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SCIENTIFIC OPINION

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Commodity risk assessment of *Salix caprea* and *Salix cinerea* 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 *Salix caprea* and *Salix cinerea* imported from the United Kingdom (UK) as: (a) bundles of 1- to 2-year old cuttings/graftwood, (b) 1- to 7-year-old bare root plants, (c) 1- to 2-year-old cell grown plants and (d) 2- to 15-year-old plants in pots, taking into account the available scientific information, including the technical information provided by the UK. All pests associated with the commodities were evaluated against specific criteria for their relevance for this opinion. Two EU protected zone quarantine pests, i.e. *Bemisia tabaci* (European populations) and *Entoleuca mammata,* and one EU quarantine pest, i.e. *Phytophthora ramorum* (non-EU isolates), fulfilled all relevant criteria and were selected for further evaluation. For the selected pests, the risk mitigation measures described in the technical dossier from the UK were evaluated. Expert judgements were given on the likelihood of pest freedom taking into consideration the risk mitigation measures acting on the pests, including uncertainties associated with the assessment. The age of the plants was considered, reasoning that older trees are more likely to be infested mainly due to longer exposure time and larger size. The degree of pest freedom varies between the pests evaluated, with *P. ramorum* being the pest most frequently expected on the imported plants. The Expert Knowledge Elicitation (EKE) indicated with 95% certainty that between 9738 and 10,000 rooted *S. caprea* and *S. cinerea* plants in pots (2 to 15-year-old) per 10,000 will be free from *P. ramorum.*

KEYWORDS

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

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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 (MSs) 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 MSs and other international organizations needs to be set.

In view of the above and in accordance with Article 29 of Regulation (EC) No 178/2002, the Commission asks EFSA to provide scientific opinion in the field of plant health for *Salix caprea* and *Salix cinerea* 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 *S. caprea* and *S. cinerea* from the UK following the Guidance on commodity risk assessment for the evaluation of high risk plant dossiers (EFSA PLH Panel, 2019) and the protocol for commodity risk assessments as presented in the EFSA standard protocols for scientific assessments (EFSA PLH Panel, 2024; Gardi et al., 2024), 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),

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

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

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

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

Southern Federal District (Yuzhny federalny okrug), North Caucasian Federal District (Severo-Kavkazsky federalny okrug) and Volga Federal District (Privolzhsky federalny okrug), San Marino, Serbia, Switzerland, Türkiye, Ukraine and the United Kingdom (except Northern Ireland[5]).

Consequently, for those countries,

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

Pests listed as 'Regulated Non-Quarantine Pest' (RNQP) in Annex IV of the Commission Implementing Regulation (EU) 2019/2072, and deregulated pests (i.e. 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 a RNQP and as a Protected Zone Quarantine pest, in this Opinion it should be evaluated as Quarantine pest.

In its evaluation the Panel:

- Checked whether the provided information in the technical dossier (hereafter referred to as 'the Dossier') provided by the applicant (United Kingdom, Department for Environment Food and Rural Affairs – hereafter referred to as 'DEFRA') was sufficient to conduct a commodity risk assessment. When necessary, additional information was requested to the applicant.
- Selected the relevant Union quarantine pests and protected zone quarantine pests (as specified in Commission Implementing Regulation (EU) 2019/2072, hereafter referred to as 'EU quarantine pests') and other relevant pests present in the UK and associated with the commodity.
- Did not assess the effectiveness of measures for Union quarantine pests for which specific measures are in place for the import of the commodity from the UK in Commission Implementing Regulation (EU) 2019/2072 and/or in the relevant legislative texts for emergency measures and if the specific country is in the scope of those emergency measures. The assessment was restricted to whether or not the applicant country implements those measures.
- Assessed 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 September 2023 including the additional information provided by DEFRA in February 2025, after EFSA's request. The Dossier is managed by EFSA.

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

TABLE 1 Structure and overview of the Dossier.

Dossier section	Overview of contents	Filename
1.1	Technical dossier for *Salix caprea*	Salix caprea commodity information final
1.2	Technical dossier for *Salix cinerea*	Salix cinerea commodity information final
2.0	Pest list	Salix_pest_list_final2
3.1	Producers sample product list for *Salix caprea*	Salix_producers_sample_product_list
3.2	Producers sample product list for *Salix cinerea*	Salix_producers_sample_product_list

(Continues)

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

TABLE 1 (Continued)

Dossier section	Overview of contents	Filename
4.1	Distribution of *Salix caprea*	Salix_caprea_distribution
4.2	Distribution of *Salix cinerea*	Salix_cinerea_distribution
5.1	Additional information: answers, 10 February	Salix caprea and cinarea additional information 6 January 2025 amended
5.2	Additional information: pests	Salix_EFSA_Query_Pest_Information-Feb25

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 of the UK to compile the Dossier (Dossier Sections 1.1, 1.2, 2.0, 3.1, 3.2, 4.1, 4.2, 5.1 and 5.2).

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

Database	Platform/link
3I Interactive Keys and Taxonomic Databases	https://dmitriev.speciesfile.org/index.asp
Agromyzidae of Great Britain and Ireland	https://agromyzidae.co.uk/
AHDB	https://ahdb.org.uk/
Animal Diversity Web	https://animaldiversity.org/
Aphids on the World's Plants	https://www.aphidsonworldsplants.info/
British Bugs	https://www.britishbugs.org.uk/index.html
British leafminers	https://www.leafmines.co.uk/index.htm
The British Plant Gall Society	https://www.britishplantgallsociety.org/
CABI Crop Protection Compendium	https://www.cabi.org/cpc/
CABI Plantwise Plus	https://plantwiseplusknowledgebank.org/
Checklist of the British & Irish Basidiomycota	https://basidiochecklist.science.kew.org/
Current British Aphid Checklist	https://influentialpoints.com/aphid/Checklist_of_aphids_in_Britain.htm
Database of Insects and their Food Plants	https://dbif.brc.ac.uk/homepage.aspx
Descriptions of Plant Viruses	https://www.dpvweb.net/
Dipterists Forum	https://dipterists.org.uk/home
Diaspididae of the World 2.0	https://diaspididae.linnaeus.naturalis.nl/linnaeus_ng/app/views/introduction/topic.php?id=3377&epi=155
EPPO Global Database	https://gd.eppo.int/
EU-Nomen	https://www.eu-nomen.eu/portal/index.php
FAO	https://agris.fao.org/
Fera	https://www.fera.co.uk/ncppb
GBIF	https://www.gbif.org/
Hantsmoths	https://www.hantsmoths.org.uk/index.php
HOSTS - a Database of the World's Lepidopteran Hostplants	https://data.nhm.ac.uk/dataset/hosts
ICAR – National Bureau of Agricultural Insect Resources	https://www.nbair.res.in/
Index Fungorum	https://www.indexfungorum.org/names/Names.asp
InfluentialPoints	https://influentialpoints.com/
Insects (Insecta) of the World	https://insecta.pro/
L'Inventaire national du patrimoine naturel (INPN)	https://inpn.mnhn.fr/accueil/index
Lepidoptera and some other life forms	https://ftp.funet.fi/pub/sci/bio/life/intro.html
Lepidoptera and their ecology	https://www.pyrgus.de/index_en.php
Lepiforum e.V.	https://lepiforum.org/
Mycobank	https://www.mycobank.org/
Natural History Museum	https://www.nhm.ac.uk/
Nemaplex	https://nemaplex.ucdavis.edu/Nemabase2010/PlantNematodeHostStatusDDQuery.aspx
NBN atlas	https://nbnatlas.org/
NorfolkMoths	https://www.norfolkmoths.co.uk/

TABLE 2 (Continued)

Database	Platform/link
Plant Parasites of Europe	https://bladmineerders.nl/
Scalenet	https://scalenet.info/catalogue/
Spider Mites Web	https://www1.montpellier.inra.fr/CBGP/spmweb/
The leaf and stem mines of British flies and other isects	https://www.ukflymines.co.uk/index.php
The Sawflies (Symphyta) of Britain and Ireland	https://www.sawflies.org.uk/
Thrips of the British Isles	https://keys.lucidcentral.org/keys/v3/british_thrips/overview.html
TortAI	https://idtools.org/id/leps/tortai/index.html
Tortricid.net	https://www.tortricidae.com/
UK Beetle Recording	https://coleoptera.org.uk/home
UKmoths	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 Databases	https://fungi.ars.usda.gov/
Woodland trust	https://www.woodlandtrust.org.uk/

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 *S. caprea* and *S. cinerea*. The following searches were combined: (i) a general search to identify pests reported on *S. caprea* and *S. cinerea* in the databases, (ii) a search to identify any EU quarantine pest reported on *Salix* as genus and subsequently (iii) a tailored search to identify whether the above pests are present or not in the UK. The searches were run between November and December 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 *S. caprea* and *S. cinerea*. 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 *Salix caprea* and *Salix cinerea*.

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

2.3 | Methodology

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

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

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

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

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

2.3.1 | Commodity data

Based on the information provided by DEFRA 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 *S. caprea* and *S. cinerea* based on information provided in the Dossier Sections 1.1, 1.2, 2.0, 3.1, 3.2, 4.1, 4.2, 5.1 and 5.2 and on searches performed by the Panel. The search strategy and search syntax were adapted to each of the databases listed in Table 3, according to the options and functionalities of the different databases and CABI keyword thesaurus.

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

EUROPHYT was investigated by searching for the interceptions associated with *S. caprea* and *S. cinerea* imported from the whole world from 1995 to May 2020 and TRACES-NT from May 2020 to 30 November 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 November 2024.

The search strategy used for Web of Science Databases was designed combining English common names for pests and diseases, terms describing symptoms of plant diseases and the scientific and English common names of the commodity and excluding pests which were identified using searches in other databases. The established search strings are detailed in Appendix B and they were run on 15 November 2024.

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

The compiled pest list (see Microsoft Excel® in Appendix F) includes all identified pests that use as host *S. caprea* and *S. cinerea* or that are reported as associated with *Salix* sp. and *Salix* spp. as well as all EU quarantine pests and protected zone quarantine pests found to be associated with *Salix* as a genus.

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 *S. caprea* and *S. cinerea* in export nursery were considered (see also Figure 1):

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

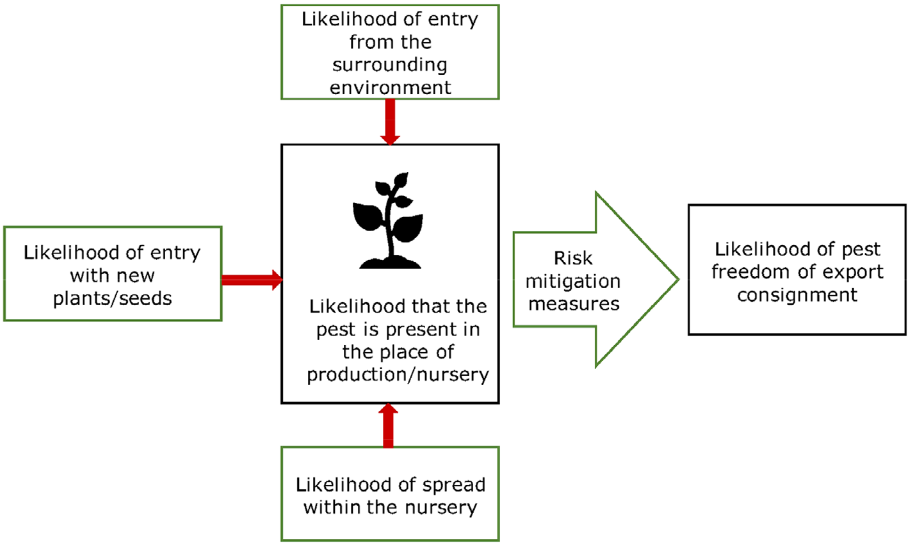

FIGURE 1 Conceptual framework to assess likelihood that plants are exported free from relevant pests (*Source*: EFSA PLH Panel, 2019).

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

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

2.3.4 | Expert Knowledge Elicitation

To estimate the pest freedom of the commodities an EKE was performed following EFSA guidance (Annex B.8 of EFSA Scientific Committee, 2018). The specific question for EKE was: 'Taking into account (i) the risk mitigation measures in place in the nurseries and (ii) other relevant information, how many of 10,000 commodity units, either single plants or bundles of plants will be infested with the relevant pest when arriving in the EU? A unit is defined as either single plants or bundles of plants, cuttings/graftwood, 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. Cuttings/graftwood of 1–2 years, in bundles of 10–20 items;
2. Bare root plants of 1–7 years as single trees or in bundles of 5, 10, 15, 25, 50 plants depending on the species and plant size;
3. Cell grown plants of 1–2 years as single plants or bundles of 10, 12 or 15 plants depending on the nursery choice;
4. Single rooted plants of 2–15 years in pots.

