix F).

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

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

Five EU-quarantine species that are reported to use *T. baccata* as a host plant were evaluated (Table 6) for their relevance of being included in this Opinion.

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

a. the pest is present in the UK;
b. the commodity is host of the pest;
c. one or more life stages of the pest can be associated with the specified commodity.

Pests that fulfilled all criteria were selected for further evaluation.

Table 6 presents an overview of the evaluation of the five EU-quarantine pest species that are reported as associated with the commodity.

Of these five EU-quarantine pest species evaluated, one (*Phytophthora ramorum* (non-EU isolates)) is present in the UK and can be associated with the commodity and hence was selected for further evaluation.

There was one additional EU quarantine pest, i.e. the nematode *Meloidogyne chitwoodi* for which the association with *T. baccata* was found in Nemaplex (Ferris, 2024). However, the consultation of the original paper den Nijs et al. (2004) revealed that *T. baccata* is not reported as a host of *M. chitwoodi*. Therefore, this pest was not further considered.

TABLE 6 Overview of the evaluation of the five EU-quarantine pest species for which information was found in the Dossier, databases and literature searches that use *Taxus* 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	*Taxus* confirmed as a host (reference)	Pest can be associated with the commodity	Pest relevant for the opinion
1	*Oligonychus perditus*	OLIGPD	Mites	No	*Taxus cuspidata* (EPPO, 2024; Migeon & Dorkeld, 2024)	Not assessed	No
2	*Phloeosinus perlatus* as Scolytinae spp. (non-European)	PHLSPE	Insects	No	*Taxus* spp. (Wood & Bright, 1992)	Not assessed	No
3	*Phytophthora ramorum* (non-EU isolates)	PHYTRA	Oomycetes	Yes	*Taxus baccata* (Lane et al., 2004)	Yes	Yes
4	*Scolytoplatypus daimio* as Scolytinae spp. (non-European)		Insects	No	*Taxus baccata* (Wood & Bright, 1992)	Not assessed	No
5	*Xiphinema americanum sensu stricto*	XIPHAA	Nematodes	No	*Taxus canadensis* (Goodey et al., 1965)	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).

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

Based on the information collected, 347 potential pests known to be associated with the species commodity were evaluated for their relevance to this Opinion. Pests were excluded from further evaluation when at least one of the conditions listed above (a–e) was not met. Details can be found in Appendix F (Microsoft Excel® file). 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 *T. baccata* can provide information on some of the organisms that can be present on *T. baccata* despite the current measures taken. According to EUROPHYT (2024) (accessed on 23 October 2024) and TRACES-NT (2024) (accessed on 23 October 2024), there were no interceptions of harmful organisms associated with plants for planting of *T. baccata* from the UK destined to the EU Member States from 1995 to 30 September 2024. It should be noted that the UK was previously part of the EU and at that time *Taxus* was not subjected to plant passport, and that since Brexit the movement of *Taxus* to the EU has been banned according to the current plant health legislation.

4.4 | List of potential pests not further assessed

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

4.5 | Summary of pests selected for further evaluation

Only *P. ramorum* (Table 7) satisfied all the relevant criteria listed above in Section 4.1. The effectiveness of the risk mitigation measures applied to the commodity was evaluated for the selected pest.

TABLE 7 Relevant pest selected for further evaluation.

Number	Current scientific name	EPPO code	Name used in the EU legislation	Taxonomic information	Group	Regulatory status
1	*Phytophthora ramorum*	PHYTRA	*Phytophthora ramorum* (non-EU isolates)	Peronosporales Peronosporaceae	Oomycetes	EU Quarantine Pest according to Commission Implementing Regulation (EU) 2019/2072

5 | RISK MITIGATION MEASURES

The Panel evaluated the likelihood that *P. ramorum* (Table 7) could be present in *T. baccata* nurseries by evaluating the possibility that the commodity in the export nurseries is infested either by:

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

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

5.1 | Risk mitigation measures applied in the UK

With the information provided by the UK (Dossier Sections 1.0, 2.0, 3.0, 4.0, 5.1 and 5.2), the Panel summarised the risk mitigation measures (see Table 8) that are implemented in the production nursery.

TABLE 8 Overview of implemented risk mitigation measures for *T. baccata* 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 Section 1.0).
2	Physical separation	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. All plants within UK nurseries are grown under the same phytosanitary measures, meeting the requirements of the UK Plant Passporting regime (Dossier Section 1.0).
3	Certified plant material	*T. baccata* seed purchased in the UK may be certified under the Forestry Commission's Voluntary Scheme for the Certification of Native Trees and Shrubs. This allows certification of seeds not covered by The Forest Reproductive Material (Great Britain) Regulations 2002. Seedlings sourced in the UK are certified with UK Plant Passports (Dossier Section 1.0). A small percentage of seed and young plants may be obtained from EU (including the Netherlands, Belgium, France); seeds and seedlings from the EU countries are certified with phytosanitary certificates (Dossier Section 1.0).
4	Growing media	The growing media used is either virgin peat or peat-free compost (a mixture of coir, tree bark, wood fibre, etc.) complying with the requirements for growing media as specified in the Annex VII of the Commission Implementing Regulation 2019/2072. This growing media is certified and 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 completely hygienic and 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 Section 1.0).
5	Surveillance, monitoring and sampling	For additional information, see Section 3.3.3 Pest monitoring during production.
6	Hygiene measures	All nurseries have plant hygiene and housekeeping rules and practices in place, which are communicated to all relevant employees. 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 transfer of pests between subjects. There are various disinfectants available, with Virkon S (active substance: potassium peroxymonosulfate and sodium chloride) being a common example (Dossier Section 1.0). Growers must have an appropriate programme of weed management in place on the nursery (Dossier Section 1.0).
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 Section 1.0). All residues or waste materials shall be assessed for the potential to host, harbour or transmit pests (Dossier Section 1.0).
8	Irrigation water	Water for irrigation is routinely sampled and sent for analysis (Dossier Section 1.0).

TABLE 8 (Continued)

Number	Risk mitigation measure	Implementation in the UK
9	Application of pest control measures	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 Section 1.0). Pest and disease pressure varies from season to season. Plant protection products are applied 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 reported to be used to control outbreaks, rather than using chemical treatments (Dossier Section 1.0). Examples of typical treatments used against Botrytis, root rot, aphids and weeds are detailed in the Dossier Sections 1.0 and 5.1). These would be applied at the manufacturers recommended rate and intervals (Dossier Section 1.0).
10	Measures against soil pests	There are no specific measures/treatments against 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 Section 1.0).
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 Section 1.0). Separate to any official inspection, plant material is checked by growers for plant health issues prior to dispatch (Dossier Section 1.0). 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 Section 1.0).
12	Separation/grouping and/or packing for transport to the destination	Prior to export bare root plants may be placed in bundles of 5–50 plants, depending on their size; 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 Section 1.0). 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 Section 1.0). The preparation of the commodities for export is carried out inside the nurseries in a closed environment, e.g. packing shed (Dossier Section 1.0). 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 Section 1.0).

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

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

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

An overview of the evaluation of a relevant pest is given in the section below (Section 5.2.1). The outcome of the EKE regarding pest freedom after the evaluation of the currently proposed risk mitigation measures is summarised in Section 5.2.2.

5.2.1 | Overview of the evaluation of *Phytophthora ramorum* (non-EU isolates) (Peronosporales; Peronosporaceae)

Overview of the evaluation of *P. ramorum* (non-EU isolates) for bare root plants (2–7 years old), including whips (2 years old)					
Rating of the likelihood of pest freedom	Extremely frequently pest free (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free plants/bundles	**9809** out of 10,000 **plants/bundles**	**9894** out of 10,000 **plants/bundles**	**9941** out of 10,000 **plants/bundles**	**9972** out of 10,000 **plants/bundles**	**9992** out of 10,000 **plants/bundles**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected plants/bundles	**8** out of 10,000 **plants/bundles**	**28** out of 10,000 **plants/bundles**	**59** out of 10,000 **plants/bundles**	**106** out of 10,000 **plants/bundles**	**191** out of 10,000 **plants/bundles**
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** *Phytophthora ramorum* is present in the UK with a restricted distribution. The pathogen has a wide host range including *T. baccata*. The main hosts (e.g. *Rhododendron* spp., *Larix* spp., etc.) can be present either inside or in the surroundings of the nurseries. Aerial inoculum could be produced on these host plants and cause foliar and bark infections on the commodity. **Measures taken against the pest and their efficacy** *Phytophthora ramorum* is a quarantine pest in the UK and under official control. General measures taken by the nurseries are effective against the pathogen. These measures include (a) the use of certified plant material and growing media; (b) inspections, surveillance, monitoring, sampling and laboratory testing; and (c) application of pest control products. **Interception records** In the EUROPHYT/TRACES-NT database, there are no records of notification of *T. baccata* plants for planting neither from the UK nor from other countries due to the presence of *P. ramorum* between the years 1995 and September 2024 (EUROPHYT, 2024; TRACES-NT, 2024). **Shortcomings of current measures/procedures** – None **Main uncertainties** – The level of susceptibility of *T. baccata* to the pathogen. – Whether symptoms may be promptly detected. – The presence/abundance of the pathogen in the area where the nurseries are located. – Effect of fungicide treatments against the pathogen.				

Overview of the evaluation of *P. ramorum* (non-EU isolates) for plants in pots up to 15 years old, including 2-year-old cell grown plants					
Rating of the likelihood of pest freedom	Extremely frequently pest free (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free plants/bundles	**9699** out of 10,000 **plants/bundles**	**9819** out of 10,000 **plants/bundles**	**9907** out of 10,000 **plants/bundles**	**9964** out of 10,000 **plants/bundles**	**9991** out of 10,000 **plants/bundles**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected plants/bundles	**9** out of 10,000 **plants/bundles**	**36** out of 10,000 **plants/bundles**	**93** out of 10,000 **plants/bundles**	**181** out of 10,000 **plants/bundles**	**301** out of 10,000 **plants/bundles**
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** *Phytophthora ramorum* is present in the UK with a restricted distribution. The pathogen has a wide host range including *T. baccata*. The main hosts (e.g. *Rhododendron* spp., *Larix* spp., etc.) can be present either inside or in the surroundings of the nurseries. Aerial inoculum could be produced on these host plants and cause foliar and bark infections on the commodity. Infected, fallen needles could become incorporated into the growing medium of the plants in pots. **Measures taken against the pest and their efficacy** *Phytophthora ramorum* is a quarantine pest in the UK and under official control. General measures taken by the nurseries are effective against the pathogen. These measures include (a) the use of certified plant material and growing media; (b) inspections, surveillance, monitoring, sampling and laboratory testing; and (c) application of pest control products. **Interception records** In the EUROPHYT/TRACES-NT database, there are no records of notification of *T. baccata* plants for planting neither from the UK nor from other countries due to the presence of *P. ramorum* between the years 1995 and September 2024 (EUROPHYT, 2024; TRACES-NT, 2024).				

(Continued)

	Shortcomings of current measures/procedures – None **Main uncertainties** – The level of susceptibility of *T. baccata* to the pathogen. – Whether symptoms may be promptly detected. – The presence/abundance of the pathogen in the area where the nurseries are located. – Effect of fungicide treatments against the pathogen. – Whether fallen needles will be completely removed from the growing medium.

For more details, see relevant pest data sheet on *Phytophthora ramorum* (non-EU isolates) (Section A.1 in Appendix A).

5.2.2 | Outcome of Expert Knowledge Elicitation

Table 9 and Figure 2 show the outcome of the EKE regarding pest freedom after the evaluation of the implemented risk mitigation measures for all the evaluated pests.

Figure 3 provides an explanation of the descending distribution function describing the likelihood of pest freedom after the evaluation of the implemented risk mitigation measures for *T. baccata* plants in pots up to 15 years old designated for export to the EU for *Phytophthora ramorum*.

TABLE 9 Assessment of the likelihood of pest freedom following evaluation of current risk mitigation measures against pests on *Taxus baccata* plants designated for export to the EU. In panel A, the median value for the assessed level of pest freedom for each pest is indicated by 'M', the 5% percentile is indicated by 'L' and the 95% percentile is indicated by 'U'. The percentiles together span the 90% uncertainty range regarding pest freedom. The pest freedom categories are defined in panel B of the table.

Number	Group	Pest species	Sometimes pest free	More often than not pest free	Frequently pest free	Very frequently pest free	Extremely frequently pest free	Pest free with some exceptional cases	Pest free with few exceptional cases	Almost always pest free
1	Oomycetes	*Phytophthora ramorum* (non-EU isolates), bare root plants				L	M		U	
2	Oomycetes	*Phytophthora ramorum* (non-EU isolates), plants in pots				L	M		U	

PANEL A

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

PANEL B

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

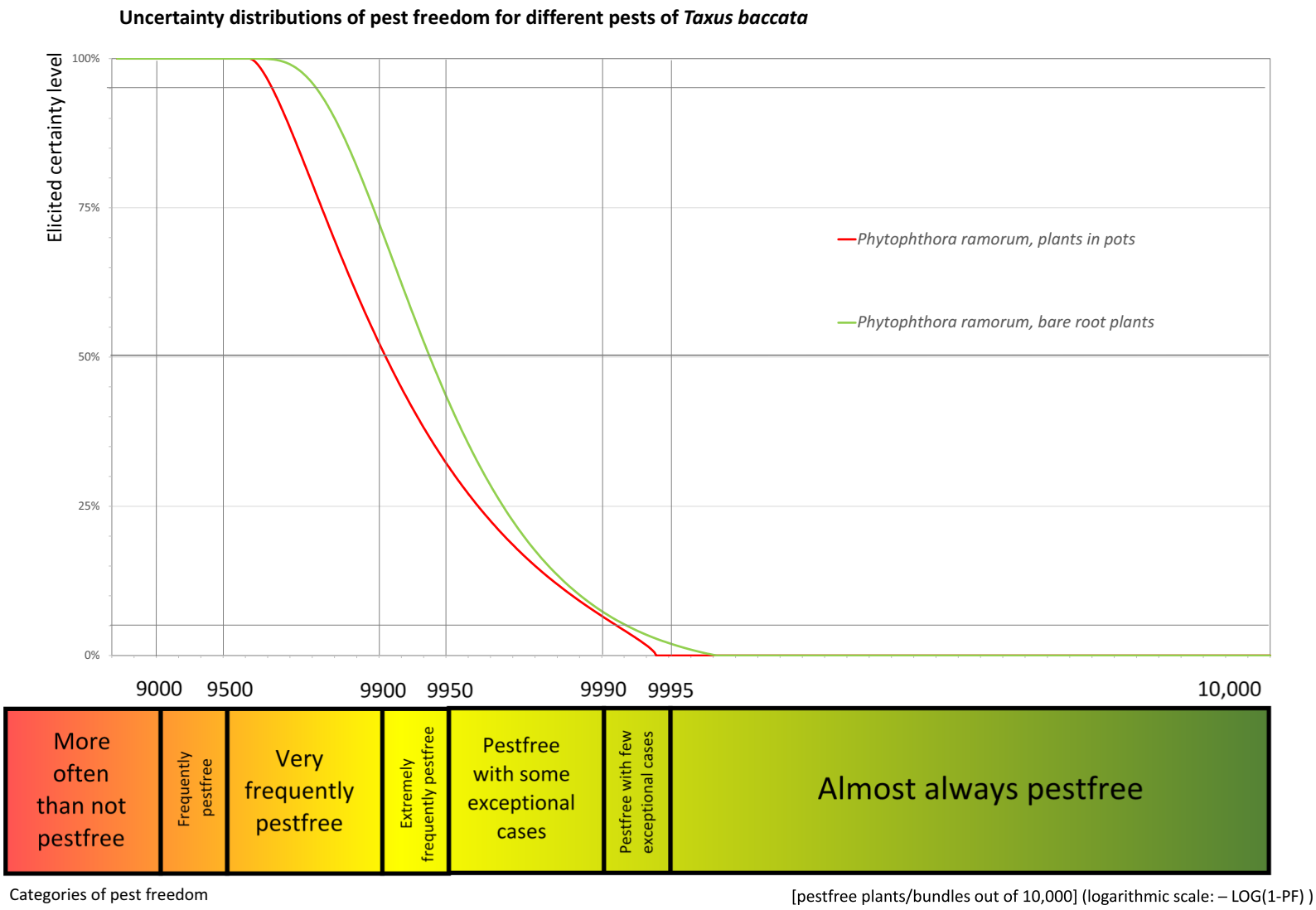

FIGURE 2 Elicited certainty (*y*-axis) of the number of pest-free *Taxus baccata* plants in pots and bare root plants (*x*-axis; log-scaled) out of 10,000 plants designated for export to the EU from the UK for all evaluated pests visualised as descending distribution function. Horizontal lines indicate the percentiles (starting from the bottom 5%, 25%, 50%, 75%, 95%).