Single 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 their respective 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 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 cuttings/graftwood, bare root plants, cell grown plants and rooted plants up to 15 years old in pots of *S. caprea* (common names: pussy willow, goat willow, common sallow; Family: Salicaceae) and *S. cinerea* (common names: grey willow, common sallow, grey sallow; Family: Salicaceae) as described in the details below:

1. **Cuttings/graftwood**: the age of cuttings/graftwood is between 1–2 years (Dossier Sections 1.1 and 1.2). The diameter is between 0.6 and 1.2 cm. They are grouped in bundles of 10–20 items. Cuttings/graftwood are strong young shoots bearing buds which are suitable for use in chip budding or grafting. The shoots are approximately between 35 and 40 cm long and will typically have 9, 10 or more buds present (Dossier Sections 1.2, 1.2 and 5.1). Cuttings/graftwood are without leaves.
2. **Bare root plants**: the age of plants is between 1 and 7 years (Dossier Sections 1.1, 1.2, and 5.1). The diameter is between 0.4 and 4 cm and height is between 20 and 200 cm. Bare root plants may have some leaves at the time of export, in particular when exported in early winter (Dossier Sections 1.1, 1.2 and 5.1). Bare root plants will be exported as single trees or in bundles of 5, 10, 15, 25, 50 (Dossier Sections 1.1, 1.2 and 5.1).
3. **Cell grown plants**: the age of plants is between 1 and 2 years. The diameter is between 0.4 and 1 cm and height between 20 and 60 cm. Cell grown plants are plants grown in cells at one plant per cell, using EU-compliant growing media. These may be grown in greenhouses initially but are subsequently grown outdoors in containers in metal frames above the ground. Cell grown plants may be traded as individual plants or as bundles. Typically, bundles will include 10, 12 or 15 plants depending on the choice of the nursery. The cell grown plants may be exported with leaves based on the picture 'cell grown *Salix* ready for export' provided by the applicant country (Dossier Sections 1.1, 1.2 and 5.1).
4. **Rooted plants in pots**: the age of plants is between 2 and 15 years (Dossier Sections 5.1). The diameter is between 1 and 14 cm and height between 0.6 and 10 m. Rooted plants in pots may be either grown in EU-compliant growing media in pots for their whole life, or initially grown in the field before being lifted, root-washed to remove any soil and then potted in EU-compliant growing media. The trees will be lifted from the field a minimum of one growing season prior to export at no more than 6 years old. The plants in pots may be exported with leaves, depending on the timing of the export (Dossier Sections 1.1, 1.2 and 5.1).

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 medium is certified and heat-treated by commercial suppliers during production to eliminate pests and diseases (Dossier Sections 1.1 and 1.2).

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

The yearly average trade volume of the different commodities to the EU is reported in Dossier Sections 1.1 and 1.2 and summarised in Table 4. The trade of these commodities will mainly be to Northern Ireland and the Republic of Ireland.

TABLE 4 Yearly average trade volumes of *Salix caprea* and *Salix cinerea* commodities.

Type of plant	Number of items	Seasonal timing
Salix caprea		
Cuttings/graftwood	2000	January to March
Bare root plants	25,000	November to March
Rooted plants in pots (including cell grown plants)	20,000	Mainly September to May
Salix cinerea		
Cuttings/graftwood	2000	January to March
Bare root plants	25,000	November to March
Rooted plants in pots (including cell grown plants)	22,000	Mainly September to May

According to the Dossier Sections 1.1 and 1.2, 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:

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

3.2 | Description of the production areas

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

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

The nurseries also grow other plant species as shown in the Appendix C. The minimum and maximum proportion of *Salix* compared to the other plant species grown in the nurseries is between 1% and 3% for *S. caprea* and between 1% and 2% for *S. cinerea* (Dossier Sections 1.1 and 1.2). The following plant species may be grown in some of the nurseries: *Castanea sativa, Larix* spp., *Fagus sylvatica, Fagus* spp., *Malus* spp., *Quercus petraea, Quercus pubescens, Quercus robur, Quercus* spp., *Rosa* spp., *Sorbus* spp., *Ulmus* spp. and *Viburnum* spp. (Dossier Section 5.1). There are nurseries which also produce plants for the local market, and there is no distancing between production areas for the export and the local market (Dossier Sections 1.1 and 1.2).

Non-cultivated herbaceous plants grow on less than 1% of the nursery area. The predominant species is rye grass (*Lolium* spp.). Other identified species include dandelions (*Taraxacum officinale*), hairy bittercress (*Cardamine hirsuta*), common daisy (*Bellis perennis*), creeping cinquefoil (*Potentilla reptans*) and bluebells (*Hyacinthoides non-scripta*). These are all extremely low in number (Dossier Sections 1.1 and 1.2). 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 (*Taxus 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 Sections 1.1 and 1.2).

The minimum distance in a straight line, between the growing area in the nurseries and the closest *S. caprea* and *S. cinerea* plants in the local surroundings is 20 metres (Dossier Sections 1.1 and 1.2).

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

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 Sections 1.1 and 1.2).

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

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

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

The following plant species may be grown within a 2 km zone surrounding the nurseries: *Camellia* spp., *Castanea sativa*, *Larix kaempferi*, *Larix* spp., *Fagus sylvatica*, *Fagus* spp., *Populus* spp., *Quercus* spp., *Rhododendron* spp. and *Viburnum* spp. (Dossier Section 5.1).

Based on the global Köppen–Geiger climate zone classification (World Maps of Köppen-Geiger climate classification), the climate of the production areas of *S. caprea* and *S. cinerea* in the UK is classified as Cfb, i.e. main climate (C): warm temperate; precipitation (f): fully humid; temperature (b): warm summer.

3.3 | Production and handling processes

3.3.1 | Source of planting material

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

[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.

Seeds purchased in the UK are certified under the Forest Reproductive Material (Great Britain) Regulations 2002. Seedlings sourced in the UK are certified with the UK Plant Passports. A small percentage of seedlings are obtained from EU countries (the Netherlands, Belgium, France) and they are certified with phytosanitary certificates (Dossier Sections 1.1 and 1.2).

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 Sections 1.1 and 1.2). The minimum distance between greenhouses and production fields of *Salix* is 30 m (Dossier Section 5.1).

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 1.1, 1.2 and 5.1).

Rooted plants in pots may be either grown in EU-compliant growing media in pots for their whole life, or initially grown in the field before being lifted, root-washed to remove the soil and then potted in EU-compliant growing media. Trees will be lifted from the field at no more than 6 years old, root-washed to remove the soil and transplanted into pots at least one growing season before export (Dossier Sections 1.1, 1.2 and 5.1).

Pruning is done on the commodities 1, 2 and 4 described above in 3.1 Pruning frequency depends on growth, age of plant, nursery and customer preference. Cell grown plants are not pruned (Dossier Sections 1.1, 1.2 and 5.1).

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

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

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 Sections 1.1 and 1.2). Additional information on water used for irrigation is provided in Appendix D. Regardless of the source of the water used to irrigate, none of the nurseries are known to have experienced the introduction of a pest/disease because of contamination of the water supply (Dossier Sections 1.1 and 1.2).

Growers are required to assess 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 Sections 1.1 and 1.2).

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

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

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

3.3.3 | Pest monitoring during production

All producers are registered as professional operators with the UK Competent Authority via the Animal and Plant Health Agency (APHA) for England and Wales, or with 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, soil, watercourses) (Dossier Sections 1.1 and 1.2).

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

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. However, no information is available on the frequency of these crop walks. 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 Sections 1.1 and 1.2).

The nurseries follow the Plant Health Management Standard issued by the Plant Healthy Certification Scheme which DEFRA, the Royal Horticultural Society (Dossier Sections 1.1 and 1.2).

During production, in addition to the general health monitoring of the plants by the nurseries, official growing season inspections are undertaken by the UK Plant Health Service at an appropriate time, taking into consideration factors such as the likelihood of pest presence and growth stage of the crop. Where appropriate this could include sampling and laboratory analysis. Official sampling and analysis could also be undertaken nearer to the point of export depending on the type of analysis and the import requirements of the country being exported to. Samples are generally taken on a representative sample of plants, in some cases, however, where the consignment size is quite small, all plants are sampled. Magnification equipment is provided to all inspectors as part of their standard equipment and is used during inspections when appropriate (Dossier Sections 1.1 and 1.2).

In the Dossier it is reported that in years 2020 to 2022 there has been a substantial level of inspection of registered *S. caprea* and *S. cinerea* producers, both in support of the Plant Passporting scheme (checks are consistent with EU legislation, with a minimum of 1 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 three in 2020, nine in 2021 and six in 2022. Inspections targeted *P. ramorum* but plants were also inspected for symptoms and signs of other pests, including quarantine pests (Dossier Sections 1.1 and 1.2).

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

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

3.3.4 | Pest management during production

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

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

Examples of typical treatments used against rust, leaf spot, canker, spider mites, aphids and weeds are listed in the Dossier Sections 1.1, 1.2 and 5.1. These would be applied at the manufacturers recommended rate and intervals (Dossier Sections 1.1 and 1.2).

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

Post-harvest and through the autumn and winter, nursery management is centred on pest and disease prevention and maintaining good levels of nursery hygiene. Leaves, pruning residues and weeds are all removed from the nursery to reduce the number of over wintering sites for pests and diseases (Dossier Sections 1.1 and 1.2).

3.3.5 | Inspections before export

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

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

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

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

3.3.6 | Export procedure

Bare 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 Sections 1.1 and 1.2).

Rooted plants in pots can be moved at any point in the year to fulfil customer demand. These will likely be destined for garden centre trade rather than nurseries (Dossier Sections 1.1 and 1.2).

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

Cell grown plants may be traded as individual plants or as bundles. Typically, bundles will include 10, 12 or 15 plants depending on the size of plant (Dossier Section 5.1).

Prior to export bare root plants can be placed in bundles 5, 10, 15, 25, 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 Sections 1.1 and 1.2).

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

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

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

4 | IDENTIFICATION OF PESTS POTENTIALLY ASSOCIATED WITH THE COMMODITY

The search for potential pests associated with the commodity rendered 1449 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.

77 EU-quarantine species that are reported to use the commodities as host plants were evaluated (Table 5) 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 5 presents an overview of the evaluation of the 77 EU-quarantine pest species that are reported as associated with the commodities.

Of these 77 EU-quarantine pest species evaluated, 3 (*Bemisia tabaci* (European populations), *Entoleuca mammata* and *Phytophthora ramorum* (non-EU isolates)) are present in the UK and can be associated with the commodities and hence were selected for further evaluation.

There was one EU quarantine pest, i.e. *Meloidogyne enterolobii* that despite being reported to be associated with *Salix* was not further evaluated. An association with *Salix* × *pendulina* f. *salamonii* was reported in EPPO. However, the consultation of the original literature (Brito et al., 2010) revealed that *Salix* is not reported as a host of *M. enterolobii*, but a host of *Meloidogyne* spp. Moreover, the pest is not known to be present in the UK.