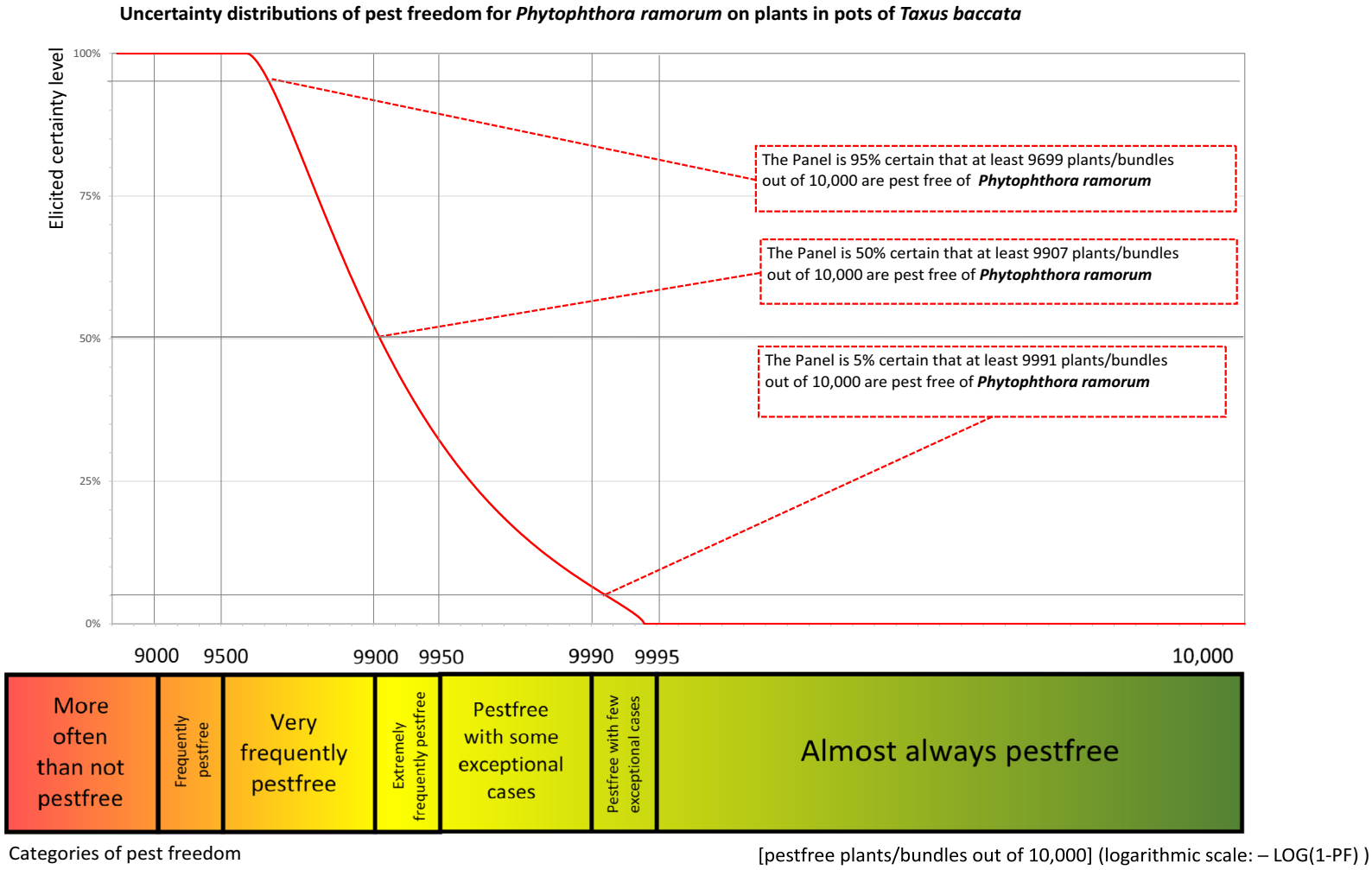

FIGURE 3 Explanation of the descending distribution function describing the likelihood of pest freedom after the evaluation of the implemented risk mitigation measures for plants designated for export to the EU based on the example of *Phytophthora ramorum* on plant in pots of *Taxus baccata*.

6 | CONCLUSIONS

There is one relevant pest present in the UK and considered to be potentially associated with the *T. baccata* commodities imported into the EU from the UK.

This pest is *Phytophthora ramorum* (non-EU isolates). The likelihood of pest freedom after evaluation of the implemented risk mitigation measures for the commodities designated for export to the EU was estimated. In the assessment of risk, the fact that *T. baccata* is an evergreen plant on which *P. ramorum* can cause foliar infection was considered a critical element. In addition, the age of the plants was considered, reasoning that older trees are more likely to be infested mainly due to longer exposure time and larger size.

For *P. ramorum* (non-EU isolates), the likelihood of pest freedom for 2- to 7-year-old bare root plants and whips exported either as single plants or in bundles was estimated as 'extremely frequently pest free' with a 90% uncertainty range from 'very frequently pest free' to 'pest free with few exceptional cases'. The EKE indicated, with 95% certainty, that between 9809 and 10,000 plants or bundles per 10,000 plants/bundles will be free from *P. ramorum*. The likelihood of pest freedom for 3- to 15-year-old plants in pots and bundles of 2-year-old cell-grown plants was estimated as 'extremely frequently pest free' with a 90% uncertainty range from 'very frequently pest free' to 'pest free with few exceptional cases'. The EKE indicated, with 95% certainty, that between 9699 and 10,000 plants/bundles in pots per 10,000 will be free from *P. ramorum*.

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, 2024a, 2024b).
Entry (of a pest)	Movement of a pest into an area where it is not yet present, or present but not widely distributed and being officially controlled (FAO, 2024b).
Establishment (of a pest)	Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO, 2024b).
Impact (of a pest)	The impact of the pest on the crop output and quality and on the environment in the occupied spatial units.
Introduction (of a pest)	The entry of a pest resulting in its establishment (FAO, 2024b).
Measures	Control (of a pest) is defined in ISPM 5 (FAO, 2024b) as 'Suppression, containment or eradication of a pest population' (FAO, 2024a). Control measures are measures that have a direct effect on pest abundance. Supporting measures are organisational measures or procedures supporting the choice of appropriate risk mitigation measures that do not directly affect pest abundance.
Pathway	Any means that allows the entry or spread of a pest (FAO, 2024b).
Phytosanitary measures	Any legislation, regulation or official procedure having the purpose to prevent the introduction or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests (FAO, 2024b).
Protected zone	A Protected zone is an area recognised at EU level to be free from a harmful organism, which is established in one or more other parts of the Union.
Quarantine pest	A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled (FAO, 2024b).
Regulated non-quarantine pest	A non-quarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact and which is therefore regulated within the territory of the importing contracting party (FAO, 2024b).
Risk mitigation measure	A measure acting on pest introduction and/or pest spread and/or the magnitude of the biological impact of the pest should the pest be present. A risk mitigation measure may become a phytosanitary measure, action or procedure according to the decision of the risk manager.
Spread (of a pest)	Expansion of the geographical distribution of a pest within an area (FAO, 2024b).

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SUPPORTING INFORMATION

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

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APPENDIX A

Data sheets of pests selected for further evaluation

A.1 | *PHYTOPHTHORA RAMORUM* (NON-EU ISOLATES)

A.1.1 | Organism information

Taxonomic information	Current valid scientific name: *Phytophthora ramorum* Synonyms: – Name used in the EU legislation: *Phytophthora ramorum* (non-EU isolates) Werres, De Cock & Man in 't Veld [PHYTRA] Order: Peronosporales Family: Peronosporaceae Common name: Sudden Oak Death (SOD), ramorum bleeding canker, ramorum blight, ramorum leaf blight, twig and leaf blight Name used in the Dossier: *Phytophthora ramorum*
Group	Oomycetes
EPPO code	PHYTRA
Regulated status	The pathogen is listed in Annex II of Commission Implementing Regulation (EU) 2019/2072 as *Phytophthora ramorum* (non-EU isolates) Werres, De Cock & Man in 't Veld [PHYTRA]. The EU isolates of *P. ramorum* are listed as regulated non quarantine pest (RNQP). The pathogen is included in the EPPO A2 list (EPPO, 2024a). *Phytophthora ramorum* is quarantine in Canada, China, Israel, Mexico, Morocco, South Korea and the UK. It is on A1 list of Brazil, Chile, Egypt, Kazakhstan, Switzerland, Türkiye and EAEU (=Eurasian Economic Union: Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia) (EPPO, 2024b).
Pest status in the UK	Non-EU isolates of *Phytophthora ramorum* are present in the UK (Brown & Brasier, 2007; Dossier Section 2.0; CABI, 2020; EPPO, 2024c). The pest is not widely distributed and under official control. It has been found in most regions of the UK, but it is more often reported in more humid, western regions (Dossier Section 2.0)
Pest status in the EU	*Phytophthora ramorum* is present in the EU and it is currently reported in the following EU Member States: Belgium, Croatia, Denmark, Finland (transient), France, Germany, Ireland, Luxembourg, the Netherlands, Poland, Portugal and Slovenia (EPPO, 2024c).
Host status on *Taxus baccata*	*Phytophthora ramorum* was reported to infect *T. baccata* in the UK, specifically on young container-grown plants in a nursery in north-west England (Lane et al., 2004). According to APHIS USDA (2022), *T. baccata* is a proven host since Koch's postulate has been completely fulfilled by Lane et al. (2004). During in vitro leaf inoculation studies, *T. baccata* was only slightly affected by *P. ramorum*. Increased necrosis was apparent on needles that were wounded prior to inoculation (Denman et al., 2005).
PRA information	Pest Risk Assessments available: – Risk analysis for *Phytophthora ramorum* Werres, de Cock & Man in't Veld, causal agent of sudden oak death, ramorum leaf blight, and ramorum dieback (Cave et al., 2008); – Risk analysis of *Phytophthora ramorum*, a newly recognised pathogen threat to Europe and the cause of sudden oak death in the USA (Sansford et al., 2009); – Scientific opinion on the pest risk analysis on *Phytophthora ramorum* prepared by the FP6 project RAPRA (EFSA PLH Panel, 2011); – Pest risk management for *Phytophthora kernoviae* and *Phytophthora ramorum* (EPPO, 2013); – ANSES opinion and report on 'Host species in the context of control of *Phytophthora ramorum*' (ANSES 2018); – UK Risk Register Details for *Phytophthora ramorum* (DEFRA, 2022); – Risk of *Phytophthora ramorum* to the United States (USDA, 2023); – Updated pest risk assessment of *Phytophthora ramorum* in Norway (Thomsen et al., 2023).
Other relevant information for the assessment	
Biology	*Phytophthora ramorum* is most probably native to East Asia (Jung et al., 2021; Poimala & Lilja, 2013). The pathogen is present in Asia (Japan, Vietnam), Europe (Belgium, Croatia, Denmark, Finland, France, Germany, Guernsey, Ireland, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, the UK), North America (Canada, the US) and South America (Argentina) (EPPO, 2024c). So far there are 12 known lineages of *P. ramorum*: NA1 and NA2 from North American, EU1 from Europe (including the UK) and North America (Grünwald et al., 2009), EU2 from Northern Ireland and western Scotland (Van Poucke et al., 2012), IC1 to IC5 from Vietnam and NP1 to NP3 from Japan (Jung et al., 2021). *Phytophthora ramorum* is heterothallic oomycete species belonging to clade 8c (Blair et al., 2008) with two mating types: A1 and A2 (Boutet et al., 2010). *Phytophthora* species generally reproduce through a) dormant (resting) spores which can be either sexual (oospores) or asexual (chlamydospores); and b) fruiting structures (sporangia) which contain zoospores (Erwin & Ribeiro, 1996). *Phytophthora ramorum* produces sporangia on the surfaces of infected leaves and twigs of host plants. These sporangia can be splash-dispersed over short distances or carried by wind and rain over longer distances. The sporangia germinate to produce zoospores that penetrate and initiate an infection on new hosts. In infected plant material the chlamydospores are produced and can serve as resting structures (Davidson et al., 2005; Grünwald et al., 2008). The pathogen is also able to survive in soil (Shishkoff, 2007). In the west of Scotland, it persisted in soil for at least 2 years after its hosts were removed (Elliot et al., 2013). Oospores were only observed in pairing tests under controlled laboratory conditions (Brasier & Kirk, 2004). Optimal temperatures under laboratory conditions were 16–26°C for growth, 14–26°C for chlamydospore production and 16–22°C for sporangia production (Englander et al., 2006).

(Continues)

(Continued)

		Phytophthora ramorum is mainly a foliar pathogen, however it was also reported to infect shoots, stems, and occasionally roots of various host plants (Grünwald et al., 2008; Parke & Lewis, 2007). According to Brown and Brasier (2007), *P. ramorum* commonly occupies xylem beneath phloem lesions and may spread within xylem and possibly recolonise the phloem from the xylem. *Phytophthora ramorum* can remain viable within xylem for two or more years after the overlying phloem had been excised. *Phytophthora ramorum* can disperse by aerial dissemination, water, movement of infested plant material and soil containing propagules on footwear, tires of trucks and mountain bikes, or the feet of animals (Brasier, 2008; Davidson et al., 2002). Infected foliar hosts can be a major source of inoculum, which can lead to secondary infections on nearby host plants. Important foliar hosts in Europe are *Rhododendron* spp. and *Larix kaempferi* (Brasier & Webber, 2010, Grünwald et al., 2008). Possible pathways of entry for *Phytophthora ramorum* are plants for planting (excluding seed and fruit) of known susceptible hosts; plants for planting (excluding seed and fruit) of non-host plant species accompanied by contaminated attached growing media; soil/growing medium (with organic matter) as a commodity; soil as a contaminant; foliage or cut branches; seed and fruits; susceptible (isolated) bark and susceptible wood (EFSA PLH Panel, 2011). *Phytophthora ramorum* caused rapid decline of *Lithocarpus densiflorus* and *Quercus agrifolia* in forests of California and Oregon (Rizzo et al., 2005) and *Larix kaempferi* in plantations of southwest England (Brasier & Webber, 2010).
Symptoms	**Main type of symptoms**	*Phytophthora ramorum* causes different types of symptoms depending on the host species and the plant tissue infected. According to DEFRA (2008) *P. ramorum* causes three different types of disease: a. 'Ramorum bleeding canker'– cankers on trunks of trees, which emit a dark ooze. As they increase in size they can lead to tree death; b. 'Ramorum leaf blight'– infection of the foliage, leading to discoloured lesions on the leaves; c. 'Ramorum dieback'– shoot and bud infections which result in wilting, discolouration and dying back of affected parts. The reported symptoms on *T. baccata* were Ramorum leaf blight (including petiole) and Ramorum dieback in the UK (DEFRA, 2015). The plants of *T. baccata* were showing shoot dieback (Lane et al., 2004) and leaf necrosis (Denman et al., 2005).
	Presence of asymptomatic plants	If roots are infected by *P. ramorum*, the plants can be without aboveground symptoms for months until developmental or environmental factors trigger disease expression (Roubtsova & Bostock, 2009; Thompson et al., 2021). Application of some fungicides may reduce symptoms and therefore mask infection, making it more difficult to determine whether the plant is pathogen-free (DEFRA, 2008).
	Confusion with other pests	Various symptoms caused by *P. ramorum* can be confused with other pathogens, such as: canker and foliar symptoms caused by other *Phytophthora* species (*P. cinnamomi*, *P. citricola* and *P. cactorum*); leaf lesions caused by rust in early stages; leafspots caused by sunburn; dieback of twigs and leaves caused by *Botryosphaeria dothidea* (Davidson et al., 2003). *Phytophthora ramorum* can be easily distinguished from other pathogens, including *Phytophthora* species based on morphology (Grünwald et al., 2008) and molecular tests.
Host plant range		*Phytophthora ramorum* has a very wide host range, which is expanding. Main host plants include *Kalmia* spp., *Kalmia latifolia*, *Larix decidua*, *L. kaempferi*, *Pieris* spp., *Rhododendron* spp., *Syringa vulgaris, Viburnum* spp., and the North American trees species, *Lithocarpus densiflorus* and *Quercus agrifolia* (EPPO, 2024d). Further proven hosts confirmed by Koch's postulates are *Abies grandis*, *A. magnifica*, *Acer circinatum*, *A. macrophyllum, A. pseudoplatanus*, *Adiantum aleuticum, A. jordanii, Aesculus californica*, *A. hippocastanum*, *Arbutus menziesii*, *A. unedo*, *Arctostaphylos columbiana*, *A. glauca*, *A. hooveri*, *A. manzanita, A. montereyensis*, *A. morroensis*, *A. pilosula*, *A. pumila*, *A. silvicola*, *A. viridissima*, *Betula pendula, Calluna vulgaris*, *Camellia* spp., *Castanea sativa*, *Ceanothus thyrsiflorus*, *Chamaecyparis lawsoniana*, *Chrysolepis chrysophylla*, *Cinnamomum camphora*, *Corylus cornuta*, *Fagus sylvatica*, *Frangula californica*, *Frangula purshiana*, *Fraxinus excelsior*, *Gaultheria procumbens*, *G. shallon*, *Griselinia littoralis*, *Hamamelis virginiana*, *Heteromeles arbutifolia*, *Larix* × *eurolepis*, *Laurus nobilis*, *Lonicera hispidula*, *Lophostemon confertus*, *Loropetalum chinense*, *Magnolia* × *loebneri*, *M. oltsopa*, *M. stellata*, *Mahonia aquifolium*, *Maianthemum racemosum*, *Parrotia persica*, *Photinia fraseri*, *Phoradendron serotinum* subsp. *macrophyllum*, *Photinia* × fraseri, *Prunus laurocerasus*, *Pseudotsuga menziesii* var. *menziesii*, *Quercus cerris*, *Q. chrysolepis*, *Q. falcata Q. ilex*, *Q. kelloggii*, *Q. parvula* var. *shrevei*, *Q. petraea, Q. robur, Rosa gymnocarpa*, *Salix caprea*, *Sequoia sempervirens*, *Taxus baccata*, *Trientalis latifolia*, *Umbellularia californica*, *Vaccinium myrtillus*, *V. ovatum*, *V. parvifolium*, and *Vinca minor* (APHIS USDA, 2022; Cave et al., 2008; EPPO, 2024d; Farr & Rossman, 2024).
Reported evidence of impact		*Phytophthora ramorum* (non-EU isolates) is an EU quarantine pest.
Evidence that the commodity is a pathway		*T. baccata* is a confirmed host of *Phytophthora ramorum*, on which the pathogen can cause leaf blight and dieback. *T. baccata* is an evergreen tree species, therefore the commodities under investigation are possible pathways of entry for *P. ramorum*.
Surveillance information		As part of an annual survey at ornamental retail and production sites (frequency of visits determined by a decision matrix), *Phytophthora ramorum* is inspected for on common hosts plants. An additional inspection, during the growing period, is carried out at plant passport production sites. Inspections are carried out at a survey to 300 non-woodland wider environment sites annually (Dossier Section 1.0). According to the Dossier Section 1.0, in the last 3 years (2020–2022) there has been a substantial level of inspection of registered *Taxus* producers, both in support of the Plant Passporting scheme (checks are consistent with EU legislation, with a minimum of one a year for authorised operators) and as part of the Quarantine Surveillance programme (Great Britain uses the same framework for its surveillance programme as the EU). *Phytophthora ramorum* was not detected during these inspections (Dossier Sections 1.0 and 5.1).

A.1.2 | Possibility of pest presence in the nursery

A.1.2.1 | Possibility of entry from the surrounding environment

Phytophthora ramorum is present in the UK, it has been found in most regions of the UK, but it is more often reported in more humid, western regions of the UK (Dossier Section 2.0). The possible entry of *P. ramorum* from surrounding environment to the nurseries may occur through aerial dissemination and through spread by water, animals, machinery and footwear (Brasier, 2008; Davidson et al., 2002).

Phytophthora ramorum has a wide host range and can infect large numbers of different plants. Suitable plants like *Acer pseudoplatanus*, *Camellia* spp., *Fraxinus* spp., *Larix kaempferi*, *Larix* spp., *Quercus* spp., *Q. robur*, *Pieris* spp., *Prunus* spp., *P. laurocerasus*, *Rhododendron* spp., *T. baccata* and *Viburnum* spp. are present in hedges and woodland in the surrounding areas of nurseries (Dossier Sections 1.0 and 5.1).

Uncertainties:

- The dispersal range of *P. ramorum* sporangia.
- The distance of the nurseries to sources of the pathogen in the surrounding environment.
- Whether machinery from outside the nursery is used inside the nursery.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible for the pathogen to enter the nurseries from the surrounding environment. In the surrounding area, suitable hosts are present, and the pathogen can spread by wind, rain and infested soil on footwear, machinery and feet of animals entering the nurseries.

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

The starting materials are either seeds or seedlings. Seeds and seedlings are certified and are either from the UK or the EU (the Netherlands, Belgium and France) (Dossier Section 1.0).

In addition to *T. baccata* plants, the nurseries also produce other plants (Dossier Sections 3.0 and 5.1). Out of them, there are many suitable hosts for the pathogen (such as *Abies* spp., *Acer* spp., *Aesculus* spp., *Arbutus* spp., *Castanea* spp., *Fagus* spp., *Larix* spp., *Quercus* spp., *Prunus* spp., *Viburnum* spp., etc.). However, there is no information on how and where the plants are produced. Therefore, if the plants are first produced in another nursery, the pathogen could possibly travel with them.

The nurseries are using virgin peat or peat-free compost (a mixture of coir, tree bark, wood fibre, etc.) as a growing media (Dossier Section 1.0). *Phytophthora ramorum* is able to survive in soil (Shishkoff, 2007) and therefore could potentially enter with infested soil/growing media. However, the growing media are certified and heat-treated by commercial suppliers during production to eliminate pests and diseases (Dossier Section 1.0).

Uncertainties:

- The provenance of plants other than *T. baccata* used for plant production in the nurseries.

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

A.1.2.3 | Possibility of spread within the nursery

Taxus plants are either grown in containers (cells, pots, tubes, etc.) or in field. Cell grown trees may be grown in greenhouses; however, most plants will be field grown or field grown in containers (Dossier Section 1.0).

The pathogen can infect other suitable plants (such as *Abies* spp., *Acer* spp., *Aesculus* spp., *Arbutus* spp., *Castanea* spp., *Fagus* spp., *Larix* spp., *Quercus* spp., *Prunus* spp. and *Viburnum* spp.) present within the nurseries and hedges surrounding the nurseries (*Prunus* spp., *T. baccata*) (Dossier Sections 1.0, 3.0 and 5.1).

Phytophthora ramorum can spread within the nurseries by aerial dissemination, soil, water, movement of infested plant material, machinery, footwear and animals (Brasier, 2008; Davidson et al., 2002).

Uncertainties:

- None.

Taking into consideration the above evidence and uncertainties, the Panel considers that the spread of the pathogen within the nurseries is possible either by aerial dissemination, animals, movement of infested plant material, soil and water.

A.1.3 | Information from interceptions

In the EUROPHYT/TRACES-NT database, there are no records of notification of *T. baccata* plants for planting neither from the UK nor from other countries due to the presence of *P. ramorum* between the years 1995 and September 2024 (EUROPHYT, 2024; TRACES-NT, 2024).

A.1.4 | Evaluation of the risk mitigation measures

In the table below, all risk mitigation measures currently applied in the UK are listed and an indication of their effectiveness on *P. ramorum* is provided. The description of the risk mitigation measures currently applied in the UK is provided in Table 8.

N	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Registration of production sites	Yes	*Phytophthora ramorum* is a quarantine organism in the UK and targeted by this measure. Uncertainties: – Whether disease symptoms on *T. baccata* and other host plants are recognisable, particularly at an early stage of infection.
2	Physical separation	No	Not relevant.
3	Certified plant material	Yes	*Phytophthora ramorum* is a quarantine organism in the UK and targeted by this measure. Uncertainties: – Whether disease symptoms on *T. baccata* and other host plants are recognisable, particularly at an early stage of infection.
4	Growing media	Yes	This measure should ensure pest-free growing media and is expected to prevent the introduction of the pathogen into the nurseries with growing media. Uncertainties: – None
5	Surveillance, monitoring and sampling	Yes	This measure has an effect as the pathogen would be detected on nursery-grown plants, as well as on incoming plant material and growing media, and suspected plant material quarantined. Uncertainties: – Whether disease symptoms on *T. baccata* and other host plants are recognisable, particularly at an early stage of infection. – The efficiency of inspections on larger trees.
6	Hygiene measures	Yes	General hygiene measures will reduce the likelihood of the pathogen being spread by tools and equipment, although this is not a major pathway for the pest. Uncertainties: – None
7	Removal of infested plant material	Yes	This measure could have some effect by removing potentially infested plant material, thus reducing the spread of the pathogen within the nursery. Uncertainties: – None
8	Irrigation water	Yes	Testing of irrigation water would detect the pathogen, which can spread by water. Overhead irrigation could favour foliar infections and spread of the pathogen by water splash. Uncertainties: – Whether irrigation water is tested for *P. ramorum*.
9	Application of pest control products	Yes	Some fungicides could reduce the likelihood of foliar infection by the pathogen. Uncertainties: – No specific information on the fungicides used. – The level of efficacy of fungicides in reducing infection of *P. ramorum*.
10	Measures against soil pests	No	No relevant. *P. ramorum* is a foliar pathogen on *T. baccata*.
11	Inspections and management of plants before export	Yes	*Phytophthora ramorum* is a quarantine organism in the UK and the EU and this measure is expected to reduce the likelihood of infested plants being exported. Uncertainties: – Whether disease symptoms on *T. baccata* are recognisable, particularly at an early stage of infection. – The efficiency of inspections on larger trees.
12	Separation during transport to the destination	No	Not relevant.

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

A.1.5.1 | Reasoning for a scenario which would lead to a reasonably low number of infected bare root plants

The scenario assumes a low pressure of the pathogen in the nurseries and in the surroundings. The commodity mainly consists of younger plants, which are exposed to the pathogen for only short period of time. The scenario also assumes that *T. baccata* has a low susceptibility to the pathogen and that symptoms of the disease are visible and promptly detected during inspections.

A.1.5.2 | Reasoning for a scenario which would lead to a reasonably high number of infected bare root plants

The scenario assumes a high pressure of the pathogen in the nurseries and in the surroundings as suitable hosts are present. The commodity mainly consists of older plants that are exposed to the pathogen for a longer period of time and are also more difficult to inspect. The scenario also assumes that *T. baccata* is quite susceptible and that symptoms of the disease are not easily recognisable during inspections.

A.1.5.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infected bundles of whips and seedlings (Median)

The scenario assumes a limited presence of the pathogen in the nurseries and the surroundings, and a limited susceptibility of *T. baccata*. The pathogen is a regulated quarantine pest in the UK and under official control. However, symptoms can be overlooked during inspections, especially on older plants.

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

The limited information on the susceptibility of *T. baccata* and the occurrence of the pathogen in the nurseries and the surroundings results in high level of uncertainties for infestation rates below the median. Otherwise, the pest pressure from the surroundings is expected to be low giving less uncertainties for rates above the median.

A.1.5.5 | Elicitation outcomes of the assessment of the pest freedom for *Phytophthora ramorum* on bare root plants

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

TABLE A.1 Elicited and fitted values of the uncertainty distribution of pest infection by *Phytophthora ramorum* per 10,000 plants/bundles.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	4					30		55		110					250
EKE	4.00	5.40	7.72	12.45	19.0	27.7	37.2	59.1	87.7	106.3	130.5	158.2	190.9	219.0	250.0

Note: The EKE results are the BetaGeneral (1.0227, 4.5297, 3.05, 388) distribution fitted with @Risk version 7.6.