TABLE 5 Overview of the evaluation of the 77 EU-quarantine pest species for which information was found in the Dossier, databases and literature searches that use *Salix* 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	*Salix* confirmed as a host (reference)	Pest can be associated with the commodity	Pest relevant for the opinion
1	*Acleris issikii*	ACLRIS	Insects	No	*Salix integra* (Byun & Yan, 2004; EPPO, 2024)	Not assessed	No
2	*Acleris senescens*	ACLRSE	Insects	No	*Salix lasiolepis* (Powell, 2004; EPPO, 2024)	Not assessed	No
3	*Aleurocanthus spiniferus*	ALECSN	Insects	No	*Salix* sp. (Gillespie, 2012; EPPO, 2024)	Not assessed	No
4	*Anoplophora chinensis*	ANOLCN	Insects	No	*Salix caprea* (Oğuzoğlu et al., 2024; EPPO, 2024)	Not assessed	No
5	*Anoplophora glabripennis*	ANOLGL	Insects	No	*Salix caprea, S. cinerea* (CABI, 2025; Straw et al., 2015)	Not assessed	No
6	*Aphrophora angulata*	APHRAN	Insects	No	*Salix* sp. (Severin, 1950; EPPO, 2024)	Not assessed	No
7	*Apriona cinerea*	APRICI	Insects	No	*Salix* (Singh & Prasad, 1985; EPPO, 2024)	Not assessed	No
8	*Apriona germari*	APRIGE	Insects	No	*Salix babylonica* (Lim et al., 2014; EPPO, 2024)	Not assessed	No
9	*Apriona rugicollis*	APRIJA	Insects	No	*Salix babylonica* (EPPO, 2024)[b]	Not assessed	No
10	*Bemisia tabaci* (non-European populations)	BEMITA	Insects	No	*Salix matsudana* (Bayhan et al., 2006)	Not assessed	No
11	*Bemisia tabaci* (European populations)[c]	BEMITA	Insects	Yes	*Salix matsudana* (Bayhan et al., 2006)	Yes	Yes
12	*Candidatus* Phytoplasma phoenicium	PHYPPH	Phytoplasmas	No	*Salix alba* (Zamhari, 2017)	Not assessed	No
13	*Candidatus* Phytoplasma ziziphi	PHYPZI	Phytoplasmas	No	*Salix babylonica* (Lai et al., 2022; EPPO, 2024)	Not assessed	No
14	*Choristoneura conflictana*	ARCHCO	Insects	No	*Salix* sp. (Ciesla & Kruse, 2009; EPPO, 2024)	Not assessed	No
15	*Choristoneura rosaceana*	CHONRO	Insects	No	*Salix* (Furniss & Carolin, 1977; EPPO, 2024)	Not assessed	No
16	*Diabrotica virgifera zeae*	DIABVZ	Insects	No	*Salix nigra* (Clark et al., 2004; EPPO, 2024)	Not assessed	No
17	*Entoleuca mammata*	HYPOMA	Fungi	Yes	*Salix caprea, S. cinerea* (Granmo et al., 1999)	Yes	Yes
18	*Eurhizococcus brasiliensis*	EURHBR	Insects	No	*Salix babylonica* (Foldi, 2005; EPPO, 2024)	Not assessed	No
19	*Euwallacea fornicatus sensu lato*	XYLBFO	Insects	No	*Salix* (DAFNAE, 2025; Mendel et al., 2021)	Not assessed	No
20	Grapevine flavescence dorée phytoplasma	PHYP64	Phytoplasmas	No	*Salix* spp. (Casati et al., 2017)	Not assessed	No
21	*Graphocephala atropunctata*	GRCPAT	Insects	No	*Salix* spp. (Purcell, 1976; EPPO, 2024)	Not assessed	No
22	*Graphocephala confluens*	GRCPCF	Insects	No	*Salix* (Nielson, 1968; EPPO, 2024)	Not assessed	No
23	*Homalodisca vitripennis*	HOMLTR	Insects	No	*Salix* spp. (Hoddle et al., 2003; EPPO, 2024)	Not assessed	No
24	*Lopholeucaspis japonica*	LOPLJA	Insects	No	*Salix babylonica* (Batsankalashvili et al., 2017)	Not assessed	No
25	*Lycorma delicatula*	LYCMDE	Insects	No	*Salix babylonica* (Barringer & Ciafré, 2020; EPPO, 2024)	Not assessed	No
26	*Neocosmospora euwallaceae*	FUSAEW	Fungi	No	*Salix* sp. (Eskalen et al., 2013)	Not assessed	No
27	*Neokolla hieroglyphica*	GRCPHI	Insects	No	*Salix* sp. (Overall & Rebek, 2017; EPPO, 2024)	Not assessed	No
28	*Oemona hirta*	OEMOHI	Insects	No	*Salix caprea* (Lu & Wang, 2005; EPPO, 2024)	Not assessed	No

(Continues)

TABLE 5 (Continued)

No.	Pest name according to EU legislation[a]	EPPO code	Group	Pest present in the UK	*Salix* confirmed as a host (reference)	Pest can be associated with the commodity	Pest relevant for the opinion
29	*Oncometopia nigricans*	ONCMNI	Insects	No	*Salix caroliniana* (Adlerz, 1980; EPPO, 2024)	Not assessed	No
30	*Oncometopia orbona*	ONCMUN	Insects	No	*Salix nigra* (Turner, 1959; EPPO, 2024)	Not assessed	No
31	*Phymatotrichopsis omnivora*	PHMPOM	Fungi	No	*Salix nigra* (Anonymous, 1960; Farr & Rossman, 2025)	Not assessed	No
32	*Phytophthora ramorum* (non-EU isolates)	PHYTRA	Oomycetes	Yes	*Salix caprea* (APHIS USDA, 2022; Cave et al., 2008)	Yes	Yes
33	*Popillia japonica*	POPIJA	Insects	No	*Salix discolor, S. viminalis* (Fleming, 1972; EPPO, 2024)	Not assessed	No
34	*Ralstonia pseudosolanacearum*	RALSPS	Bacteria	No	*Salix gracilistyla* (EPPO, 2024; Lin et al., 2014)	Not assessed	No
35	*Scirtothrips citri*	SCITCI	Insects	No	*Salix* (Bailey, 1964; EPPO, 2024)	Not assessed	No
36	*Sphaerulina musiva*	MYCOPP	Fungi	No	*Salix lucida* subsp. *lucida* (EPPO, 2024; Feau & Bernier, 2004)	Not assessed	No
37	*Spodoptera eridania*	PRODER	Insects	No	*Salix* sp. (Montezano et al., 2014; EPPO, 2024)	Not assessed	No
38	*Tirachys sartus*	AELSSA	Insects	No	*Salix* spp. (EPPO, 2024; Farashiani et al., 2001)	Not assessed	No
39	*Xylella fastidiosa*	XYLEFA	Bacteria	No	*Salix alba* (Casarin et al., 2022) – experimental host	Not assessed	No
Scolytinae spp. (non-European)							
40	*Ambrosiodmus lewisi* as Scolytinae spp. (non-European)	AMBDLE	Insects	No	*Salix* (DAFNAE, 2025; Wood & Bright, 1992)	Not assessed	No
41	*Ambrosiodmus minor* as Scolytinae spp. (non-European)	AMBDMI	Insects	No	*Salix* (Lin et al., 2019; DAFNAE, 2025)	Not assessed	No
42	*Ambrosiodmus rubricollis* as Scolytinae spp. (non-European)	AMBDRU	Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
43	*Anisandrus maiche* as Scolytinae spp. (non-European)	ANIDMA	Insects	No	*Salix* (DAFNAE, 2025; Mandelshtam et al., 2018)	Not assessed	No
44	*Corthylus mexicanus* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
45	*Corthylus nudus* as Scolytinae spp. (non-European)		Insects	No	*Salix babylonica* (Bright & Skidmore, 2002; DAFNAE, 2025)	Not assessed	No
46	*Corthylus papulans* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
47	*Cryphalus exiguus* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Wood & Bright, 1992; DAFNAE, 2025	Not assessed	No
48	*Diuncus haberkorni* as Scolytinae spp. (non-European)		Insects	No	*Salix tetrasperma* (DAFNAE, 2025; Maiti & Saha, 2004)	Not assessed	No

TABLE 5 (Continued)

No.	Pest name according to EU legislation[a]	EPPO code	Group	Pest present in the UK	*Salix* confirmed as a host (reference)	Pest can be associated with the commodity	Pest relevant for the opinion
49	*Heteroborips seriatus* as Scolytinae spp. (non-European)	XYLBSE	Insects	No	*Salix* (DAFNAE, 2025; Mandelshtam et al., 2019)	Not assessed	No
50	*Hylocurus hirtellus* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
51	*Hylocurus microcornis* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
52	*Hypothenemus atomus* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
53	*Hypothenemus californicus* as Scolytinae spp. (non-European)	HYOTCA	Insects	No	*Salix babylonica* (DAFNAE, 2025; Wood & Bright, 1992)	Not assessed	No
54	*Hypothenemus columbi* as Scolytinae spp. (non-European)	HYOTCO	Insects	No	*Salix* (DAFNAE, 2025; Wood & Bright, 1992)	Not assessed	No
55	*Hypothenemus crudiae* as Scolytinae spp. (non-European)	HYOTHI	Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
56	*Hypothenemus distinctus* as Scolytinae spp. (non-European)		Insects	No	*Salix nigra* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
57	*Hypothenemus interstitialis* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
58	*Hypothenemus seriatus* as Scolytinae spp. (non-European)	STEHSE	Insects	No	*Salix* (DAFNAE, 2025; Wood & Bright, 1992)	Not assessed	No
59	*Lymantor decipiens* as Scolytinae spp. (non-European)		Insects	No	*Salix interior* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
60	*Micracis carinulatus* as Scolytinae spp. (non-European)		Insects	No	*Salix* (DAFNAE, 2025; Wood & Bright, 1992)	Not assessed	No
61	*Micracis detentus* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No
62	*Micracis festivus* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
63	*Micracis grandis* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No
64	*Micracis suturalis* as Scolytinae spp. (non-European)		Insects	No	*Salix interior* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
65	*Micracis swainei* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No
66	*Micracis tribulatus* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No

(Continues)

TABLE 5 (Continued)

No.	Pest name according to EU legislation[a]	EPPO code	Group	Pest present in the UK	*Salix* confirmed as a host (reference)	Pest can be associated with the commodity	Pest relevant for the opinion
67	*Micracis unicornis* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
68	*Micracisella knulli* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No
69	*Microcorthylus vicinus* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
70	*Procryphalus utahensis* as Scolytinae spp. (non-European)		Insects	No	*Salix scouleriana* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No
71	*Pseudothysanoes hopkinsi* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Atkinson, 2025; DAFNAE, 2025)	Not assessed	No
72	*Scolytoplatypus minimus* as Scolytinae spp. (non-European)		Insects	No	*Salix tetrasperma* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No
73	*Scolytus schevyrewi* as Scolytinae spp. (non-European)	SCOLSH	Insects	No	*Salix* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No
74	*Taphrorychus machnovskii* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No
75	*Taphrorychus picipennis* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No
76	*Trypophloeus nitidus* as Scolytinae spp. (non-European)		Insects	No	*Salix scouleriana* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No
77	*Trypophloeus salicis* as Scolytinae spp. (non-European)		Insects	No	*Salix* (Wood & Bright, 1992; DAFNAE, 2025)	Not assessed	No

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

[b]Reported in EPPO, 2024, but no original papers are cited in EPPO.

[c]*B. tabaci* (European populations) is regulated as a protected zone quarantine pest. Therefore *B. tabaci* is listed twice, as European and non-European population. The association with *Salix* was assessed at the pest species level and not at the population level.

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

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

a. the pest is present in the UK;
b. the pest is (i) absent or (ii) has a limited distribution in the EU;
c. commodity is a host of the pest;
d. one or more life stages of the pest can be associated with the specified commodity;
e. the pest may have an impact in the EU.

For non-regulated species 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, 1372 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 *Salix* can provide information on some of the organisms that can be present on *Salix* despite the current measures taken. According to EUROPHYT (2024) (accessed on 10 December 2024) and TRACES-NT (2024) (accessed on 10 December 2024), there were no interceptions of plants for planting of *Salix* from the UK destined to the EU MSs due to the presence of harmful organisms between the years 1995 and 30 November 2024. It should be noted that since Brexit the movement of *Salix* from UK to the EU has been banned according to the current plant health legislation and therefore it is not expected to have interceptions after Brexit.

4.4 | List of potential pests not further assessed

From the list of pests not selected for further evaluation, the Panel highlighted one species *Takahashia japonica* (see Appendix E) for which currently available information provides not enough evidence on impacts to select this species for further evaluation in this opinion. *T. japonica* was not yet included in the list of Union quarantine pests because no significant impact of the pest on its host plants was observed in areas where it is already present in Europe. However, there is uncertainty on potential impacts once it reaches other areas in Europe with different environmental conditions and with different natural enemies or abundance of enemies. The uncertainty on the impact is added as justification of the inclusion in Appendix E.

4.5 | Summary of pests selected for further evaluation

The three pests satisfying all the relevant criteria listed above in the Sections 4.1 and 4.2 are included in Table 6. The effectiveness of the risk mitigation measures applied to the commodity was evaluated for these selected pests.

TABLE 6 List of relevant pests selected for further evaluation

Number	Current scientific name	EPPO code	Name used in the EU legislation	Taxonomic information	Group	Regulatory status
1	*Bemisia tabaci*	BEMITA	*Bemisia tabaci* Genn. (European populations)	Hemiptera Aleyrodidae	Insects	Protected Zone Quarantine Pest according to Commission Implementing Regulation (EU) 2019/2072
2	*Entoleuca mammata*	HYPOMA	*Entoleuca mammata* (Wahlenb.) Rogers and Ju	Xylariales Xylariaceae	Fungi	Protected Zone Quarantine Pest according to Commission Implementing Regulation (EU) 2019/2072
3	*Phytophthora ramorum*	PHYTRA	*Phytophthora ramorum* (non-EU isolates) Werres, De Cock & Man in 't Veld	Peronosporales Peronosporaceae	Oomycetes	EU Quarantine Pest according to Commission Implementing Regulation (EU) 2019/2072

5 | RISK MITIGATION MEASURES

For the selected pests (Table 6), the Panel evaluated the likelihood that it could be present in the *S. caprea* and *S. cinerea* nurseries by evaluating the possibility that the commodity in the export nurseries is infested either by:

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

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

5.1 | Risk mitigation measures applied in the UK

With the information provided by the UK (Dossier Sections 1.1, 1.2 and 5.1), the Panel summarised the risk mitigation measures (see Table 7) that are implemented in the production nursery.