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

TABLE A.2 The uncertainty distribution of plants free of *Phytophthora ramorum* per 10,000 plants/bundles calculated by Table A.1.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9750					9890		9945		9970					9996
EKE results	9750	9781	9809	9842	9870	9894	9912	9941	9963	9972	9981	9988	9992	9995	9996

Note: The EKE results are the fitted values.

FIGURE A.1 (Continued)

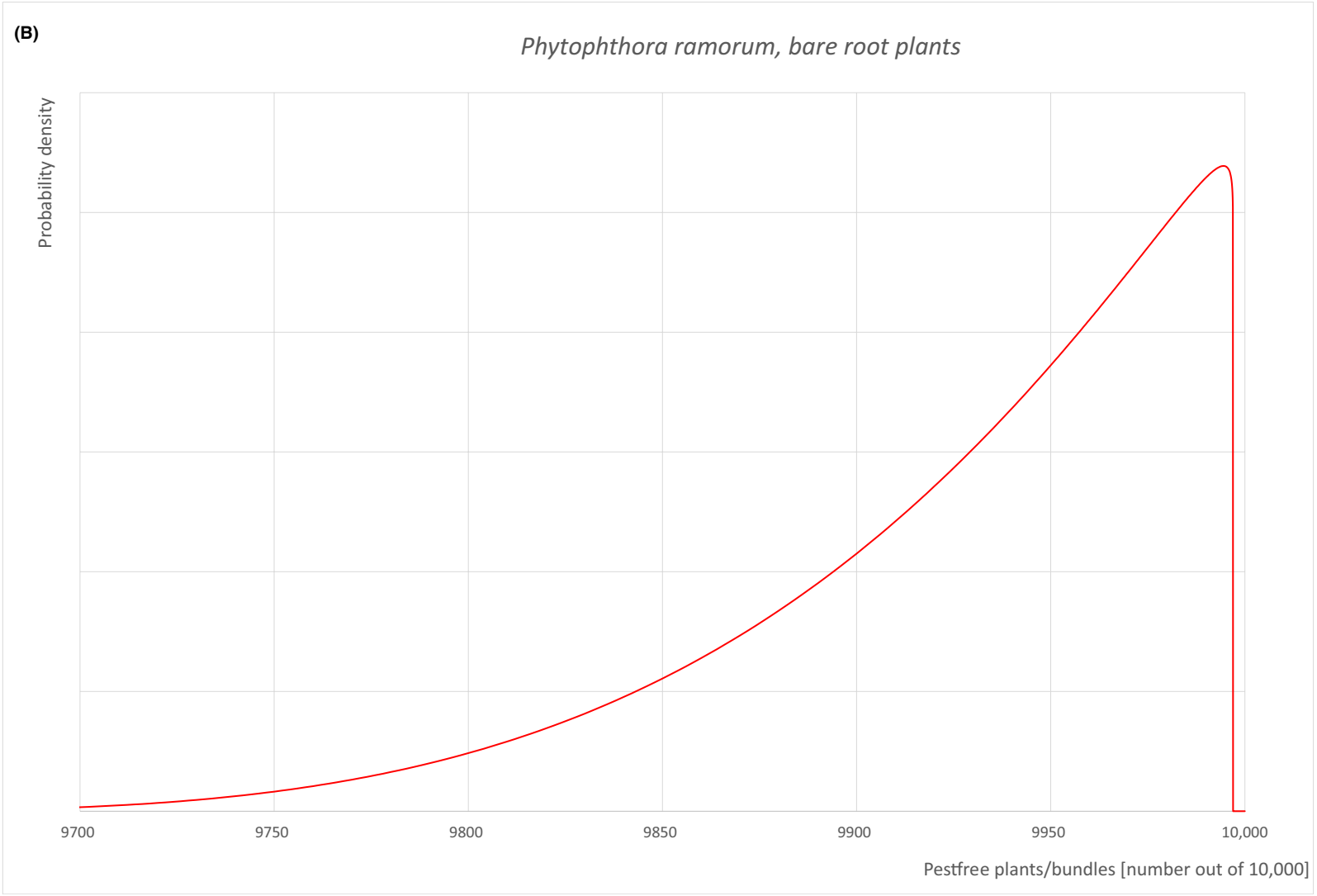

FIGURE A.1 (Continued)

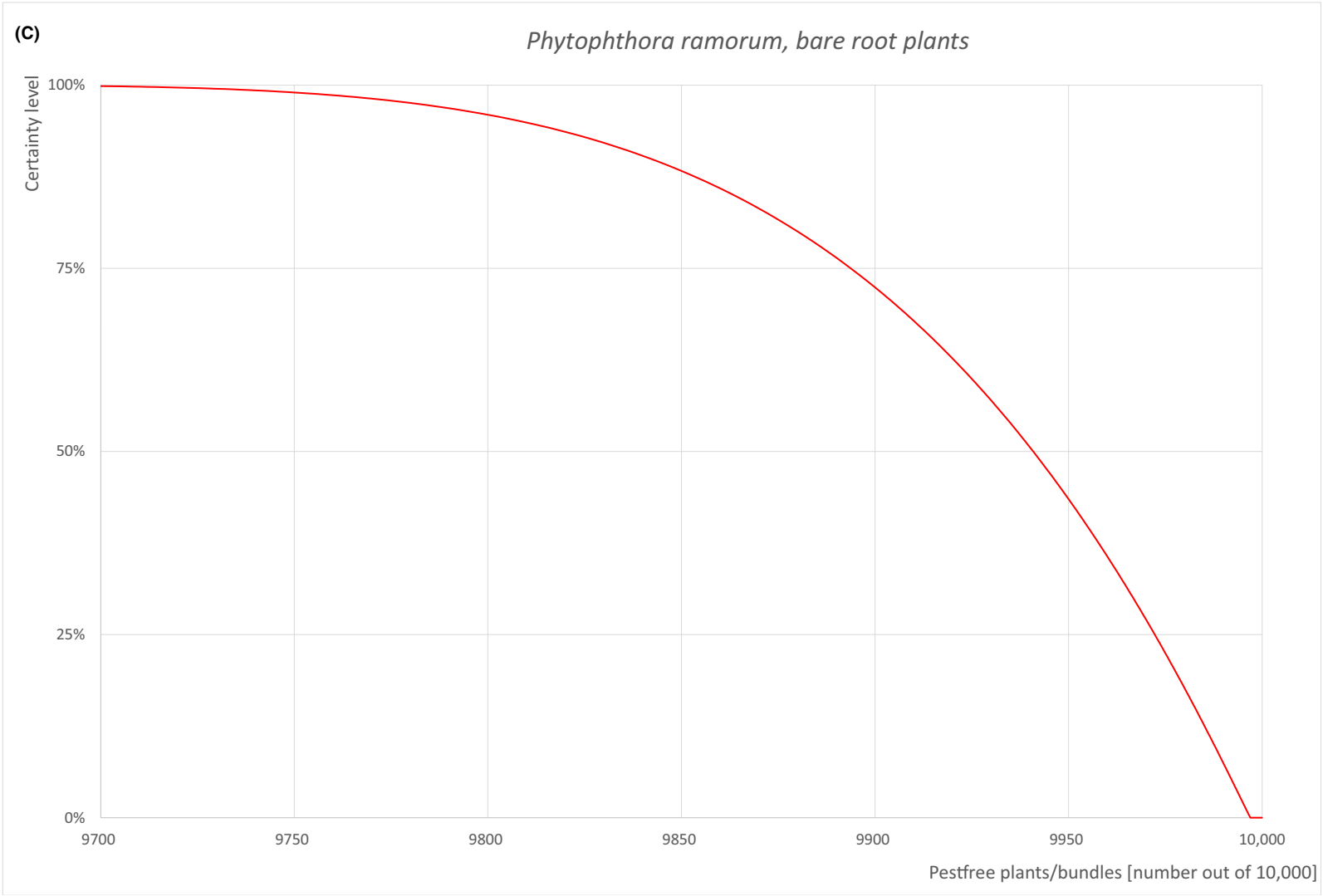

FIGURE A.1 (A) Elicited uncertainty of pest infection per 10,000 bare root plants/bundles (histogram in blue–vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (B) uncertainty of the proportion of pest-free bare root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

A.1.6 | Overall likelihood of pest freedom for plants in pots

A.1.6.1 | Reasoning for a scenario which would lead to a reasonably low number of infected plants in pots

The scenario assumes a low pressure of the pathogen in the nurseries and in the surroundings. The commodity mainly consists of younger plants, which are exposed to the pathogen for only short period of time. The scenario also assumes that *T. baccata* has a low susceptibility to the pathogen and that symptoms of the disease are visible and promptly detected during inspections.

A.1.6.2 | Reasoning for a scenario which would lead to a reasonably high number of infected plants in pots

The scenario assumes a high pressure of the pathogen in the nurseries and in the surroundings as suitable hosts are present. The commodity mainly consists of older plants that are exposed to the pathogen for a longer period of time and are also more difficult to inspect. The scenario also assumes that *T. baccata* is quite susceptible and that symptoms of the disease are not easily recognisable during inspections. Infected, fallen needles may have been incorporated into the growing media of the plants in pots.

A.1.6.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infected plants in pots (Median)

The scenario assumes a limited presence of the pathogen in the nurseries and the surroundings, and a limited susceptibility of *T. baccata*. The pathogen is a regulated quarantine pest in the UK and under official control. However, symptoms can be overlooked during inspections, especially on older plants, and some infected needles can become incorporated into the growing medium.

A.1.6.4 | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/ interquartile range)

The limited information on the susceptibility of *T. baccata* and the occurrence of the pathogen in the nurseries and the surroundings results in high level of uncertainties for infestation rates below the median. Otherwise, the pest pressure from the surroundings is expected to be low giving less uncertainties for rates above the median.

A.1.6.5 | Elicitation outcomes of the assessment of the pest freedom for *Phytophthora ramorum* on plants in pots.

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

TABLE A.3 Elicited and fitted values of the uncertainty distribution of pest infection by *Phytophthora ramorum* per 10,000 plants/bundles.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	6					43		80		190					350
EKE	6.0	6.8	8.6	13.5	22.3	35.9	52.2	93	147	181	221	262	301	328	350

Note: The EKE results are the BetaGeneral (0.69174, 1.6369, 5.7380) distribution fitted with @Risk version 7.6.

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

TABLE A.4 The uncertainty distribution of plants free of *Phytophthora ramorum* per 10,000 plants/bundles calculated by Table A.3.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9650					9810		9920		9957					9994
EKE results	9650	9672	9699	9738	9779	9819	9853	9907	9948	9964	9978	9986	9991	9993	9994

Note: The EKE results are the fitted values.

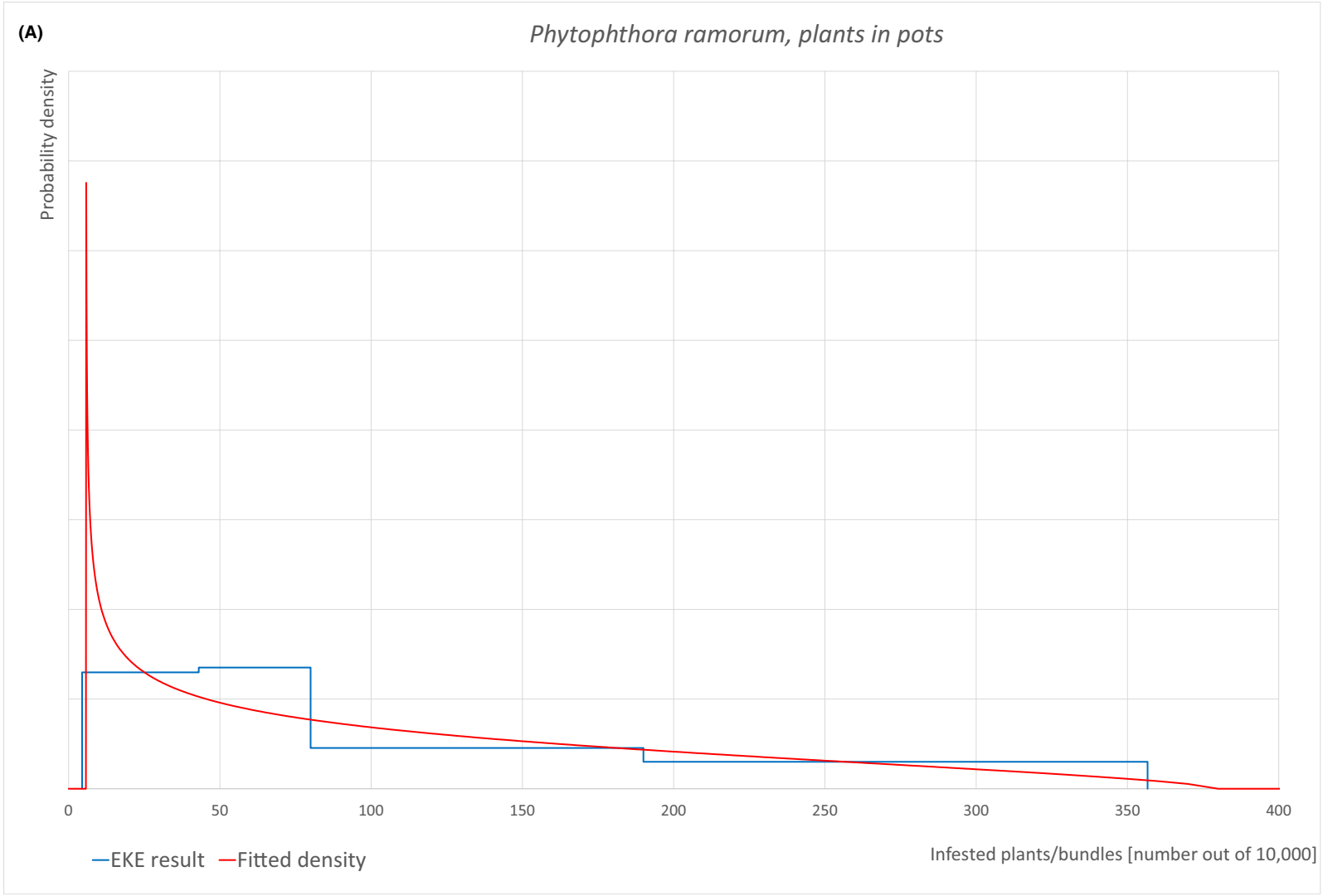

FIGURE A.2 (Continued)