TABLE 7 Overview of implemented risk mitigation measures for *Salix caprea* and *Salix cinerea* plants designated for export to the EU from the UK.

Number	Risk mitigation measure	Implementation in the UK
1	Registration of production sites	All producers are registered as professional operators with the UK Competent Authority via APHA for England and Wales, or SASA for Scotland, and are authorised to issue the UK plant passports, verifying they meet the required national sanitary standards (Dossier Sections 1.1 and 1.2).
2	Physical separation	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 Sections 1.1 and 1.2).
3	Certified plant material	*Salix* seeds purchased in the UK are certified under The Forest Reproductive Material (Great Britain) Regulations 2002 (legislation.gov.uk); seedlings sourced in the UK are certified with UK Plant Passports. A small percentage of seed and young plants may be obtained from EU (Netherlands, Belgium and France); seeds and planting material from the EU countries are certified with phytosanitary certificates (Dossier Sections 1.1 and 1.2).
4	Growing media	The growing media is virgin peat or peat-free compost. This compost is heat-treated by commercial suppliers during production to eliminate pests and diseases. It is supplied in sealed bulk bags or shrink-wrapped bales and stored off the ground on pallets, these are free from contamination. Where delivered in bulk, compost is kept in a dedicated bunker, either indoors, or covered by tarpaulin outdoors, and with no risk of contamination with soil or other material (Dossier Sections 1.1 and 1.2).
5	Surveillance, monitoring and sampling	For additional information see Section 3.3.3 Pest monitoring during production.

TABLE 7 (Continued)

Number	Risk mitigation measure	Implementation in the UK
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. Growers must have an appropriate programme of weed management in place on the nursery (Dossier Sections 1.1 and 1.2).
7	Removal of infested plant material	Post-harvest and through the autumn and winter, nursery management is centred on pest and disease prevention and maintaining good levels of nursery hygiene. Leaves, pruning residues and weeds are all removed from the nursery to reduce the number of over wintering sites for pests and diseases. All residues or waste materials shall be assessed for the potential to host, harbour or transmit pests (Dossier Sections 1.1 and 1.2).
8	Irrigation water	Water for irrigation is routinely sampled and sent for analysis (Dossier Sections 1.1 and 1.2).
9	Application of pest control products	Crop protection is achieved using a combination of measures including approved plant protection products, biological control or physical measures. Plant protection products are only used when necessary and records of all plant protection treatments are kept. Pest and disease pressure varies from season to season. Plant protection products are applied 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. Examples of typical products used against rusts, leafspots and canker fungi, spider mites, aphids and weeds are provided in the Dossier Sections 1.1, 1.2 and 5.1. These would be applied at the manufacturers recommended rate and intervals (Dossier Sections 1.1 and 1.2).
10	Measures against soil pests	There are no specific measures/treatments against soil pests. However, containerised plants are grown in trays on top of protective plastic membranes to prevent contact with soil. Membranes are regularly refreshed when needed. Alternatively, plants may be grown on raised galvanised steel benches stood on gravel as a barrier between the soil and bench feet and/or concreted surfaces (Dossier Sections 1.1 and 1.2).
11	Inspections and management of plants before export	The UK NPPO carries out inspections and testing where required by the country of destination's plant health legislation, to ensure all requirements are fulfilled and a valid phytosanitary certificate with the correct additional declarations is issued (Dossier Sections 1.1 and 1.2). Separate to any official inspection, plant material is checked by growers for plant health issues prior to dispatch (Dossier Sections 1.1 and 1.2). A final pre-export inspection is undertaken as part of the process of issuing a phytosanitary certificate. These inspections are generally undertaken usually within 1–2 days, and not more than 2 weeks before export. Phytosanitary certificates are only issued if the commodity meets the required plant health standards after inspection and/or testing according to appropriate official procedures (Dossier Sections 1.1 and 1.2). The protocol for plants infested by pests during inspections before export is to treat the plants, if they are on site for a sufficient period of time or to destroy any plants infested by pests otherwise. All other host plants in the nursery would be treated. The phytosanitary certificate for export will not be issued until the UK Plant Health inspectors confirm that the plants are free from pests (Dossier Sections 1.1 and 1.2).
12	Separation during transport to the destination	The commodities are dispatched as single plants in pots, single cell grown plants, single bare root plants or in bundles (this applies also to cuttings/graftwood) as follows: – bundles of 10–20 plants for cuttings/graftwood; – 5, 10, 15, 25, 50 for bare root plants; – 5–10 for cell grown plants. Cuttings/graftwood is wrapped in plastic and packed in cardboard boxes or Dutch crates on ISPM 15 certified wooden pallets, or metal pallets, dependant on quantity (Dossier Sections 1.1 and 1.2). Bare root plants are then wrapped in polythene and packed and distributed on ISPM 15 certified wooden pallets or metal pallets. Alternatively, they may be placed in pallets which are then wrapped in polythene. Small volume orders may be packed in waxed cardboard cartons or polythene bags and dispatched via (Dossier Sections 1.1 and 1.2). Rooted plants in pots are transported on Danish trolleys for smaller containers, or ISPM 15 certified pallets, or individually in pots for larger containers (Dossier Sections 1.1 and 1.2). The preparation of the commodities for export is carried out inside the nurseries in a closed environment, e.g. packing shed, except for the specimen trees, which are prepared outside in an open field due to their dimensions (Dossier Sections 1.1 and 1.2). Plants are transported by lorry (size dependant on load quantity). Sensitive plants are occasionally transported by temperature-controlled lorry if weather conditions during transit are likely to be very cold (Dossier Sections 1.1 and 1.2).

(Continues)

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

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

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

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

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

The same values as elicited in a previous opinion on *Populus* spp. were (EFSA PLH Panel, 2025) considered applicable to the commodities of *Salix* for the following reasons: *Populus* and *Salix* belong to the same plant family. Therefore, the host preference of *Bemisia tabaci* is considered similar also taking into account that the pest is polyphagous. The commodities of *Salix* are similar to those of *Populus*, and the maximum size of the commodities are identical. The surroundings of the nurseries are similar. The minimum distance of the production fields to greenhouses is the same. The production conditions, risk mitigation, inspection and surveillance, the presence of leaves on the exported plants are similar.

Overview of the evaluation of *Bemisia tabaci* (European populations) for bare root plants (1–7 years, single or bundles)					
Rating of the likelihood of pest freedom	Pest free with some exceptional cases (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free plants/bundles	**9959** out of 10,000 **plants/bundles**	**9976** out of 10,000 **plants/bundles**	**9987** out of 10,000 **plants/bundles**	**9994** out of 10,000 **plants/bundles**	**9999** out of 10,000 **plants/bundles**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected plants/bundles	**1** out of 10,000 **plants/ bundles**	**6** out of 10,000 **plants/ bundles**	**13** out of 10,000 **plants/ bundles**	**24** out of 10,000 **plants/ bundles**	**41** out of 10,000 **plants/ bundles**
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** The pest is present in the UK, with few occurrences but continuously intercepted. UK outbreaks of *B. tabaci* have been restricted to greenhouses. The pest is extremely polyphagous with a very wide host range. Other traded plants present in the surroundings of the nursery could be a source of the pest. Polytunnels and glasshouses in the nurseries could act as a reservoir of the pest. The pest could go undetected during inspections. **Measures taken against the pest and their efficacy** General measures taken by the nurseries are effective against the pest. These measures include (a) inspections, surveillance, monitoring, sampling and laboratory testing; (b) hygiene measures; (c) application of pest control products and (d) removal of infested plant material. **Interception records** In the EUROPHYT/TRACES-NT database there are no records of notification of *Salix* plants for planting neither from the UK nor from other countries due to the presence of *B. tabaci* between the years 1995 and November 2024 (EUROPHYT, 2024; TRACES-NT, 2024). There were four interceptions of *B. tabaci* from the UK in 2007 and 2015 on other non-*Salix* plants (EUROPHYT, 2024). **Shortcomings of current measures/procedures** None. **Main uncertainties** – Possibility of development of the pest outside greenhouses. – Pest abundance in the nursery and the surroundings. – The precision of surveillance and the application of measures targeting the pest. – Whether yellow sticky traps are used for surveillance of *B. tabaci*. – Host status of *S. caprea* and *S. cinerea* to the pest.					

Overview of the evaluation of *Bemisia tabaci* (European populations) for cell grown plants (1–2 years, single or bundles)					
Rating of the likelihood of pest freedom	Pest free with some exceptional cases (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free bundles	**9943** out of 10,000 **bundles**	**9966** out of 10,000 **bundles**	**9981** out of 10,000 **bundles**	**9992** out of 10,000 **bundles**	**9998** out of 10,000 **bundles**

(Continued)

Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected bundles	**2** out of 10,000 **bundles**	**8** out of 10,000 **bundles**	**19** out of 10,000 **bundles**	**34** out of 10,000 **bundles**	**57** out of 10,000 **bundles**
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** The pest is present in the UK, with few occurrences but continuously intercepted. UK outbreaks of *B. tabaci* have been restricted to greenhouses. The pest is extremely polyphagous with a very wide host range. Other traded plants present in the surroundings of the nursery could be a source of the pest. Polytunnels and glasshouses in the nurseries could act as a reservoir of the pest. The pest could go undetected during inspections. **Measures taken against the pest and their efficacy** General measures taken by the nurseries are effective against the pest. These measures include (a) inspections, surveillance, monitoring, sampling and laboratory testing; (b) hygiene measures; (c) application of pest control products and (d) removal of infested plant material. **Interception records** In the EUROPHYT/TRACES-NT database there are no records of notification of *Salix* plants for planting neither from the UK nor from other countries due to the presence of *B. tabaci* between the years 1995 and November 2024 (EUROPHYT, 2024; TRACES-NT, 2024). There were four interceptions of *B. tabaci* from the UK in 2007 and 2015 on other non-*Salix* plants (EUROPHYT, 2024). **Shortcomings of current measures/procedures** None. **Main uncertainties** – Possibility of development of the pest outside greenhouses. – Pest abundance in the nursery and the surroundings. – The precision of surveillance and the application of measures targeting the pest. – Host status of *S. caprea* and *S. cinerea* to the pest.				

Overview of the evaluation of *Bemisia tabaci* (European populations) for plants in pots (2–15 years, single trees)					
Rating of the likelihood of pest freedom	Pest free with some exceptional cases (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free plants	**9937** out of 10,000 **plants**	**9961** out of 10,000 **plants**	**9978** out of 10,000 **plants**	**9991** out of 10,000 **plants**	**9999** out of 10,000 **plants**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected plants	**1** out of 10,000 **plants**	**9** out of 10,000 **plants**	**22** out of 10,000 **plants**	**39** out of 10,000 **plants**	**63** out of 10,000 **plants**
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** The pest is present in the UK, with few occurrences but continuously intercepted. UK outbreaks of *B. tabaci* have been restricted to greenhouses. The pest is extremely polyphagous with a very wide host range. Other traded plants present in the surroundings of the nursery could be a source of the pest. Polytunnels and glasshouses in the nurseries could act as a reservoir of the pest. The pest could go undetected during inspections. **Measures taken against the pest and their efficacy** General measures taken by the nurseries are effective against the pest. These measures include (a) inspections, surveillance, monitoring, sampling and laboratory testing; (b) hygiene measures; (c) application of pest control products and (d) removal of infested plant material. **Interception records** In the EUROPHYT/TRACES-NT database there are no records of notification of *Salix* plants for planting neither from the UK nor from other countries due to the presence of *Bemisia tabaci* between the years 1995 and November 2024 (EUROPHYT, 2024; TRACES-NT, 2024). There were four interceptions of *B. tabaci* from the UK in 2007 and 2015 on other non-*Salix* plants (EUROPHYT, 2024). **Shortcomings of current measures/procedures** None. **Main uncertainties** – Possibility of development of the pest outside greenhouses. – Pest abundance in the nursery and the surroundings. – The precision of surveillance and the application of measures targeting the pest. – Host status of *S. caprea* and *S. cinerea* to the pest.				

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

5.2.2 | Overview of the evaluation of *Entoleuca mammata* (Xylariales; Xylariaceae)

The same values as elicited in a previous opinion on *Populus* spp. were (EFSA PLH Panel, 2025) were considered applicable to the commodities of *Salix* for the following reasons: *Populus* and *Salix* belong to the same plant family. *Salix* is reported as a secondary host of *E. mammata*. However, observational reports from Scandinavia point to the fungus to be prevalent on *Salix* (Mathiassen, 1993). Therefore, based on the available information, the susceptibility of *Salix* to *E. mammata* were considered similar to that of *P. nigra* and *P. alba* while the susceptibility of *P. tremula* is higher being the major host in Europe. The commodities of *Salix* are similar to those of *Populus*, and the maximum size of the commodities are identical. The surrounding of the nurseries is similar. The production conditions, risk mitigation, inspection and surveillance, the presence of leaves on the exported plants are similar.

Overview of the evaluation of *Entoleuca mammata* for cuttings/graftwood (1–2 years, bundles)					
Rating of the likelihood of pest freedom	Pest free with some exceptional cases (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free bundles	**9947** out of 10,000 **bundles**	**9971** out of 10,000 **bundles**	**9983** out of 10,000 **bundles**	**9992** out of 10,000 **bundles**	**9998** out of 10,000 **bundles**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected bundles	**2** out of 10,000 **bundles**	**8** out of 10,000 **bundles**	**17** out of 10,000 **bundles**	**29** out of 10,000 **bundles**	**53** out of 10,000 **bundles**
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** *Entoleuca mammata* is present in the UK, although not widely distributed. All willows (*Salix* spp.) are suitable minor hosts. Mechanical wounds including pruning wounds are expected to be present and may represent infection courts. The hosts can be present either inside or in the surroundings of the nurseries. Altogether, this suggests that an association with the commodity is possible. **Measures taken against the pest and their efficacy** General measures taken by the nurseries have an effect against the pathogen. These measures include (a) the use of certified plant material; (b) inspections, surveillance, monitoring, sampling and laboratory testing; (c) the removal of infected plant material and (d) application of pest control products. **Interception records** In the EUROPHYT/TRACES-NT database there are no records of notification of *Salix* plants for planting neither from the UK nor from other countries due to the presence of *E. mammata* between the years 1995 and November 2024 (EUROPHYT, 2024; TRACES-NT, 2024). **Shortcomings of current measures/procedures** None observed. **Main uncertainties** – The presence/abundance of the pathogen in the area where the nurseries are located. – Whether the pest can reliably be detected via visual inspection. – Effect of fungicide treatments against the pathogen.				

Overview of the evaluation of *Entoleuca mammata* for bare root plants (1–7 years, single or bundles)					
Rating of the likelihood of pest freedom	Pest free with some exceptional cases (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free plants/bundles	**9911** out of 10,000 **plants/bundles**	**9950** out of 10,000 **plants/bundles**	**9971** out of 10,000 **plants/bundles**	**9985** out of 10,000 **plants/bundles**	**9996** out of 10,000 **plants/bundles**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected plants/bundles	**4** out of 10,000 **plants/bundles**	**15** out of 10,000 **plants/bundles**	**29** out of 10,000 **plants/bundles**	**50** out of 10,000 **plants/bundles**	**89** out of 10,000 **plants/bundles**
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** *Entoleuca mammata* is present in the UK, although not widely distributed. All willows (*Salix* spp.) are suitable minor hosts. The hosts can be present either inside or in the surroundings of the nurseries. Infection may occur through mechanically-induced wounds such as pruning wounds. Altogether, this suggests that an association with the commodity is possible. **Measures taken against the pest and their efficacy** General measures taken by the nurseries are effective against the pathogen. These measures include (a) the use of certified plant material; (b) inspections, surveillance, monitoring, sampling and laboratory testing; (c) the removal of infected plant material and (d) application of pest control products. **Interception records** In the EUROPHYT/TRACES-NT database there are no records of notification of *Salix* plants for planting neither from the UK nor from other countries due to the presence of *E. mammata* between the years 1995 and November 2024 (EUROPHYT, 2024; TRACES-NT, 2024).				

(Continued)

	Shortcomings of current measures/procedures None observed. **Main uncertainties** – The presence/abundance of the pathogen in the area where the nurseries are located. – Whether the pest can reliably be detected via visual inspection. – Effect of fungicide treatments against the pathogen.

Overview of the evaluation of *Entoleuca mammata* for cell grown plants (1–2 years, single or bundles)					
Rating of the likelihood of pest freedom	Pest free with some exceptional cases (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free plants/bundles	**9930** out of 10,000 **plants/bundles**	**9961** out of 10,000 **plants/bundles**	**9979** out of 10,000 **plants/bundles**	**9991** out of 10,000 **plants/bundles**	**9998** out of 10,000 **plants/bundles**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected plants/bundles	**2** out of 10,000 **plants/bundles**	**9** out of 10,000 **plants/bundles**	**21** out of 10,000 **plants/bundles**	**39** out of 10,000 **plants/bundles**	**70** out of 10,000 **plants/bundles**
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** *Entoleuca mammata* is present in the UK, although not widely distributed. All willows (*Salix* spp.) are suitable minor hosts. Cell grown plants are in close proximity to each other which increases the humidity and hence provides good growth conditions for *E. mammata*. Mechanical wounds could be present and may represent infection courts. The hosts can be present either inside or in the surroundings of the nurseries. Altogether, this suggests that an association with the commodity may be possible. **Measures taken against the pest and their efficacy** General measures taken by the nurseries are effective against the pathogen. These measures include (a) the use of certified plant material; (b) inspections, surveillance, monitoring, sampling and laboratory testing; (c) the removal of infected plant material and (d) application of pest control products. **Interception records** In the EUROPHYT/TRACES-NT database there are no records of notification of *Salix* plants for planting neither from the UK nor from other countries due to the presence of *E. mammata* between the years 1995 and November 2024 (EUROPHYT, 2024; TRACES-NT, 2024). **Shortcomings of current measures/procedures** None observed. **Main uncertainties** – The presence/abundance of the pathogen in the area where the nurseries are located. – Whether the pest can reliably be detected via visual inspection. – Effect of fungicide treatments against the pathogen.				

Overview of the evaluation of *Entoleuca mammata* for plants in pots (2–15 years, single trees)					
Rating of the likelihood of pest freedom	Pest free with some exceptional cases (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free plants	**9865** out of 10,000 **plants**	**9923** out of 10,000 **plants**	**9958** out of 10,000 **plants**	**9982** out of 10,000 **plants**	**9997** out of 10,000 **plants**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected plants	**3** out of 10,000 **plants**	**18** out of 10,000 **plants**	**42** out of 10,000 **plants**	**77** out of 10,000 **plants**	**135** out of 10,000 **plants**
Summary of the information used for the evaluation	**Possibility that the pest could become associated with the commodity** *Entoleuca mammata* is present in the UK, although not widely distributed. All willows (*Salix* spp.) are suitable minor hosts. Mechanical wounds including pruning wounds are expected to be present and may represent infection courts. The hosts can be present either inside or in the surroundings of the nurseries. Altogether, this suggests that an association with the commodity may be possible. **Measures taken against the pest and their efficacy** General measures taken by the nurseries are effective against the pathogen. These measures include (a) the use of certified plant material; (b) inspections, surveillance, monitoring, sampling and laboratory testing; (c) the removal of infected plant material and (d) application of pest control products. **Interception records** In the EUROPHYT/TRACES-NT database there are no records of notification of *Salix* plants for planting neither from the UK nor from other countries due to the presence of *E. mammata* between the years 1995 and November 2024 (EUROPHYT, 2024; TRACES-NT, 2024). **Shortcomings of current measures/procedures** None observed. **Main uncertainties** – The presence/abundance of the pathogen in the area where the nurseries are located. – Whether the pest can reliably be detected via visual inspection. – Effect of fungicide treatments against the pathogen.				

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

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

Overview of the evaluation of *Phytophthora ramorum* (non-EU isolates) for cuttings/graftwood (1–2 years, bundles)					
Rating of the likelihood of pest freedom	Pest free with some exceptional cases (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free bundles	**9942** out of 10,000 **bundles**	**9967** out of 10,000 **bundles**	**9983** out of 10,000 **bundles**	**9993** out of 10,000 **bundles**	**9999** out of 10,000 **bundles**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected bundles	**1** out of 10,000 **bundles**	**7** out of 10,000 **bundles**	**17** out of 10,000 **bundles**	**33** out of 10,000 **bundles**	**58** out of 10,000 **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 *S. caprea*. The main hosts (e.g. *Larix* spp., *Rhododendron* 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 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 *Salix* plants for planting neither from the UK nor from other countries due to the presence of *P. ramorum* between the years 1995 and November 2024 (EUROPHYT, 2024; TRACES-NT, 2024). **Shortcomings of current measures/procedures** None observed. **Main uncertainties** – 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 – Host status of *S. cinerea*.				

Overview of the evaluation of *Phytophthora ramorum* (non-EU isolates) for bare root plants (1–7 years, single or bundles)					
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	**9822** out of 10,000 **plants/bundles**	**9907** out of 10,000 **plants/bundles**	**9948** out of 10,000 **plants/bundles**	**9976** out of 10,000 **plants/bundles**	**9994** out of 10,000 **plants/bundles**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected plants/bundles	**6** out of 10,000 **plants/bundles**	**24** out of 10,000 **plants/bundles**	**52** out of 10,000 **plants/bundles**	**93** out of 10,000 **plants/bundles**	**178** 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 *S. caprea*. The main hosts (e.g. *Larix* spp., *Rhododendron* 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 bark and leaf 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 *Salix* plants for planting neither from the UK nor from other countries due to the presence of *P. ramorum* between the years 1995 and November 2024 (EUROPHYT, 2024; TRACES-NT, 2024). **Shortcomings of current measures/procedures** None observed.				

(Continued)

	Main uncertainties – The level of susceptibility of *Salix* spp. to the pathogen. – Whether symptoms may be promptly detected. – The practicability of inspections of older trees. – The presence/abundance of the pathogen in the area where the nurseries are located. – Effect of fungicide treatments against the pathogen. – Host status of *Salix cinerea*.

Overview of the evaluation of *Phytophthora ramorum* (non-EU isolates) for cell grown plants (1–2 years, single or bundles)					
Rating of the likelihood of pest freedom	Pest free with some exceptional cases (based on the median).				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free plants/bundles	**9853** out of 10,000 **plants/bundles**	**9920** out of 10,000 **plants/bundles**	**9955** out of 10,000 **plants/bundles**	**9978** out of 10,000 **plants/bundles**	**9995** out of 10,000 **plants/bundles**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected plants/bundles	**5** out of 10,000 **plants/bundles**	**22** out of 10,000 **plants/bundles**	**45** out of 10,000 **plants/bundles**	**80** out of 10,000 **plants/bundles**	**147** 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 *S. caprea*. The main hosts (e.g. *Larix* spp., *Rhododendron* 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 bark and leaf 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 *Salix* plants for planting neither from the UK nor from other countries due to the presence of *P. ramorum* between the years 1995 and November 2024 (EUROPHYT, 2024; TRACES-NT, 2024). **Shortcomings of current measures/procedures** None observed. **Main uncertainties** – The level of susceptibility of *Salix* spp. to the pathogen. – Whether symptoms may be promptly detected. – The practicability of inspections of older trees. – The presence/abundance of the pathogen in the area where the nurseries are located. – Effect of fungicide treatments against the pathogen. – Host status of *Salix cinerea*.				

Overview of the evaluation of *Phytophthora ramorum* (non-EU isolates) for plants in pots (2–15 years, single trees)					
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	**9738** out of 10,000 **plants**	**9860** out of 10,000 **plants**	**9925** out of 10,000 **plants**	**9968** out of 10,000 **plants**	**9994** out of 10,000 **plants**
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of infected plants	**6** out of 10,000 **plants**	**32** out of 10,000 **plants**	**75** out of 10,000 **plants**	**140** out of 10,000 **plants**	**262** out of 10,000 **plants**
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 *S. caprea*. The main hosts (e.g. *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 bark and leaf infections on the commodity. **Measures taken against the pest and their efficacy** *P. 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.				

(Continues)

(Continued)

Interception records

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

Shortcomings of current measures/procedures

None observed.

Main uncertainties

- The level of susceptibility of *Salix* spp. to the pathogen.
- Whether symptoms may be promptly detected.
- The practicability of inspections of older trees.
- The presence/abundance of the pathogen in the area where the nurseries are located.
- Effect of fungicide treatments against the pathogen.
- Host status of *Salix cinerea*.