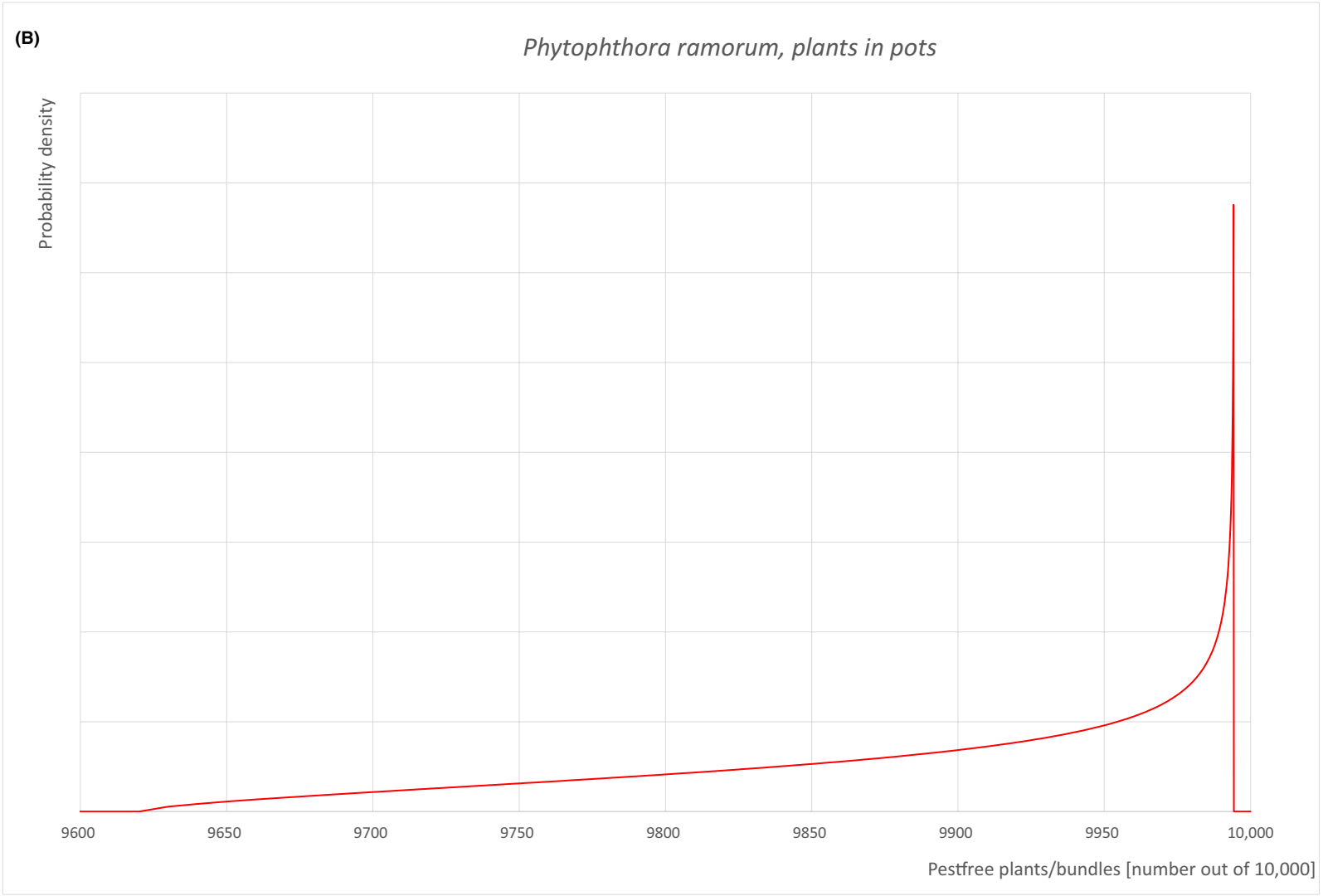

FIGURE A.2 (Continued)

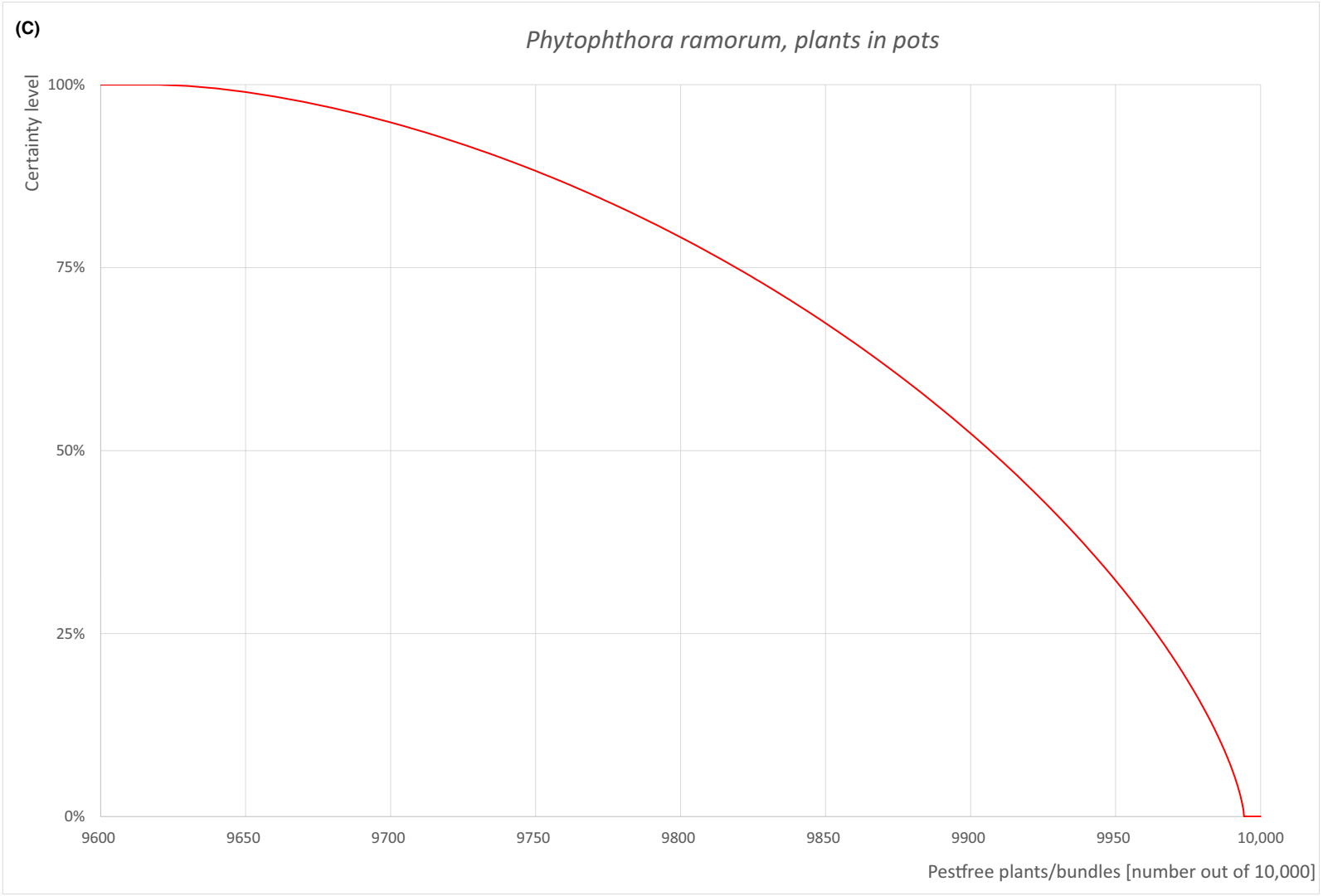

FIGURE A.2 (A) Elicited uncertainty of pest infection per 10,000 plants/bundles (histogram in blue–vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (B) uncertainty of the proportion of pest-free plants/bundles per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

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APPENDIX B

Web of science all databases search string

In the Table B.1, the search string for *T. baccata* used in Web of Science is reported. Totally, 271 papers were retrieved. Titles and abstracts were screened, and 68 pests were added to the list of pests (see Appendix F).

TABLE B.1 String for *Taxus baccata*.

Web of Science All databases	**TOPIC:** "Taxus baccata" OR "T. baccata" OR "common yew" OR "European yew" OR "God's tree" OR "English yew" OR "Taxus communis" OR "Taxus lugubris" OR "Taxus pectinata" **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

APPENDIX C

Plant taxa reported to be present in the nurseries of *Taxus baccata*

TABLE C.1 Plant taxa reported in the Dossier Section 3.0 to be present in the nurseries of *T. baccata*.

Number	Plant taxa	Number	Plant taxa
1	*Abelia*	581	*Malus* 'Scarlett'
2	*Acacia*	582	*Malus* 'Scotch Bridget'
3	*Acanthus*	583	*Malus* 'Scotch Dumpling'
4	*Acer*	584	*Malus* 'Scrumptious'
5	*Acer campestre*	585	*Malus* 'Somerset Redstreak'
6	*Acer palmatum* 'Crimson King'	586	*Malus* 'Spartan'
7	*Acer palmatum* 'Crimson Sentry'	587	*Malus* 'St Edmund's Russet'
8	*Acer palmatum* 'Drummondii'	588	*Malus* 'Stirling Castle'
9	*Acer palmatum* 'Pixie'	589	*Malus* 'Stoke Red'
10	*Acer palmatum* 'Princeton Gold'	590	*Malus* 'Sun Rival'
11	*Acer palmatum* 'Sango kaku'	591	*Malus* 'Sunset'
12	*Acer palmatum* 'Seiryu'	592	*Malus* 'Surprize'
13	*Acer palmatum* 'Shaina'	593	*Malus sylvestris*
14	*Acer palmatum* 'Suminagashi'	594	*Malus* 'Three Counties'
15	*Acer palmatum* 'Tamukeyama'	595	*Malus* 'TICKLED PINK Baya Marisa'
16	*Acer palmatum* 'Trompenburg'	596	*Malus* 'Tom Putt'
17	*Acer palmatum* 'Villa Taranto'	597	*Malus toringo* subsp. *sargentii* 'Tina'
18	*Acer pseudoplatanus* 'Brilliantissimum'	598	*Malus transitoria*
19	*Acer pseudoplatanus* 'Esk Sunset'	599	*Malus transitoria* 'Thornhayes Tansy'
20	*Acer pseudoplatanus* 'Leopoldii'	600	*Malus* 'Tremlett's Bitter'
21	*Acer pseudoplatanus* 'Prinz Handjery'	601	*Malus trilobata* 'Guardsman'
22	*Acer rubrum*	602	*Malus* 'Trinity'
23	*Acer rubrum* 'Autumn Flame'	603	*Malus tschonoskii*
24	*Acer rubrum* 'Brandywine'	604	*Malus tschonoskii* 'Belmonte'
25	*Acer rubrum* 'October Glory'	605	*Malus* 'Van Eseltine'
26	*Acer rubrum* 'Red Sunset'	606	*Malus* 'Vicky'
27	*Acer rubrum* 'Scanlon'	607	*Malus* 'Warner's King'
28	*Acer rubrum* 'Sun Valley'	608	*Malus* 'William Crump'
29	*Acer saccharum*	609	*Malus* 'Winter Gem'
30	*Acer shirasawanum* 'Autumn Moon'	610	*Malus* 'Worcester Pearmain'
31	*Acer* × *freemanii* 'Autumn Blaze'	611	*Malus* × *moerlandsii* 'Profusion Improved'
32	*Acer* × *freemanii* 'Morgan'	612	*Malus* × *purpurea* 'Crimson Cascade'
33	*Achillea*	613	*Malus* 'Yarlington Mill'
34	*Acorus*	614	*Matteuccia*
35	*Actaea*	615	*Meconopsis*
36	*Aesculus parviflora*	616	*Mespilus* 'Nottingham'
37	*Aesculus* × *carnea* 'Briotii'	617	*Metasequoia glyptostroboides*
38	*Agapanthus*	618	*Miscanthus*
39	*Agastache*	619	*Molinia*
40	*Ajuga*	620	*Monarda*
41	*Akebia*	621	*Morus* 'Carman'
42	*Albizia julibrissin* 'Chocolate Fountain'	622	*Morus* 'Chelsea'
43	*Albizia julibrissin* 'Evys Pride'	623	*Morus* 'Giant Fruit'
44	*Albizia julibrissin* 'Ombrella'	624	*Morus* 'Mojo Berry'
45	*Albizia julibrissin* 'Shidare'	625	*Morus* 'Pendula'
46	*Albizia julibrissin* 'Summer Chocolate'	626	*Myrtus*

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
47	*Alchemilla*	627	*Nandina*
48	*Allium*	628	*Nemesia*
49	*Alnus*	629	*Nepeta*
50	*Alnus cordata*	630	*Nothofagus antarctica*
51	*Alnus glutinosa*	631	*Nyssa sylvatica*
52	*Alnus glutinosa* 'Imperialis'	632	*Nyssa sylvatica* 'Red Rage'
53	*Alnus incana* 'Aurea'	633	*Nyssa sylvatica* 'Wisley Bonfire'
54	*Alnus rubra*	634	*Olearia*
55	*Alnus spaethii*	635	*Ophiopogon*
56	*Alstroemeria*	636	*Osmanthus*
57	*Amelanchier*	637	*Osmunda*
58	*Amelanchier* × *grandiflora* 'Robin Hill'	638	*Pachysandra*
59	*Amelanchier alnifolia* 'Obelisk'	639	*Pachystegia*
60	*Amelanchier canadensis* 'Rainbow Pillar'	640	*Paeonia*
61	*Amelanchier* 'Edelweiss'	641	*Panicum*
62	*Amelanchier* 'La Paloma'	642	*Parrotia persica*
63	*Amelanchier laevis* 'R J Hilton'	643	*Parrotia persica* 'Bella'
64	*Amelanchier laevis* 'Snowflakes'	644	*Parrotia persica* 'Persian Spire'
65	*Amelanchier lamarckii*	645	*Parrotia persica* 'Vanessa'
66	*Amelanchier* 'Northline'	646	*Paulownia tomentosa*
67	*Amelanchier* × *grandiflora* 'Ballerina'	647	*Pennisetum*
68	*Anemanthele*	648	*Penstemon*
69	*Anemone*	649	*Perovskia*
70	*Aquilegia*	650	*Persicaria*
71	*Araucaria araucana*	651	*Philadelphus*
72	*Arbutus*	652	*Phlomis*
73	*Arbutus unedo*	653	*Phlox*
74	*Armeria*	654	*Phormium*
75	*Artemisia*	655	*Photinia*
76	*Arum*	656	*Photinia* × *fraseri* 'Red Robin'
77	*Aruncus*	657	*Phygelius*
78	*Asplenium*	658	*Physocarpus*
79	*Astelia*	659	*Physocarpus opulifolius* 'Diablo'
80	*Aster*	660	*Physocarpus opulifolius* 'Lady in Red'
81	*Astilbe*	661	*Physostegia*
82	*Astrantia*	662	*Picea pungens* 'Erich Frahm'
83	*Athyrium*	663	*Picea pungens* 'Iseli Fastigiate'
84	*Aucuba*	664	*Picea smithiana* 'Aurea'
85	*Baptisia*	665	*Pinus*
86	*Berberis*	666	*Pinus densiflora* 'Umbraculifera'
87	*Bergenia*	667	*Pinus flexilis* 'Vanderwolf's Pyramid'
88	*Betula*	668	*Pinus mugo* 'Winter Sun'
89	*Betula alba* 'Pendula'	669	*Pinus nigra* 'Bright Eyes'
90	*Betula albosinensis* 'Red Panda'	670	*Pinus nigra* 'Obelisk'
91	*Betula* 'China Ruby'	671	*Pinus radiata* 'Aurea'
92	*Betula costata* 'Daleside'	672	*Pinus strobus* 'Minima'
93	*Betula ermanii* 'Mount Zao Purple'	673	*Pinus strobus* 'Tiny Kurls'
94	*Betula ermanii* 'Polar Bear'	674	*Pinus sylvestris*
95	*Betula ermanii* 'White Chocolate'	675	*Pinus sylvestris* 'Chantry Blue'

(Continues)

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
96	*Betula* 'Fascination'	676	*Pinus sylvestris* 'Gold Medal'
97	*Betula* 'Fetisowii'	677	*Pinus sylvestris* 'Westonbirt'
98	*Betula nigra* 'Shiloh Splash'	678	*Pinus thunbergii* 'Banshosho'
99	*Betula pendula* 'Dalecarlica'	679	*Pinus wallichiana*
100	*Betula pendula* 'Fastigiata Joes'	680	*Pinus* × *holdfordiana*
101	*Betula pendula* 'Royal Frost'	681	*Pittosporum*
102	*Betula pendula* 'Spider Alley'	682	*Platanus* × *hispanica*
103	*Betula pendula* 'Tristis'	683	*Polemonium*
104	*Betula pendula* 'Youngii'	684	*Polygonatum*
105	*Betula utilis* 'Cacao'	685	*Polypodium*
106	*Betula utilis* 'Cinnamon'	686	*Polystichum*
107	*Betula utilis* 'Dark-Ness'	687	*Populus*
108	*Betula utilis* 'Edinburgh'	688	*Potentilla*
109	*Betula utilis* 'Melony Sanders'	689	*Primula*
110	*Betula utilis* 'Moonbeam'	690	*Prunus*
111	*Betula utilis* 'Mount Luoji'	691	*Prunus* × *persicoides* 'Ingrid'
112	*Betula utilis* 'Snow Queen'	692	*Prunus* 'Accolade'
113	*Betula utilis* subsp. *albosinensis* 'China Rose'	693	*Prunus* 'Amanogawa'
114	*Betula utilis* subsp. *albosinensis* 'Hergest'	694	*Prunus* 'Amber Heart'
115	*Betula utilis* subsp. *albosinensis* 'Kansu'	695	*Prunus* 'Amsden June'
116	*Betula utilis* subsp. *albosinensis* 'Pink Champagne'	696	*Prunus* 'Aprikyra'
117	*Betula utilis* var. *jacquemontii*	697	*Prunus* 'Aprimira'
118	*Betula utilis* var. *jacquemontii* 'Grayswood Ghost'	698	*Prunus* 'Aprisali'
119	*Betula utilis* var. *jacquemontii* 'Jermyns'	699	*Prunus* 'Areko'
120	*Betula utilis* var. *jacquemontii* 'McBeath'	700	*Prunus* 'Asano'
121	*Betula utilis* var. *jacquemontii* 'Silver Shadow'	701	*Prunus* 'Athos'
122	*Betula utilis* var. *jacquemontii* 'Trinity College'	702	*Prunus* 'Avalon'
123	*Betula utilis* 'Wakehurst Place Chocolate'	703	*Prunus* 'Avalon Pride'
124	*Blechnum*	704	*Prunus avium*
125	*Brachyglottis*	705	*Prunus avium* 'Plena'
126	*Brunnera*	706	*Prunus* 'Aylesbury Prune'
127	*Buddleja*	707	*Prunus* 'Belle de Louvain'
128	*Buxus*	708	*Prunus* 'Beni-yutaka'
129	*Buxus sempervirens*	709	*Prunus* 'Bergeron'
130	*Calamagrostis*	710	*Prunus* 'Bergeval'
131	*Callicarpa bodinieri* 'Profusion'	711	*Prunus* 'Black Oliver'
132	*Calycanthus* 'Aphrodite'	712	*Prunus* 'Blaisdon Red'
133	*Campanula*	713	*Prunus* 'Blue Tit'
134	*Carex*	714	*Prunus* 'Blushing Bride'
135	*Carpinus*	715	*Prunus* 'Burcombe'
136	*Carpinus betulus*	716	*Prunus* 'Cambridge'
137	*Carpinus betulus* 'Chartreuse'	717	*Prunus* 'Candy Floss'
138	*Carpinus betulus* 'Frans Fontaine'	718	*Prunus* 'Catherine'
139	*Carpinus betulus* 'Lucas'	719	*Prunus* 'Celeste'
140	*Carpinus betulus* 'Rockhampton Red'	720	*Prunus cerasifera*
141	*Caryopteris*	721	*Prunus cerasifera* 'Crimson Pointe'
142	*Castanea*	722	*Prunus cerasifera* 'Nigra'
143	*Castanea sativa*	723	*Prunus* 'Chocolate Ice'
144	*Catalpa bignonioides* 'Aurea'	724	*Prunus* 'Coes Golden Drop'
145	*Catalpa* × *erubescens* 'Purpurea'	725	*Prunus* 'Collingwood Ingram'

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
146	*Ceanothus*	726	*Prunus* 'Compacta'
147	*Ceanothus arboreus* 'Trewithen Blue'	727	*Prunus* 'Countess'
148	*Cedrus atlantica* 'Glauca'	728	*Prunus* 'Czar'
149	*Cedrus atlantica* 'Glauca Pendula'	729	*Prunus* 'Daikoku'
150	*Cedrus deodara* 'Karl Fuchs'	730	*Prunus* 'de Nancy'
151	*Cedrus deodara* 'Klondyke'	731	*Prunus* 'Denniston's Superb'
152	*Cedrus libani*	732	*Prunus dulcis* 'Robijn'
153	*Centaurea*	733	*Prunus* 'Early Red Maraly'
154	*Centranthus*	734	*Prunus* 'Early Transparent'
155	*Ceratostigma*	735	*Prunus* 'Edda'
156	*Cercidiphyllum japonicum*	736	*Prunus* 'Excalibur'
157	*Cercidiphyllum japonicum* 'Pendulum'	737	*Prunus* 'Farleigh'
158	*Cercis canadensis* 'Alley Cat'	738	*Prunus* 'Ferbleue'
159	*Cercis canadensis* 'Carolina Sweetheart'	739	*Prunus* 'Fertile'
160	*Cercis canadensis* 'Eternal Flame'	740	*Prunus* 'Fice'
161	*Cercis canadensis* 'Forest Pansy'	741	*Prunus* 'Flavor King'
162	*Cercis canadensis* 'Golden Falls'	742	*Prunus* 'Folfer'
163	*Cercis canadensis* 'Hearts of Gold'	743	*Prunus* 'Fragrant Cloud'
164	*Cercis canadensis* 'Lavender Twist'	744	*Prunus* 'Frilly Frock'
165	*Cercis canadensis* 'Merlot'	745	*Prunus* 'Fugenzo'
166	*Cercis canadensis* 'Pink Pom Pom'	746	*Prunus* 'Garden Aprigold'
167	*Cercis canadensis* 'Rising Sun'	747	*Prunus* 'Garden Beauty'
168	*Cercis canadensis* 'Ruby Falls'	748	*Prunus* 'Garden Lady'
169	*Cercis canadensis* 'Vanilla Twist'	749	*Prunus* 'Goldcot'
170	*Cercis chinensis* 'Avondale'	750	*Prunus* 'Golden Glow'
171	*Cercis chinensis* 'Diane'	751	*Prunus* 'Golden Sphere'
172	*Cercis reniformis* 'Oklahoma'	752	*Prunus* 'Gordon Castle'
173	*Cercis reniformis* 'Texan White'	753	*Prunus* 'Gorgeous'
174	*Cercis siliquastrum* 'Bodnant'	754	*Prunus* 'Guinevere'
175	*Chaenomeles*	755	*Prunus* 'Gyoiko'
176	*Chamaecyparis*	756	*Prunus* 'Gypsy'
177	*Choisya*	757	*Prunus* 'Haganta'
178	*Cistus*	758	*Prunus* 'Hales Early'
179	*Cladrastis kentuckea*	759	*Prunus* 'Hally Jolivette'
180	*Clematis*	760	*Prunus* 'HELENA DU ROUSSILLON Aviera'
181	*Convolvulus*	761	*Prunus* 'Henriette'
182	*Coprosma*	762	*Prunus* 'Herman'
183	*Coreopsis*	763	*Prunus* 'Hertford'
184	*Cornus*	764	*Prunus* 'Hokusai'
185	*Cornus sanguinea*	765	*Prunus* 'Horinji'
186	*Cortaderia*	766	*Prunus* 'Ichiyo'
187	*Corydalis*	767	*Prunus incisa* 'Kojo-no-mai'
188	*Corylus*	768	*Prunus incisa* 'Mikinori'
189	*Corylus avellana*	769	*Prunus incisa* 'Oshidori PRINCESSE'
190	*Corylus avellana* 'Contorta'	770	*Prunus incisa* 'Pendula'
191	*Corylus* 'Cosford'	771	*Prunus incisa* 'Praecox'
192	*Corylus* 'Gunslebert'	772	*Prunus incisa* 'Yamadei'
193	*Corylus* 'Hall's Giant'	773	*Prunus* 'Jacqueline'
194	*Corylus* 'Lang Tidlig Zeller'	774	*Prunus* 'Jefferson'
195	*Corylus* 'Nottingham'	775	*Prunus* 'Jubilee'

(Continues)

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
196	*Corylus* 'Red Filbert'	776	*Prunus* 'Kanzan'
197	*Corylus* 'Te-Terra Red'	777	*Prunus* 'Katinka'
198	*Corylus* 'Tonda Di Giffoni'	778	*Prunus* 'Ki 2004 R11 B93'
199	*Corylus* 'Tonda Gentile de le Romana'	779	*Prunus* 'Ki 2004 R14 B56'
200	*Corylus* 'Tonda Gentile Trilobata'	780	*Prunus* 'Kiku-shidare-zakura'
201	*Corylus* 'Webbs Prize Cob'	781	*Prunus* 'King of the Damsons'
202	*Cosmos*	782	*Prunus* 'Kioto'
203	*Cotinus*	783	*Prunus* 'KIR LAMOUR'
204	*Cotoneaster*	784	*Prunus* 'KIR ROSSO'
205	*Cotoneaster frigidus* 'Cornubia'	785	*Prunus* 'KIR VULCANO'
206	*Cotoneaster* 'Hybridus Pendulus'	786	*Prunus* 'Knights Early Black'
207	*Cotoneaster salicifolius* 'Exburiensis'	787	*Prunus* 'Kobuku-zakura POWDER PUFF'
208	*Cotoneaster salicifolius* 'Repens'	788	*Prunus* 'Kofugen'
209	*Cotoneaster* × *suecicus* 'Coral Beauty'	789	*Prunus* 'Kordia'
210	*Cotoneaster* × *suecicus* 'Juliette'	790	*Prunus* 'Kursar'
211	*Crataegus*	791	*Prunus* 'Lapins Cherokee'
212	*Crataegus azarolus*	792	*Prunus* 'Lindsey Gage'
213	*Crataegus laevigata* 'Crimson Cloud'	793	*Prunus litigiosa*
214	*Crataegus laevigata* 'Paul's Scarlet'	794	*Prunus* 'Little Pink Perfection'
215	*Crataegus laevigata* 'Plena'	795	*Prunus* 'Lord Napier'
216	*Crataegus laevigata* 'Rosea Flore Pleno'	796	*Prunus lusitanica*
217	*Crataegus monogyna*	797	*Prunus* 'Malling Elizabeth'
218	*Crataegus monogyna* 'Stricta'	798	*Prunus* 'Marjorie's Seedling'
219	*Crataegus persimilis* 'Prunifolia Splendens'	799	*Prunus* 'Merchant'
220	*Crataegus pinnatifida* var. *major* 'Big Golden Star'	800	*Prunus* 'Meritare'
221	*Crataegus schraderiana*	801	*Prunus* 'Merryweather'
222	*Crataegus succulenta* 'Jubilee'	802	*Prunus* 'Merton Glory'
223	*Crataegus* × *dippeliana*	803	*Prunus* 'Mesembrine'
224	*Crataegus* × *lavallei* 'Carrierei'	804	*Prunus* 'Mikurama-gaeshi'
225	*Crocosmia*	805	*Prunus* 'Morello'
226	*Cryptomeria japonica* 'Gracilis'	806	*Prunus* 'Nabella'
227	*Cryptomeria japonica* 'Sekkan-sugi'	807	*Prunus* 'Napoleon Bigarreau'
228	*Cupressocyparis*	808	*Prunus* 'Nectarella'
229	*Cupressus*	809	*Prunus* 'Nimba'
230	*Cupressus glabra* 'Blue Ice'	810	*Prunus* 'Okame'
231	*Cupressus macrocarpa* 'Wilma'	811	*Prunus* 'Old Green Gage'
232	*Cupressus sempervirens* 'Totem'	812	*Prunus* 'Opal'
233	*Cydonia* 'Aromatnaya'	813	*Prunus* 'Oullins Golden'
234	*Cydonia* 'Bereczki'	814	*Prunus padus* 'Le Thoureil'
235	*Cydonia* 'Isfahan'	815	*Prunus* 'Pandora'
236	*Cydonia* 'Meech's Prolific'	816	*Prunus* 'Papillon'
237	*Cydonia* 'Serbian Gold'	817	*Prunus pendula* 'Ascendens Rosea'
238	*Cydonia* 'Vranja'	818	*Prunus pendula* 'Pendula Rubra'
239	*Cynoglossum*	819	*Prunus pendula* 'Stellata'
240	*Cytisus*	820	*Prunus* 'Penny'
241	*Dahlia*	821	*Prunus* 'Peregrine'
242	*Daphne*	822	*Prunus* 'Petit Noir'
243	*Davidia involucrata*	823	*Prunus* 'Pineapple'
244	*Davidia involucrata* 'Sonoma'	824	*Prunus* 'Pink Marry'
245	*Delosperma*	825	*Prunus* 'Pink Parasol'