For more details, see relevant pest data sheet on *Phytophthora ramorum* (non-EU isolates) (Section A.3 in Appendix A).

5.2.4 | Outcome of Expert Knowledge Elicitation

Table 8 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 *S. caprea* and *S. cinerea* plants in pots up to 15 years old designated for export to the EU for *Phytophthora ramorum* (non-EU isolates).

TABLE 8 Assessment of the likelihood of pest freedom following evaluation of current risk mitigation measures against pests on *Salix caprea* and *S. cinerea* 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	Insects	*Bemisia tabaci* (European populations), bare root plants						**LM**		**U**
2	Insects	*Bemisia tabaci* (European populations), cell grown plants					**L**	**M**		**U**
3	Insects	*Bemisia tabaci* (European populations), plants in pots					**L**	**M**		**U**
4	Fungi	*Entoleuca mammata*, cuttings/graftwood					**L**	**M**		**U**
5	Fungi	*Entoleuca mammata*, bare root plants					**L**	**M**		**U**
6	Fungi	*Entoleuca mammata*, cell grown plants					**L**	**M**		**U**
7	Fungi	*Entoleuca mammata*, plants in pots				**L**		**M**		**U**
8	Oomycetes	*Phytophthora ramorum* (non-EU isolates), cuttings/graftwood					**L**	**M**		**U**
9	Oomycetes	*Phytophthora ramorum* (non-EU isolates), bare root plants				**L**	**M**		**U**	
10	Oomycetes	*Phytophthora ramorum* (non-EU isolates), cell grown plants				**L**		**M**	**U**	
11	Oomycetes	*Phytophthora ramorum* (non-EU isolates), plants in pots				**L**	**M**		**U**	

PANEL A

Pest freedom category	Pest fee 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

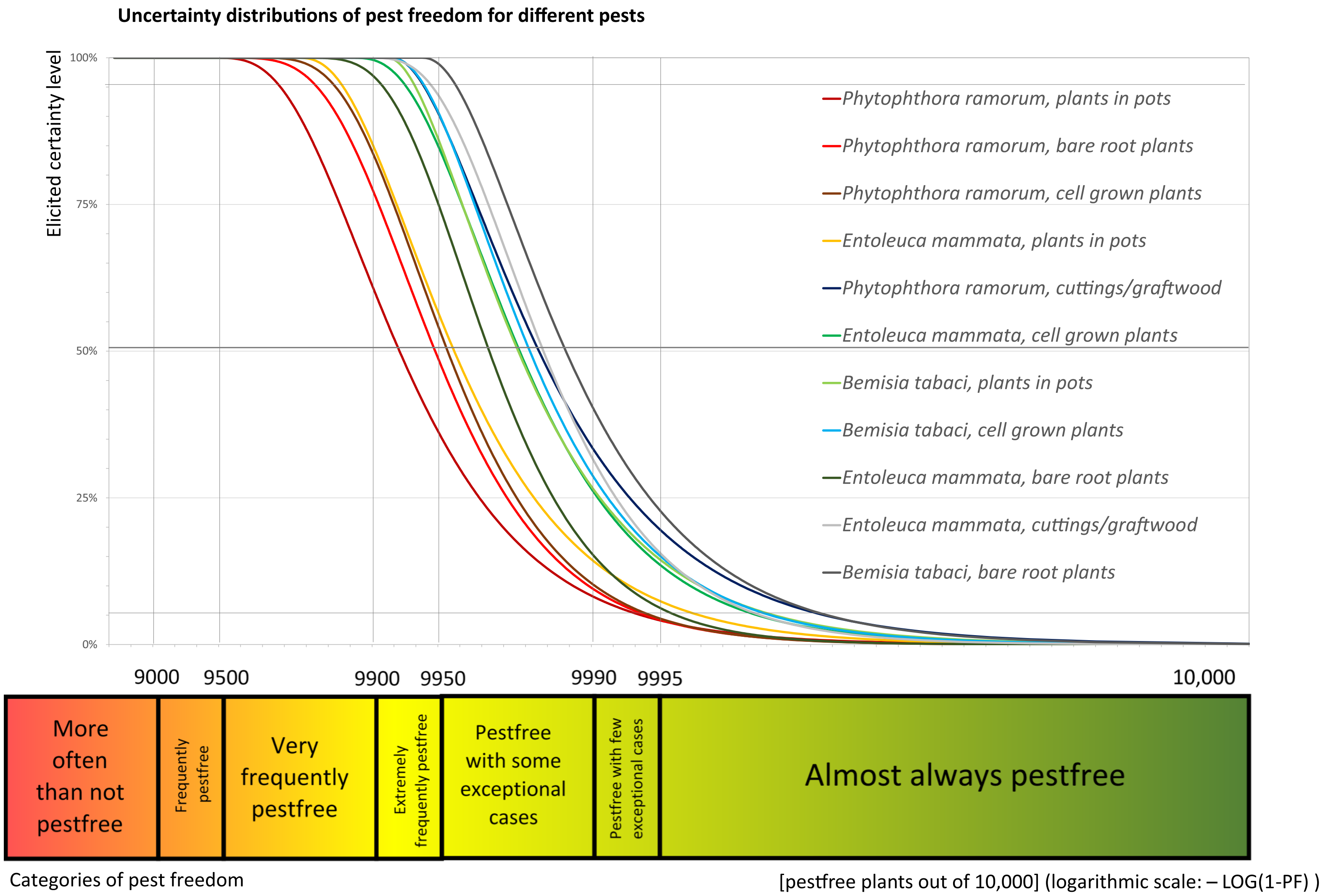

FIGURE 2 Elicited certainty (*y*-axis) of the number of pest- free plants/bundles of *Salix caprea* and *S. cinerea* (*x*-axis; log-scaled) out of 10,000 plants/bundles designated for export to the EU from the UK for all evaluated pests visualised as descending distribution function. Horizontal lines indicate the reported certainty levels (starting from the bottom 5%, 25%, 50%, 75%, 95%) Please see the reading instructions below.

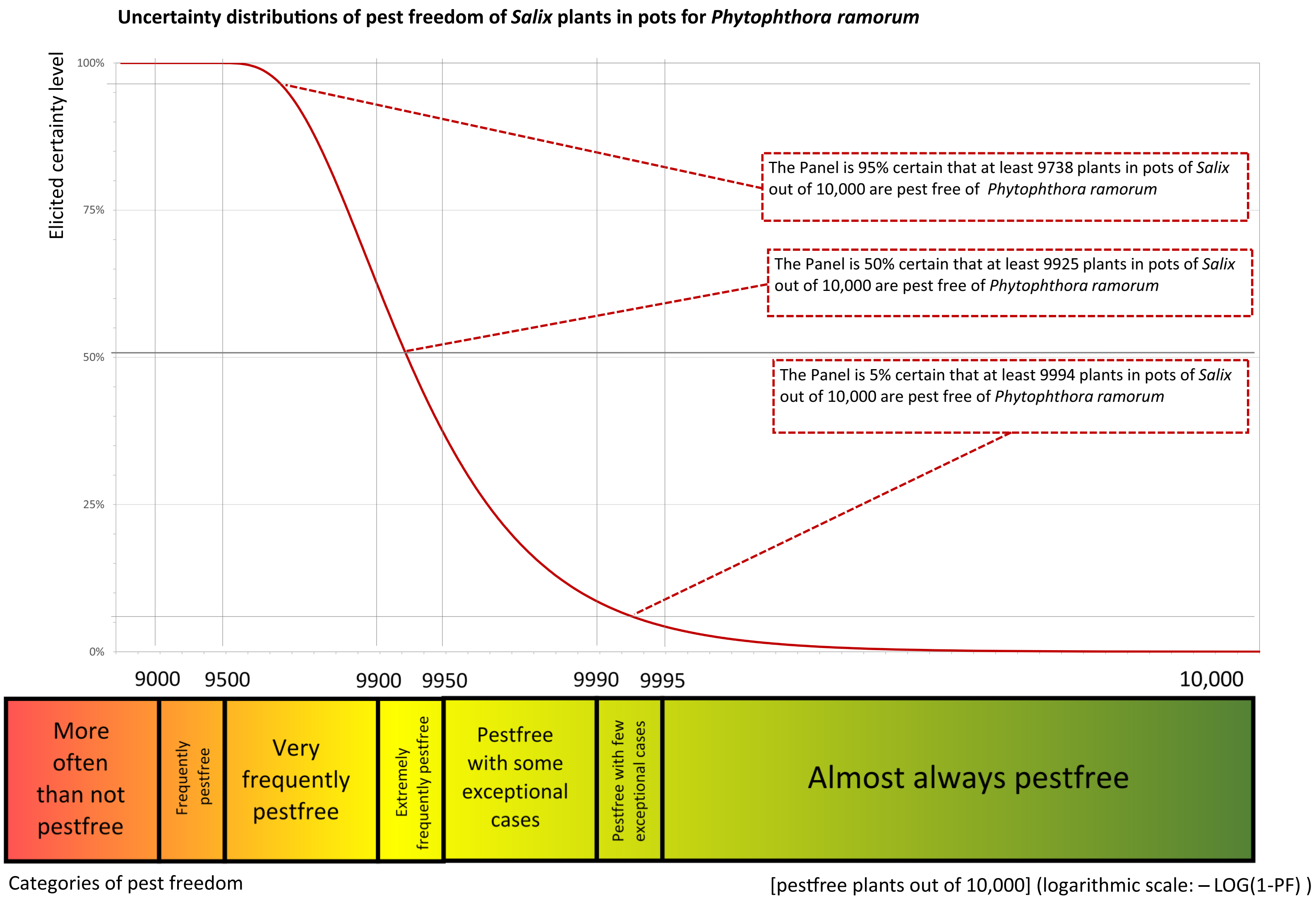

FIGURE 3 Explanation of the descending distribution function describing the likelihood of pest freedom after the evaluation of the implemented risk mitigation measures for plants designated for export to the EU based on based on the example of *Phytophthora ramorum* (non-EU isolates), on *Salix caprea* and *Salix cinerea* plants in pots up to 15 years old.

6 | CONCLUSIONS

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

These pests are *Bemisia tabaci* (European populations), *Entoleuca mammata* and *Phytophthora ramorum* (non-EU isolates). The likelihood of the pest freedom after the evaluation of the implemented risk mitigation measures for the commodities designated for export to the EU was estimated. In the assessment of risk, the age of the plants was considered, reasoning that older trees are more likely to be infested mainly due to longer exposure time and larger size.

Bemisia tabaci is not expected to be associated with cuttings/graftwood because the commodity is without leaves. For *B. tabaci*, the likelihood of pest freedom for bare root plants/trees up to 7 years old of *S. caprea* and *S. cinerea* was estimated as 'pest free with some exceptional cases' with the 90% uncertainty range reaching from 'pest free with some exceptional cases' to 'almost always pest free'. The EKE indicated, with 95% certainty, that between 9959 and 10,000 bare root plants/trees up to 7 years old per 10,000 will be free from *B. tabaci*. The likelihood of pest freedom for cell grown plants of *S. caprea* and *S. cinerea* up to 2 years old was estimated as 'pest free with some exceptional cases' with the 90% uncertainty range reaching from 'extremely frequently pest free' to 'almost always pest free'. The EKE indicated, with 95% certainty, that between 9943 and 10,000 cell grown plants up to 2 years old per 10,000 will be free from *B. tabaci*. The likelihood of pest freedom for rooted plants in pots of *S. caprea* and *S. cinerea* from two to 15 years old was estimated as 'pest free with some exceptional cases' with the 90% uncertainty range reaching from 'extremely frequently pest free' to 'almost always pest free'. The EKE indicated, with 95% certainty, that between 9937 and 10,000 rooted plants in pots from two to 15 years old per 10,000 will be free from *B. tabaci*.

For *E. mammata*, the likelihood of pest freedom of cuttings/graftwood for *S. caprea and S. cinerea*, following evaluation of current risk mitigation measures, was estimated as 'pest free with some exceptional cases' with the 90% uncertainty range reaching from 'extremely frequently pest free' to 'almost always pest free'. The EKE indicated, with 95% certainty, that between 9947 and 10,000 cuttings/graftwood per 10,000 will be free from *E. mammata*. The likelihood of pest freedom for bare root plants/trees up to 7 years old of *S. caprea* and *S. cinerea* was estimated as 'pest free with some exceptional cases' with the 90% uncertainty range reaching from 'extremely frequently pest free' to 'almost always pest free'. The EKE indicated, with 95% certainty, that between 9911 and 10,000 bare root plants/trees up to 7 years old per 10,000 will be free from *E. mammata*. The likelihood of pest freedom for cell grown plants of *S. caprea* and *S. cinerea* up to 2 years old was estimated as 'pest free with some exceptional cases' with the 90% uncertainty range reaching from 'extremely frequently pest free' to 'almost always pest free'. The EKE indicated, with 95% certainty, that between 9930 and 10,000 cell grown plants up to 2 years old per 10,000 will be free from *E. mammata*. The likelihood of pest freedom for rooted plants in pots of *S. caprea* and *S. cinerea* from two to 15 years old was estimated as 'pest free with some exceptional cases' with the 90% uncertainty range spanning from 'very frequently pest free' to 'almost always pest free'. The EKE indicated, with 95% certainty, that between 9865 and 10,000 rooted plants in pots from two to 15 years old per 10,000 will be free from *E. mammata*.

For *P. ramorum*, the likelihood of pest freedom of cuttings/graftwood for *S. caprea and S. cinerea*, following evaluation of current risk mitigation measures, was estimated as 'pest free with some exceptional cases' with the 90% uncertainty range reaching from 'extremely frequently pest free' to 'pest free with few exceptional cases'. The EKE indicated, with 95% certainty, that between 9942 and 10,000 cuttings/graftwood per 10,000 will be free from *P. ramorum*. The likelihood of pest freedom for bare root plants/trees up to 7 years old of *S. caprea* and *S. cinerea* was estimated as 'extremely frequently pest free' with the 90% uncertainty range spanning from 'very frequently pest free' to 'pest free with few exceptional cases'. The EKE indicated, with 95% certainty, that between 9822 and 10,000 bare root plants/trees up to 7 years old per 10,000 will be free from *P. ramorum*. The likelihood of pest freedom for cell grown plants of *S. caprea* and *S. cinerea* up to 2 years old was estimated as 'pest free with some exceptional cases' with the 90% uncertainty range reaching from 'very frequently pest free' to 'pest free with exceptional cases'. The EKE indicated, with 95% certainty, that between 9853 and 10,000 cell grown plants up to 2 years old per 10,000 will be free from *P. ramorum*. The likelihood of pest freedom for plants in pots from two to 15 years old was estimated as 'extremely frequently pest free' with the 90% uncertainty range spanning from 'very frequently pest free' to 'pest free with few exceptional cases'. The EKE indicated, with 95% certainty, that between 9738 and 10,000 plants in pots from two to 15 years old per 10,000 will be free from *P. ramorum*.

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).

ABBREVIATIONS

APHA	Animal and Plant Health Agency
CABI	Centre for Agriculture and Bioscience International
DEFRA	Department for Environment Food and Rural Affairs
EKE	Expert Knowledge Elicitation
EPPO	European and Mediterranean Plant Protection Organization
FAO	Food and Agriculture Organization
ISPM	International Standards for Phytosanitary Measures
MS	Member State
MSs	Member States
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

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SUPPORTING INFORMATION

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

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APPENDIX A

Data sheets of pests selected for further evaluation

A.1 | *BEMISIA TABACI* (EUROPEAN POPULATIONS)

A.1.1 | Organism information

Taxonomic information	Current valid scientific name: *Bemisia tabaci* Synonyms: *Aleurodes inconspicua*, *Aleurodes tabaci*, *Bemisia achyranthes*, *Bemisia bahiana*, *Bemisia costa-limai*, *Bemisia emiliae*, *Bemisia goldingi*, *Bemisia gossypiperda*, *Bemisia gossypiperda mosaicivectura*, *Bemisia hibisci*, *Bemisia inconspicua*, *Bemisia longispina*, *Bemisia lonicerae*, *Bemisia manihotis*, *Bemisia minima*, *Bemisia minuscula*, *Bemisia nigeriensis*, *Bemisia rhodesiaensis*, *Bemisia signata*, *Bemisia vayssieri* Name used in the EU legislation: *Bemisia tabaci* Genn. (European populations) Order: Hemiptera Family: Aleyrodidae Common name: cassava whitefly, cotton whitefly, silver-leaf whitefly, sweet-potato whitefly, tobacco whitefly Name used in the Dossier: –
Group	Insects
EPPO code	BEMITA
Regulated status	*Bemisia tabaci* Genn. (European populations) is listed in Annex III of Commission Implementing Regulation (EU) 2019/2072 as protected zone quarantine pest for Ireland and Sweden. The non-European populations of *B. tabaci* are listed in Annex II. *Bemisia tabaci* is included in the EPPO A2 list (EPPO, 2024a). The species is a quarantine pest in Belarus, Moldova, Norway and New Zealand. It is on A1 list of Azerbaijan, Chile, Georgia, Kazakhstan, Serbia, Switzerland, Ukraine and the UK. It is on A2 list of Bahrain, Russia, Türkiye, EAEU (= Eurasian Economic Union – Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia) and OIRSA (= Organismo Internacional Regional de Sanidad Agropecuaria – Belize, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama) (EPPO, 2024b).
Pest status in the UK	*Bemisia tabaci* (European populations) is present in the UK, with few occurrences (CABI, 2015; EPPO, 2024c) and it is continuously intercepted to the UK. The intercepted populations were identified as B biotype Middle East-Asia Minor 1 (=MEAM1) and Q biotype Mediterranean (=MED) (Cuthbertson, 2013). From 1998 to 2015 there were between 7 and 35 outbreaks per year of *B. tabaci* in the UK and all the findings were subject to eradication. The UK outbreaks of *B. tabaci* have been restricted to greenhouses and there are no records of the whitefly establishing outdoors during summer (Bradshaw et al., 2019; Cuthbertson & Vänninen, 2015).
Pest status in the EU	*Bemisia tabaci* is an alien species widespread in the EU – Austria, Belgium, Bulgaria, Croatia, the Republic of Cyprus, Czechia, Finland, France, Germany, Greece, Hungary, Italy, Malta, the Netherlands, Poland, Portugal, Romania, Slovenia and Spain (CABI, 2015; EPPO, 2024c). It is absent from Denmark, Estonia, Ireland, Latvia, Lithuania, Luxembourg, Slovakia and Sweden (CABI, 2015; EPPO, 2024c). In the EU, *B. tabaci* is mainly present in the greenhouses, with exception of Mediterranean coastal region (Cyprus, Greece, Malta, Italy, south of France, certain parts of Spain and Portugal), where the whitefly occurs also outdoors (EFSA PLH Panel, 2013).
Host status on *Salix caprea* and *S. cinerea*	*Bemisia tabaci* B biotype was found colonising on *Salix matsudana* plants in southern Türkiye (Bayhan et al., 2005). There is no information on whether *B. tabaci* can also attack *Salix caprea, S. cinerea* or other *Salix* species.
PRA information	Available Pest Risk Assessments: – Scientific Opinion on the risks to plant health posed by *Bemisia tabaci* species complex and viruses it transmits for the EU territory (EFSA PLH Panel, 2013); – UK Risk Register Details for *Bemisia tabaci* European populations (DEFRA, 2022); – UK Risk Register Details for *Bemisia tabaci* non-European populations (DEFRA, 2023).
Other relevant information for the assessment	
Biology	*Bemisia tabaci* is a cosmopolitan whitefly present on almost all continents except for Antarctica (CABI, 2015; EPPO, 2024c). In the literature it is reported as either native to Africa, Asia, India, North America or South America (De Barro et al., 2011). However, based on mtCO1 (mitochondrial cytochrome oxidase 1) sequence its origin is most likely to be sub-Saharan Africa (De Barro, 2012). *Bemisia tabaci* is a complex of at least 40 cryptic species that are morphologically identical but distinguishable at molecular level (Khatun et al., 2018). The species differ from each other in host association, spread capacity, transmission of viruses and resistance to insecticides (De Barro et al., 2011). *Bemisia tabaci* develops through three life stages: egg, nymph (four instars) and adult (Walker et al., 2010). Nymphs of *B. tabaci* mainly feed on phloem in minor veins of the underside leaf surface (Cohen et al., 1996). Adults feed on both phloem and xylem of leaves (Janssen et al., 1989; Lei et al., 1997, 2001; Jiang et al., 1999 cited in Walker et al., 2010). Honeydew is produced by both nymphs and adults (Davidson et al., 1994). *Bemisia tabaci* is multivoltine with up to 15 generations per year (Ren et al., 2001). The life cycle from egg to adult requires from 2.5 weeks up to 2 months depending on the temperature (Norman et al., 1995) and the host plant (Coudriet et al., 1985).

(Continued)

	In the southern California desert on field-grown lettuce (from 27 October 1983 to 4 January 1984), *B. tabaci* completed at least one generation (Coudriet et al., 1985). In Israel the reproduction of *B. tabaci* was much reduced in winter months, but adults emerging in December survived and started ovipositing at the end of the cold season (Avidov, 1956). The most cold-tolerant stage are eggs (−2°, −6°, −10°C) and the least tolerant are large nymphs. Short periods of exposure in 0° to −6°C have little effect on mortality. As the temperature lowers to −10°C, the duration of time required to cause significant mortality shortens dramatically (Simmons & Elsey, 1995). Females can lay more than 300 eggs (Gerling et al., 1986), which can be found mainly on the underside of the leaves (CABI, 2015). Females develop from fertilised and males from unfertilised eggs (Gerling et al., 1986). Eggs are yellowish white and with age turn golden brown. Their size is about 0.19–0.20 mm long and 0.10–0.12 mm wide. First instar nymph (=crawler) is scale-like, elliptical, darker yellow in colour and about 0.26 mm long and 0.15 mm wide. Crawlers have legs and crawl actively on leaves before they settle down and moult through second (0.38 mm long and 0.24 mm wide), third (0.55 mm long and 0.35 mm wide) and fourth instar nymph (0.86 mm long and 0.63 mm wide) (Hill, 1969). Fourth instar nymph (=pupa) stops feeding and moults into an adult (Walker et al., 2009, citing others). Adult emerges through a 'T'-shaped rupture in the pupal case (El-Helaly et al., 1971). Adults are pale yellow and have two pairs of white wings dusted with a white waxy powder (Hill, 1969). Female is approximately 1 mm long. Males are smaller about 0.8 mm long (EFSA PLH Panel, 2013). Out of all life stages, only first instar nymph (=crawler) and adults are mobile. Movement of crawlers by walking is very limited, usually within the leaf where they hatched (Price & Taborsky, 1992) or to more suitable neighbouring leaves. The average distance was estimated within 10–70 mm (Summers et al., 1996). For these reasons they are not considered to be good colonisers. On the contrary, adults can fly, reaching quite long distances in search of a permanent host. According to a study done by Cohen et al. (1988) some of the marked individuals were trapped 7 km away from the initial place after 6 days. Long-distance passive dispersal by wind is also possible (Byrne, 1999). *Bemisia tabaci* is an important agricultural pest able to transmit viruses (belonging to genera *Begomovirus*, *Crinivirus*, *Ipomovirus*, *Carlavirus* and *Torradovirus*) causing significant damage to food crops such as tomatoes, cucurbits, beans and ornamental plants (EFSA PLH Panel, 2013; Fiallo-Olivé et al., 2020). None of these viruses are reported to infect *Salix* species. Possible pathways of entry for *B. tabaci* are plants for planting including cuttings and rooted ornamental plants; cut flowers and branches with foliage; fruits and vegetables; human-assisted spread; natural spread such as wind (EFSA PLH Panel, 2013).	
Symptoms	**Main type of symptoms**	Main symptoms of *B. tabaci* on plants are chlorotic spotting, decrease of plant growth, deformation of fruits, deformation of leaves, intervein yellowing, leaf yellowing, leaf curling, leaf crumpling, leaf vein thickening, leaf enations, leaf cupping, leaf loss, necrotic lesions on stems, plant stunting, reduced flowering, reduced fruit development, silvering of leaves, stem twisting, vein yellowing, wilting, yellow blotching of leaves, yellow mosaic of leaves, presence of honeydew and sooty mould. These symptoms are plant responses to the feeding of the whitefly and to the presence of transmitted viruses (EFSA PLH Panel, 2013; EPPO, 2004; CABI, 2015). There is no information on the symptoms caused to *Salix* plants.
	Presence of asymptomatic plants	Symptoms of *B. tabaci* being present on the plants are usually visible. However, *B. tabaci* is a vector of several viruses and their infection could be asymptomatic.
	Confusion with other pests	*Bemisia tabaci* can be easily confused with other whitefly species such as *B. afer*, *Trialeurodes lauri*, *T. packardi*, *T. ricini*, *T. vaporariorum* and *T. variabilis*. A microscopic slide is needed for morphological identification (EPPO, 2004). Different species of *B. tabaci* complex can be distinguished using molecular methods (De Barro et al., 2011).
Host plant range	*Bemisia tabaci* has a wide host range, including more than 1000 different plant species (Abd-Rabou & Simmons, 2010). Some of the many hosts of *B. tabaci* are *Abelmoschus esculentus, Amaranthus blitoides, A. retroflexus, Arachis hypogaea*, *Atriplex semibaccata*, *Bellis perennis, Borago officinalis*, *Brassica oleracea* var. *botrytis*, *B. oleracea* var. *gemmifera*, *B. oleracea* var. *italica*, *Bryonia dioica*, *Cajanus cajan*, *Capsella bursa-pastoris*, *Capsicum annuum*, *Citrus* spp., *Crataegus* spp., *Cucumis sativus*, *Cucurbita pepo*, *Erigeron canadensis*, *Euphorbia pulcherrima*, *Gerbera jamesonii*, *Glycine max*, *Gossypium* spp., *G. hirsutum*, *Hedera helix*, *Ipomoea batatas*, *Lactuca sativa*, *L. serriola*, *Lavandula coronopifolia*, *Ligustrum lucidum*, *L. quihoui*, *L. vicaryiis*, *Manihot esculenta*, *Melissa officinalis*, *Nicotiana tabacum*, *Ocimum basilicum*, *Origanum majorana*, *Oxalis pes-caprae*, *Phaseolus* spp., *P. vulgaris*, *Piper nigrum*, *Potentilla* spp., *Prunus* spp., *Rosa* spp., *Rubus fruticosus*, *Salvia officinalis*, *S. rosmarinus*, *Senecio vulgaris*, *Sinningia speciosa*, *Solanum lycopersicum*, *S. melongena*, *S. nigrum*, *S. tuberosum, Sonchus oleraceus, Stellaria media, Tagetes erecta, Taraxacum officinale, Thymus serpyllum, Urtica urens, Vitis vinifera* and many more (CABI, 2015; EFSA PLH Panel, 2013; EPPO, 2024c; Li et al., 2011). For a full host list refer to CABI (2015), EFSA PLH Panel (2013), EPPO (2024c) and Li et al. (2011).	
Reported evidence of impact	*Bemisia tabaci* (European populations) is EU protected zone quarantine pest.	
Evidence that the commodity is a pathway	*Salix* sp. is a host of *B. tabaci* (Bayhan et al., 2005). *Bemisia tabaci* is frequently intercepted in the EU on different commodities including plants for planting (EUROPHYT, 2024; TRACES-NT, 2024). *Salix* plants can carry leaves at the time of export which can host all life stages of the pest. Therefore, the *Salix* commodities could be a pathway for *B. tabaci*.	