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
246	*Delphinium*	826	*Prunus* 'Pink Perfection'
247	*Deschampsia*	827	*Prunus* 'Pink Shell'
248	*Deutzia*	828	*Prunus* 'Purple Pershore'
249	*Dicentra*	829	*Prunus* 'Queen's Crown'
250	*Diervilla*	830	*Prunus* 'Red Haven'
251	*Digitalis*	831	*Prunus* 'Reeves'
252	*Doronicum*	832	*Prunus* 'Regina'
253	*Dryopteris*	833	*Prunus* 'Reine Claude de Bavay'
254	*Echinacea*	834	*Prunus* 'River's Early Prolific'
255	*Echinops*	835	*Prunus* 'Robada'
256	*Elaeagnus*	836	*Prunus* 'Rochester'
257	*Elaeagnus angustifolia* 'Quicksilver'	837	*Prunus* 'Roundel Heart'
258	*Epimedium*	838	*Prunus* 'Royal Burgundy'
259	*Eremurus*	839	*Prunus* 'Royal Flame'
260	*Erigeron*	840	*Prunus* 'Ruby COLUMNAR'
261	*Eriostemon*	841	*Prunus rufa*
262	*Eryngium*	842	*Prunus* 'Sanctus Hubertus'
263	*Erysimum*	843	*Prunus sargentii*
264	*Escallonia*	844	*Prunus* 'Saturn'
265	*Eucalyptus*	845	*Prunus* 'Seneca'
266	*Eucalyptus* 'Azura'	846	*Prunus serrula*
267	*Eucalyptus gunnii*	847	*Prunus serrula* 'Branklyn'
268	*Euonymus*	848	*Prunus* 'Shepherds Bullace'
269	*Euonymus alatus* 'Compactus'	849	*Prunus* 'Shirotae'
270	*Euonymus clivicola*	850	*Prunus* 'Shosar'
271	*Euonymus europaeus*	851	*Prunus* 'Shropshire Prune'
272	*Euonymus europaeus* 'Brilliant'	852	*Prunus* 'Skeena'
273	*Euonymus europaeus* 'Red Cascade'	853	*Prunus* 'Snow Goose'
274	*Euonymus hamiltonianus* 'Indian Summer'	854	*Prunus* 'Snow Showers'
275	*Euonymus hamiltonianus* 'Koi Boy'	855	*Prunus spinosa*
276	*Euonymus phellomanus*	856	*Prunus* 'Spire'
277	*Euonymus planipes*	857	*Prunus* 'Spring Snow'
278	*Euonymus planipes* 'Sancho'	858	*Prunus* 'STARDUST COVEU'
279	*Euphorbia*	859	*Prunus* 'Stella'
280	*Exochorda*	860	*Prunus* 'Stella's Star'
281	*Exochorda* × *macrantha* 'The Bride'	861	*Prunus subhirtella* 'Autumnalis'
282	*Fagus*	862	*Prunus subhirtella* 'Autumnalis Rosea'
283	*Fagus sylvatica*	863	*Prunus subhirtella* 'Pendula Plena Rosea'
284	*Fagus sylvatica* 'Black Swan'	864	*Prunus* 'Summer Sun'
285	*Fagus sylvatica* 'Dawyck'	865	*Prunus* 'Sunburst'
286	*Fagus sylvatica* 'Dawyck Gold'	866	*Prunus* 'Sunset Boulevard'
287	*Fagus sylvatica* 'Dawyck Purple'	867	*Prunus* 'Swan'
288	*Fagus sylvatica* 'Midnight Feather'	868	*Prunus* 'Sweet Prune'
289	*Fagus sylvatica* 'Pendula'	869	*Prunus* 'Sweetheart'
290	*Fagus sylvatica* 'Purple Fountain'	870	*Prunus* 'Sylvia'
291	*Fagus sylvatica* 'Purpurea'	871	*Prunus* 'Tai-haku'
292	*Fagus sylvatica* 'Purpurea Pendula'	872	*Prunus* 'Taoyame'
293	*Fagus sylvatica* 'Purpurea Tricolor'	873	*Prunus* 'Terrace Amber'
294	*Fagus sylvatica* 'Riversii'	874	*Prunus* 'The Bride'
295	*Fagus sylvatica* var. *heterophylla* 'Asplenifolia'	875	*Prunus* 'Tiltstone Hellfire'

(Continues)

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
296	*Fargesia*	876	*Prunus* 'Tomcot'
297	*Fatsia*	877	*Prunus* 'Topend Plus'
298	*Festuca*	878	*Prunus* 'Topfive'
299	*Ficus* 'Brown Turkey'	879	*Prunus* 'Tophit Plus'
300	*Ficus* 'Dalmatie'	880	*Prunus* 'Toptaste Kulinaria'
301	*Ficus* 'Ice Crystal'	881	*Prunus* 'Trailblazer'
302	*Ficus* 'Little Miss Figgy'	882	*Prunus* 'Ukon'
303	*Ficus* 'Panache'	883	*Prunus* 'Vanda'
304	*Filipendula*	884	*Prunus* 'Victoria'
305	*Foeniculum*	885	*Prunus* 'Violet'
306	*Forsythia*	886	*Prunus* 'Walter'
307	*Forsythia suspensa* 'Nymans'	887	*Prunus* 'Warwickshire Drooper'
308	*Forsythia* × *intermedia* 'Lynwood'	888	*Prunus* 'Waterloo'
309	*Fraxinus ornus* 'Obelisk'	889	*Prunus* 'Weeping Yoshino'
310	*Fuchsia*	890	*Prunus* 'Willingham'
311	*Galium*	891	*Prunus* × *persicoides* 'Spring Glow'
312	*Garrya*	892	*Prunus* × *yedoensis*
313	*Gaura*	893	*Prunus* 'Yellow Pershore'
314	*Genista*	894	*Pulmonaria*
315	*Geranium*	895	*Pyracantha*
316	*Geum*	896	*Pyrus*
317	*Ginkgo biloba*	897	*Pyrus* 'Barnet'
318	*Ginkgo biloba* 'Blagon'	898	*Pyrus* 'Benita Rafzas'
319	*Ginkgo biloba* 'Menhir'	899	*Pyrus* 'Beth'
320	*Gleditsia triacanthos* 'Sunburst'	900	*Pyrus* 'Beurre Hardy'
321	*Griselinia*	901	*Pyrus* 'Beurre Superfin'
322	*Hakonechloa*	902	*Pyrus* 'Black Worcester'
323	*Halesia carolina*	903	*Pyrus* 'Blakeney Red'
324	*Halimium*	904	*Pyrus* 'Brandy'
325	*Hamamelis* × *intermedia* 'Arnold Promise'	905	*Pyrus calleryana* 'Chanticleer'
326	*Hamamelis* × *intermedia* 'Diane'	906	*Pyrus* 'Catillac'
327	*Hamamelis* × *intermedia* 'Jelena'	907	*Pyrus* 'Celebration NUVAR'
328	*Hamamelis* × *intermedia* 'Pallida'	908	*Pyrus* 'Christie'
329	*Hebe*	909	*Pyrus communis*
330	*Hedera*	910	*Pyrus* 'Concorde'
331	*Helenium*	911	*Pyrus* 'Concorde/Conference/Comice'
332	*Helichrysum*	912	*Pyrus* 'Conference'
333	*Helleborus*	913	*Pyrus* 'Conference Moors Giant'
334	*Hemerocallis*	914	*Pyrus* 'Conference/Comice/Williams'
335	*Heptacodium miconioides*	915	*Pyrus* 'Doyenne du Comice'
336	*Heuchera*	916	*Pyrus elaeagnifolia* 'Silver Sails'
337	*Heucherella*	917	*Pyrus* 'Fondante d'Automne'
338	*Hippophae*	918	*Pyrus* 'Gin'
339	*Hoheria sexstylosa* 'Snow White'	919	*Pyrus* 'Glou Morceau'
340	*Hosta*	920	*Pyrus* 'Gorham'
341	*Houttuynia*	921	*Pyrus* 'Green Horse'
342	*Hydrangea*	922	*Pyrus* 'Hellens Early'
343	*Hypericum*	923	*Pyrus* 'Hendre Huffcap'

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
344	*Iberis*	924	*Pyrus* 'Humbug'
345	*Ilex*	925	*Pyrus* 'Invincible delwinor fertilia'
346	*Ilex altaclerensis* 'Golden King'	926	*Pyrus* 'Jargonelle'
347	*Ilex aquifolium*	927	*Pyrus* 'Josephine de Malines'
348	*Ilex aquifolium* 'Alaska'	928	*Pyrus* 'Judge Amphlet'
349	*Ilex aquifolium* 'Argentea Marginata'	929	*Pyrus* 'Kumoi'
350	*Ilex aquifolium* 'Handsworth New Silver'	930	*Pyrus* 'Louise Bonne of Jersey'
351	*Ilex aquifolium* 'J.C. van Tol'	931	*Pyrus* 'Merton Pride'
352	*Ilex aquifolium* 'Nellie R Stevens'	932	*Pyrus* 'Moonglow'
353	*Imperata*	933	*Pyrus* 'Obelisk'
354	*Iris*	934	*Pyrus* 'Olympic'
355	*Jasminum*	935	*Pyrus* 'Onward'
356	*Juglans* 'Apollo'	936	*Pyrus* 'Packham's Triumph'
357	*Juglans* 'Broadview'	937	*Pyrus* 'Pitmaston Dutchess'
358	*Juglans* 'Buccaneer'	938	*Pyrus* 'Red Pear'
359	*Juglans* 'Chandler'	939	*Pyrus salicifolia* 'Pendula'
360	*Juglans* 'Fernette'	940	*Pyrus* 'Sensation'
361	*Juglans* 'Fernor'	941	*Pyrus* 'Shinseiki'
362	*Juglans* 'Franquette'	942	*Pyrus* 'Shipover'
363	*Juglans* 'Mars'	943	*Pyrus* 'Thorn'
364	*Juglans nigra*	944	*Pyrus* 'Williams' Bon Chrétien'
365	*Juglans regia*	945	*Pyrus* 'Winnal's Longdon'
366	*Juniperus*	946	*Pyrus* 'Winter Nelis'
367	*Juniperus scopulorum* 'Blue Arrow'	947	*Pyrus* 'Yellow Huffcap'
368	*Knautia*	948	*Quercus*
369	*Kniphofia*	949	*Quercus ilex*
370	*Koelreuteria paniculata* 'Coral Sun'	950	*Quercus myrsinifolia*
371	*Laburnum*	951	*Quercus palutris* 'Green Pillar'
372	*Laburnum anagyroides* 'Yellow Rocket'	952	*Quercus robur*
373	*Lamium*	953	*Quercus rubra*
374	*Larix*	954	*Quercus texana* 'New Madrid'
375	*Lavandula*	955	*Quercus* × *warei* 'Regal Prince'
376	*Lavatera*	956	*Rhamnus*
377	*Leucanthemum*	957	*Rheum* 'Strawberry Surprise'
378	*Leucothoe*	958	*Rheum* 'Timperley Early'
379	*Leycesteria*	959	*Rheum* 'Victoria'
380	*Leymus*	960	*Rhus*
381	*Liatris*	961	*Ribes*
382	*Ligularia*	962	*Ribes* 'Ben Connan'
383	*Ligustrum*	963	*Ribes* 'Ben Sarek'
384	*Ligustrum ovalifolium*	964	*Ribes* 'Black 'n' Red Premiere'
385	*Ligustrum vulgare*	965	*Ribes* 'Blackbells'
386	*Liquidambar*	966	*Ribes* 'Blanka'
387	*Liquidambar styraciflua*	967	*Ribes* 'Captivator'
388	*Liquidambar styraciflua* 'Lane Roberts'	968	*Ribes* 'Hinnonmaki Red'
389	*Liquidambar styraciflua* 'Palo Alto'	969	*Ribes* 'Hinnonmaki Yellow'
390	*Liquidambar styraciflua* 'Slender Silhouette'	970	*Ribes* 'Invicta'
391	*Liquidambar styraciflua* 'Stared'	971	*Ribes* 'Jonkheer van Tets'
392	*Liquidambar styraciflua* 'Worplesdon'	972	*Ribes* 'Junifer'
393	*Liriodendron tulipifera*	973	*Ribes* 'Lowberry Little Black Sugar'

(Continues)

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
394	*Liriodendron tulipifera* 'Snow Bird'	974	*Ribes* 'Mucurines'
395	*Liriope*	975	*Ribes* 'Ojebyn'
396	*Lithodora*	976	*Ribes* 'Rovada'
397	*Lobelia*	977	*Ribes* 'Titania'
398	*Lonicera*	978	*Robinia pseudoacacia* 'Frisia'
399	*Lupinus*	979	*Robinia pseudoacacia* 'Lace Lady Twisty Babe'
400	*Luzula*	980	*Robinia* × *margaretta* 'Pink Cascade'
401	*Lycium barbarum* 'Lubera Instant Success'	981	*Rosa*
402	*Lysimachia*	982	*Rosa canina*
403	*Magnolia*	983	*Rosmarinus*
404	*Magnolia* 'Aphrodite'	984	*Rubus* 'Allgold'
405	*Magnolia* 'Black Tulip'	985	*Rubus* 'Arapaho'
406	*Magnolia* 'Blue Opal'	986	*Rubus* 'Autumn Bliss'
407	*Magnolia* 'Cleopatra'	987	*Rubus* 'Buckingham'
408	*Magnolia* 'Daphne'	988	*Rubus* 'Cascade Delight'
409	*Magnolia* 'Daybreak'	989	*Rubus* 'Glen Ample'
410	*Magnolia* 'Eskimo'	990	*Rubus* 'Glen Carron'
411	*Magnolia* 'Fairy Blush'	991	*Rubus* 'Golden Everest'
412	*Magnolia* 'Fairy Cream'	992	*Rubus* 'Joan J'
413	*Magnolia* 'Fairy White'	993	*Rubus* 'Loch Ness'
414	*Magnolia* 'Felix Jury'	994	*Rubus* 'Lowberry Goodasgold'
415	*Magnolia* 'Galaxy'	995	*Rubus* 'Lowberry Little Black Prince'
416	*Magnolia* 'Genie'	996	*Rubus* 'Lowberry Little Sweet Sister'
417	*Magnolia* 'Golden Pond'	997	*Rubus* 'Malling Juno'
418	*Magnolia grandiflora* 'Alta'	998	*Rubus* 'Navaho Summerlong'
419	*Magnolia grandiflora* 'Kay Parris'	999	*Rubus* 'Octavia'
420	*Magnolia* 'Heaven Scent'	1000	*Rubus* 'Oregon Thornless'
421	*Magnolia* 'Honey Tulip'	1001	*Rubus* 'Thornfree'
422	*Magnolia* 'Hot Flash'	1002	*Rubus* 'Tulameen'
423	*Magnolia* 'Joli Pompom'	1003	*Rudbeckia*
424	*Magnolia* 'Livingstone'	1004	*Salix*
425	*Magnolia* 'March-Till-Frost'	1005	*Salix caprea* 'Pendula'
426	*Magnolia* 'Peachy'	1006	*Salix erythroflexuosa* 'Golden Curls'
427	*Magnolia* 'Red as Red'	1007	*Salix* 'Hakuro Nishiki'
428	*Magnolia* 'Satisfaction'	1008	*Salvia*
429	*Magnolia* 'Shirazz'	1009	*Sambucus*
430	*Magnolia* 'Spectrum'	1010	*Sambucus nigra* 'Black Tower Eiffel'
431	*Magnolia* 'Sunsation'	1011	*Sambucus nigra porphyrophylla* 'Black Beauty'
432	*Magnolia* 'Susan'	1012	*Sambucus nigra porphyrophylla* 'Black Lace'
433	*Magnolia* 'Watermelon'	1013	*Sambucus* 'Sampo'
434	*Magnolia wilsonii* 'Eileen Baines'	1014	*Sanguisorba*
435	*Magnolia* × *brooklynensis* 'Yellow Bird'	1015	*Santolina*
436	*Mahonia*	1016	*Scabiosa*
437	*Malus*	1017	*Schizostylis*
438	*Malus* × *robusta* 'Red Sentinel'	1018	*Sedum*
439	*Malus* 'Adam's Pearmain'	1019	*Senecio*
440	*Malus* 'Admiration'	1020	*Sequoiadendron giganteum*
441	*Malus* 'Angela'	1021	*Sequoiadendron* 'Pendulum'
442	*Malus* 'Annie Elizabeth'	1022	*Sesleria*

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
443	*Malus* 'Aros'	1023	*Sophora japonica* 'Gold Standard'
444	*Malus* 'Arthur Turner'	1024	*Sorbaria*
445	*Malus* 'Ashmead's Kernel'	1025	*Sorbaronia* 'Likjormaja Liquorice'
446	*Malus baccata*	1026	*Sorbus*
447	*Malus* 'Ballerina Flamenco'	1027	*Sorbus alnifolia* 'Red Bird'
448	*Malus* 'Ballerina Samba'	1028	*Sorbus* 'Amber Light'
449	*Malus* 'Bardsey'	1029	*Sorbus aria* 'Lutescens'
450	*Malus* 'Beauty of Bath'	1030	*Sorbus arranensis*
451	*Malus* 'Black Dabinett'	1031	*Sorbus aucuparia*
452	*Malus* 'Bladon Pippin'	1032	*Sorbus aucuparia* 'Aspleniifolia'
453	*Malus* 'Blenheim Orange'	1033	*Sorbus aucuparia* 'Beissneri'
454	*Malus* 'Bloody Ploughman'	1034	*Sorbus aucuparia* 'Croft Coral'
455	*Malus* 'Bountiful'	1035	*Sorbus aucuparia* 'Fingerprint'
456	*Malus* 'Braeburn'	1036	*Sorbus* 'Autumn Spire'
457	*Malus* 'Braeburn Mariri Red'	1037	*Sorbus bissetii* 'Pearls'
458	*Malus* 'Bramley 20'	1038	*Sorbus* 'Cardinal Royal'
459	*Malus* 'Bramley 20/Christmas P/Scrumptious'	1039	*Sorbus carmesina* 'Emberglow'
460	*Malus* 'Bramley Original'	1040	*Sorbus cashmiriana*
461	*Malus* 'Bramley's Seedling'	1041	*Sorbus* 'Chinese Lace'
462	*Malus brevipes* 'Wedding Bouquet'	1042	*Sorbus* 'Copper Kettle'
463	*Malus* 'Browns'	1043	*Sorbus discolor*
464	*Malus* 'Butterball'	1044	*Sorbus* 'Eastern Promise'
465	*Malus* 'Candymint'	1045	*Sorbus* 'Ghose'
466	*Malus* 'Cardinal'	1046	*Sorbus* 'Glendoick Spire'
467	*Malus* 'Charles Ross'	1047	*Sorbus* 'Glendoick White Baby'
468	*Malus* 'Chivers Delight'	1048	*Sorbus gonggashanica* 'Snow Balls'
469	*Malus* 'Christmas Pippin'	1049	*Sorbus hemsleyi* 'John Bond'
470	*Malus* 'Cinderella'	1050	*Sorbus hupehensis*
471	*Malus* 'Cobra'	1051	*Sorbus hupehensis* 'Pink Pagoda'
472	*Malus* 'Comtesse de Paris'	1052	*Sorbus hybrida* 'Gibbsii'
473	*Malus* 'Coralburst'	1053	*Sorbus japonica*
474	*Malus* 'Core Blimey'	1054	*Sorbus* 'Joseph Rock'
475	*Malus* 'Cornish Aromatic'	1055	*Sorbus* 'Leonard Messel'
476	*Malus coronaria* 'Elk River'	1056	*Sorbus* 'Matthew Ridley'
477	*Malus* 'Coul Blush'	1057	*Sorbus* 'Pink Ness'
478	*Malus* 'Cox Lavera'	1058	*Sorbus* 'Pink Pearl'
479	*Malus* 'Cox Self Fertile'	1059	*Sorbus pseudovilmorinii*
480	*Malus* 'Cox SF/James Grieve/Katy'	1060	*Sorbus* 'Ravensbill'
481	*Malus* 'Cox/Fiesta/Herefordshire Russet'	1061	*Sorbus* 'Rose Queen'
482	*Malus* 'Cox's Orange Pippin'	1062	*Sorbus sargentiana*
483	*Malus* 'Dabinett'	1063	*Sorbus scalaris*
484	*Malus* 'Devonshire Quarrenden'	1064	*Sorbus* 'Splendens'
485	*Malus* 'Discovery'	1065	*Sorbus* 'Sunshine'
486	*Malus* 'Discovery NFT'	1066	*Sorbus thibetica* 'John Mitchell'
487	*Malus* 'Donald Wyman'	1067	*Sorbus torminalis*
488	*Malus* 'Dr Campbells'	1068	*Sorbus ulleungensis* 'Olympic Flame'
489	*Malus* 'Eden'	1069	*Sorbus vilmorinii*
490	*Malus* 'Egremont Russet'	1070	*Sorbus vilmorinii* 'Pink Charm'
491	*Malus* 'Ellison's Orange'	1071	*Sorbus wardii*
492	*Malus* 'Evereste'	1072	*Sorbus* 'Wisley Gold'

(Continues)

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
493	*Malus* 'Fiesta'	1073	*Spiraea*
494	*Malus florentina*	1074	*Stachys*
495	*Malus floribunda*	1075	*Stachyurus*
496	*Malus* 'Fortune'	1076	*Stipa*
497	*Malus* 'Gala'	1077	*Styrax japonicus* 'Fragrant Fountain'
498	*Malus* 'Galloway Pippin'	1078	*Styrax japonicus* 'June Snow'
499	*Malus* 'Gilly'	1079	*Styrax japonicus* 'Pink Snowbell'
500	*Malus* 'Golden Delicious'	1080	*Symphoricarpos*
501	*Malus* 'Golden Gem'	1081	*Symphytum*
502	*Malus* 'Golden Glory'	1082	*Syringa*
503	*Malus* 'Golden Hornet'	1083	*Syringa* 'Pink Perfume'
504	*Malus* 'Gorgeous'	1084	*Syringa vulgaris* 'Beauty of Moscow'
505	*Malus* 'Granny Smith'	1085	*Syringa vulgaris* 'Charles Joly'
506	*Malus* 'Greensleeves'	1086	*Syringa vulgaris* 'Katherine Havemeyer'
507	*Malus* 'Grenadier'	1087	*Syringa vulgaris* 'Madame Lemoine'
508	*Malus* 'Halloween'	1088	*Syringa vulgaris* 'Mrs Edward Harding'
509	*Malus* 'Harry Baker'	1089	*Syringa vulgaris* 'Primrose'
510	*Malus* 'Harry M Jersey'	1090	*Syringa vulgaris* 'Sensation'
511	*Malus* 'Hastings'	1091	*Syringa vulgaris* 'Souvenir de Louis Spaeth'
512	*Malus* 'Herefordshire Russet'	1092	*Taxodium distichum imbricarium* 'Nutans'
513	*Malus* 'Hidden Rose'	1093	*Taxodium distichum* 'Shawnee Brave'
514	*Malus* 'Honeycrisp'	1094	*Taxus*
515	*Malus* 'Howgate Wonder'	1095	*Taxus baccata*
516	*Malus hupehensis*	1096	*Taxus baccata* 'Fastigiata Robusta'
517	*Malus* 'Indian Magic'	1097	*Taxus baccata* 'Standishii'
518	*Malus ioensis* 'Fimbriata'	1098	*Tellima*
519	*Malus ioensis* 'Purpurea EVELYN'	1099	*Tetradium daniellii*
520	*Malus* 'Irish Peach'	1100	*Thalictrum*
521	*Malus* 'Isaac Newton'	1101	*Thuja*
522	*Malus* 'James Grieve'	1102	*Thymus*
523	*Malus* 'Jelly King'	1103	*Tiarella*
524	*Malus* 'John Downie'	1104	*Tilia*
525	*Malus* 'Julia's Late Golden'	1105	*Tilia cordata*
526	*Malus* 'Jumbo'	1106	*Tilia cordata* 'Greenspire'
527	*Malus* 'Jupiter'	1107	*Tilia cordata* 'Winter Orange'
528	*Malus* 'Katy'	1108	*Tilia euchlora*
529	*Malus* 'Keswick Codlin'	1109	*Tilia henryana* 'Arnold Select'
530	*Malus* 'Kidd's Orange Red'	1110	*Tilia platyphyllos*
531	*Malus* 'King of the Pippins'	1111	*Tilia platyphyllos* 'Tiltstone Filigree'
532	*Malus* 'King's Acre Pippin'	1112	*Tilia* × *europaea* 'Golden Sunset'
533	*Malus* 'Kingston Black'	1113	*Tilia* × *europaea* 'Wratislaviensis'
534	*Malus* 'Lady Henniker'	1114	*Trachelospermum*
535	*Malus* 'Lane's Prince Albert'	1115	*Tradescantia*
536	*Malus* 'Laura'	1116	*Tricyrtis*
537	*Malus* 'Laxton's Superb'	1117	*Trollius*
538	*Malus* 'Limelight'	1118	*Ulex*
539	*Malus* 'Little Pax'	1119	*Ulmus*
540	*Malus* 'Lord Derby'	1120	*Ulmus* × *hollandica* 'Wredei'
541	*Malus* 'Lord Lambourne'	1121	*Ulmus* × 'Wingham'
542	*Malus* 'Louisa'	1122	*Uncinia*

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
543	*Malus* 'Major'	1123	*Vaccinium* 'Bluecrop'
544	*Malus* 'Marble NUVAR'	1124	*Vaccinium* 'Chandler'
545	*Malus* 'Melrose Belmonte'	1125	*Vaccinium* 'Darrow'
546	*Malus* 'Meridian'	1126	*Vaccinium* 'Duke'
547	*Malus* 'Michelin'	1127	*Vaccinium* 'Liberty'
548	*Malus* 'Newton Wonder'	1128	*Vaccinium* 'Northland'
549	*Malus* 'Orleans Reinette'	1129	*Vaccinium* 'Patriot'
550	*Malus* 'Paradice Gold'	1130	*Vaccinium* 'Pink Lemonade'
551	*Malus* 'Peasgood's Nonsuch'	1131	*Vaccinium* 'Sunshine Blue'
552	*Malus* 'Pink Glow'	1132	*Verbena*
553	*Malus* 'Pink Perfection'	1133	*Veronica*
554	*Malus* 'Pinot Prince SUPERNOVA'	1134	*Viburnum*
555	*Malus* 'Pitmaston Pine Apple'	1135	*Viburnum lantana*
556	*Malus* 'Pixie'	1136	*Viburnum opulus*
557	*Malus* 'Porters Perfection'	1137	*Viburnum opulus* 'Roseum'
558	*Malus* 'Prairie Fire'	1138	*Viburnum plicatum* 'Kilimanjaro'
559	*Malus* 'Prince William'	1139	*Vinca*
560	*Malus* 'Professor Sprenger'	1140	*Vitis* 'Bacchus'
561	*Malus* 'Queen Cox S.F 18'	1141	*Vitis* 'Dornfelder'
562	*Malus*' Queen of the Realm'	1142	*Vitis* 'Lakemont'
563	*Malus* 'Red Devil'	1143	*Vitis* 'Muscat Bleu'
564	*Malus* 'Red Falstaff'	1144	*Vitis* 'Phoenix'
565	*Malus* 'Red Foxwhelp'	1145	*Vitis* 'Polo Muscat'
566	*Malus* 'Red Jonaprince'	1146	*Vitis* 'Regent'
567	*Malus* 'Red Obelisk'	1147	*Vitis* 'Strawberry'
568	*Malus* 'Red Topaz'	1148	*Vitis* 'Suffolk Red'
569	*Malus* 'Red Windsor'	1149	*Weigela*
570	*Malus* 'Reverend W. Wilks'	1150	*Wisteria brachybotrys* 'Golden Dragon'
571	*Malus* 'Ribston Pippin'	1151	*Wisteria brachybotrys* 'Kapiteyn Fugi'
572	*Malus* 'Rosehip'	1152	*Wisteria brachybotrys* 'Okayama'
573	*Malus* 'Rosemary Russet'	1153	*Wisteria brachybotrys* 'Shiro Beni'
574	*Malus* 'Rosette'	1154	*Wisteria* 'Burford'
575	*Malus* 'Royal Beauty'	1155	*Wisteria floribunda* 'Black Dragon'
576	*Malus* 'Royalty'	1156	*Wisteria floribunda* 'Hon-beni'
577	*Malus* 'Rudolph'	1157	*Wisteria sinensis* 'Prolific'
578	*Malus* 'Santana'	1158	*Xanthocyparis nootkatensis* 'Pendula'
579	*Malus* 'Saturn'	1159	*Yucca*
580	*Malus* 'Scarlet Brandywine'	1160	*Zelkova serrata* 'Kiwi Sunset'

APPENDIX D

Water used for irrigation

All mains water used meets the UK standard Water Supply (Water quality) regulation 2016 and the WHO/EU potable water standards (Drinking water Directive (98/83/EC and the revised Drinking Water Directive 2020/2184) which includes a total freedom from both human and plant pathogens (Article 2-(7)). All mains water conducting pipework fully complies with the UK Water Supply (Water Fittings) regulations of 1999 and the amendments of 2019. Irrigation water used is not stored in any open tanks where airborne contamination could take place and is entirely isolated from any outside exposure (Dossier Section 1.0).

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 Section 1.0).

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 Section 1.0).

APPENDIX E

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

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

N	Pest name	EPPO code	Group	Present in the UK	Present in the EU	*Taxus* confirmed as a host (reference)	Pest can be associated with the commodity	Impact	Justification for inclusion in this list
1	*Acremonium apii*	ACREAP	Fungi	Yes	Limited (Poland, the Netherlands)	*Taxus baccata* (Mirski, 2008)	Uncertain	Yes	Uncertainty about the association with the commodities.
2	*Meloidogyne mali*	MELGMA	Nematodes	Yes	Limited (Belgium, Italy, the Netherlands)	*Taxus baccata* (Ahmed et al., 2013)	Yes	Uncertain	Uncertainty about the impact.
3	*Metacapnodium dingleyae*	–	Fungi	Yes	Limited (Ireland, Italy, Spain)	*Taxus baccata* (Thomas & Polwart, 2003)	Yes	No data	Uncertainty about the impact.
4	*Trichomerium grandisporum*	–	Fungi	Yes	No	*Taxus baccata* (Thomas & Polwart, 2003)	Yes	No data	Uncertainty about the impact.

APPENDIX F

Excel file with the pest list of *Taxus baccata*

Appendix F 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.2025.9277