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Surveillance information	*Bemisia tabaci* is a regulated quarantine pest in the UK. As such, the policy for any outbreak is to eradicate the population. The UK makes many interceptions of *B. tabaci* and experiences a few outbreaks each year, but all outbreaks are under protection and subject to eradication measures. This pest has never established outdoors in the UK. As part of an annual survey at ornamental retail and production sites (frequency of visits determined by a decision matrix) *Bemisia tabaci* is inspected for on common hosts plants. In addition, all tomato and pepper production sites are subject to annual inspection (Dossier Section 5.1). There is no information on whether yellow sticky traps are used for surveillance of *B. tabaci*.

A.1.2 | Possibility of pest presence in the nursery

A.1.2.1 | Possibility of entry from the surrounding environment

Bemisia tabaci (European populations) is present in the UK with few occurrences (location not specified) (CABI, 2015; EPPO, 2024c) and is continuously intercepted to the UK. The UK outbreaks of *B. tabaci* have been restricted to glasshouses and there are no records of *B. tabaci* establishing outdoors during summer (Bradshaw et al., 2019; Cuthbertson & Vänninen, 2015). Bradshaw et al. (2019) indicate that theoretically *B. tabaci* (in summertime) could complete one generation across most of Scotland, and 1–3 generations over England and Wales. However, the temperatures experienced during the cold days and nights during summer may be low enough to cause chilling injury to *B. tabaci*, thereby inhibiting development and preventing establishment in the UK. It is unlikely, therefore, that this pest will establish outdoors in the UK under current climate conditions.

The possible entry of *B. tabaci* from surrounding environment to the nurseries may occur through adult dispersal and passively on wind currents (Byrne, 1999; Cohen et al., 1988; EFSA PLH Panel, 2013). Greenhouses are reported to be present at a minimum distance of 500 m from the nursery (Dossier Section 5.1). The potential distance of spread of adult *B. tabaci* can exceed that distance (Cohen et al. 1988).

Bemisia tabaci is polyphagous species that can infest a number of different plants. Suitable hosts of *B. tabaci* like *Brassica rapa, Fraxinus* spp., *Ilex* spp., *Quercus* spp., *Solanum* spp. and *Triticum* spp. are present within 2 km from the nurseries. Although *B. tabaci* has not been reported to be established outdoors in the UK so far, available information suggests that theoretically *B. tabaci* could survive and reproduce during summer outdoors (Bradshaw et al., 2019; Dossier Sections 1.1, 1.2 and 5.1).

Uncertainties:

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

Taking into consideration the above evidence and uncertainties, the Panel considers that it cannot be excluded that the pest can enter the nurseries mainly from greenhouses present in the surrounding environment.

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

The starting materials of *S. caprea* and *S. cinerea* are either seeds, seedlings or cuttings. Seeds and seedlings are either from the UK (certified with UK Plant Passports) or the EU (mostly the Netherlands, Belgium and France) (certified with phytosanitary certificates) (Dossier Sections 1.1 and 1.2). Seeds are not a pathway for the whitefly.

In the nurseries many other plants are cultivated (Dossier Sections 3.1, 3.2 and 5.1). Out of them *Acer* spp., *Acacia* spp., *Crataegus* spp., *Hedera* spp., *Prunus* spp., *Pyrus* spp., *Rosa* spp., *Salvia* spp., *Viburnum* spp. and many more plants are potential suitable hosts of the whitefly. However, there is no information on how and where the plants are produced. Therefore, if the plants are first produced in another nursery, the whitefly could possibly travel with them.

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

Uncertainties:

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

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

A.1.2.3 | Possibility of spread within the nursery

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

The whitefly can attack other suitable plants (such as *Acer* spp., *Acacia* spp., *Crataegus* spp., *Hedera* spp., etc.) and non-cultivated herbaceous plants (*Bellis perennis*, *Potentilla* spp., *Taraxacum officinale*) present within the nurseries and hedges surrounding the nurseries (*Crataegus* spp., *Hedera helix*, *Ilex* spp. and *Prunus* spp.) (Dossier Sections 3.1, 3.2 and 5.1).

There are greenhouses within the nurseries (Dossier Sections 1.1 and 1.2). The minimum distance from the greenhouses to *Salix* production fields is 30 m (Dossier Section 5.1).

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

<u>Uncertainties</u>:

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

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

A.1.3 | Information from interceptions

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

There were two interceptions of *B. tabaci* from the UK in 2007 and 2015 on other plants (EUROPHYT, 2024) and one interception on other live plants (including their roots) in October 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 *B. tabaci* is provided. The description of the risk mitigation measures currently applied in the UK is provided in Table 7.

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

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

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

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

This scenario assumes that the pest is not present in the nursery area.

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

This scenario assumes high pest pressure in and around nurseries. Leaves may be present and there is a high uncertainty of probability of detection in the canopies. Seven-year-old plants have more leaves compared to younger plants and hence more possibilities for the pest to hide and being overlooked.

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

The scenario assumes low values for the central scenario because *B. tabaci* is not expected to be present outdoors and because of the uncertainty about the host status of *B. tabaci* on *S. caprea* or *S. cinerea*. However, it has been considered also that the pest is repeatedly intercepted in the UK in the greenhouses, and that visual inspections could overlook the pest.

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

The Panel expresses the maximum uncertainty with the first quartile, and a lower uncertainty with the third quartile, mainly because there is relatively high distance between the greenhouse and the commodity outside. It is very unlikely to be present outdoors and *Salix* is not a major host. It is a quarantine pest in the UK and therefore more likely to be detected in the greenhouse where measures must be taken.

A.1.5.5 | Elicitation outcomes of the assessment of the pest freedom for *Bemisia tabaci* (European populations) 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 *Bemisia tabaci* (European populations) 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	0					6		12		25					50
EKE	0.137	0.384	0.839	1.85	3.35	5.42	7.70	13.1	19.9	24.1	29.4	35.0	41.0	45.6	49.9

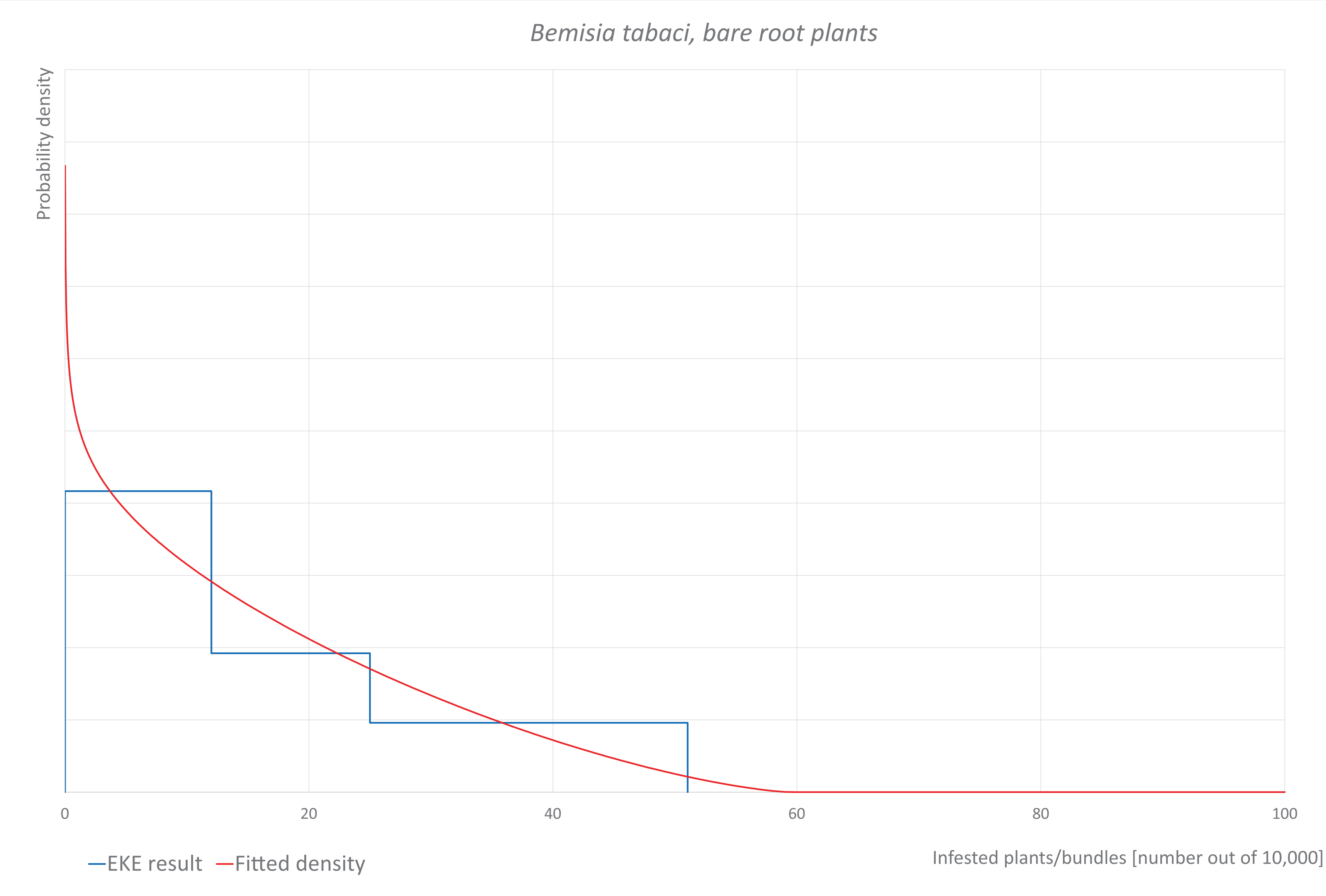
Note: The EKE result is the BetaGeneral (0.89141, 2.423, 0.595) distribution fitted with @Risk version 7.6.

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 *Bemisia tabaci* (European populations) 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	9950					9975		9988		9994					10,000
EKE results	9950	9954	9959	9965	9971	9976	9980	9987	9992	9995	9997	9998	9999.2	9999.6	9999.9

Note: The EKE results are the fitted values.



(A)

FIGURE A.1 (Continued)

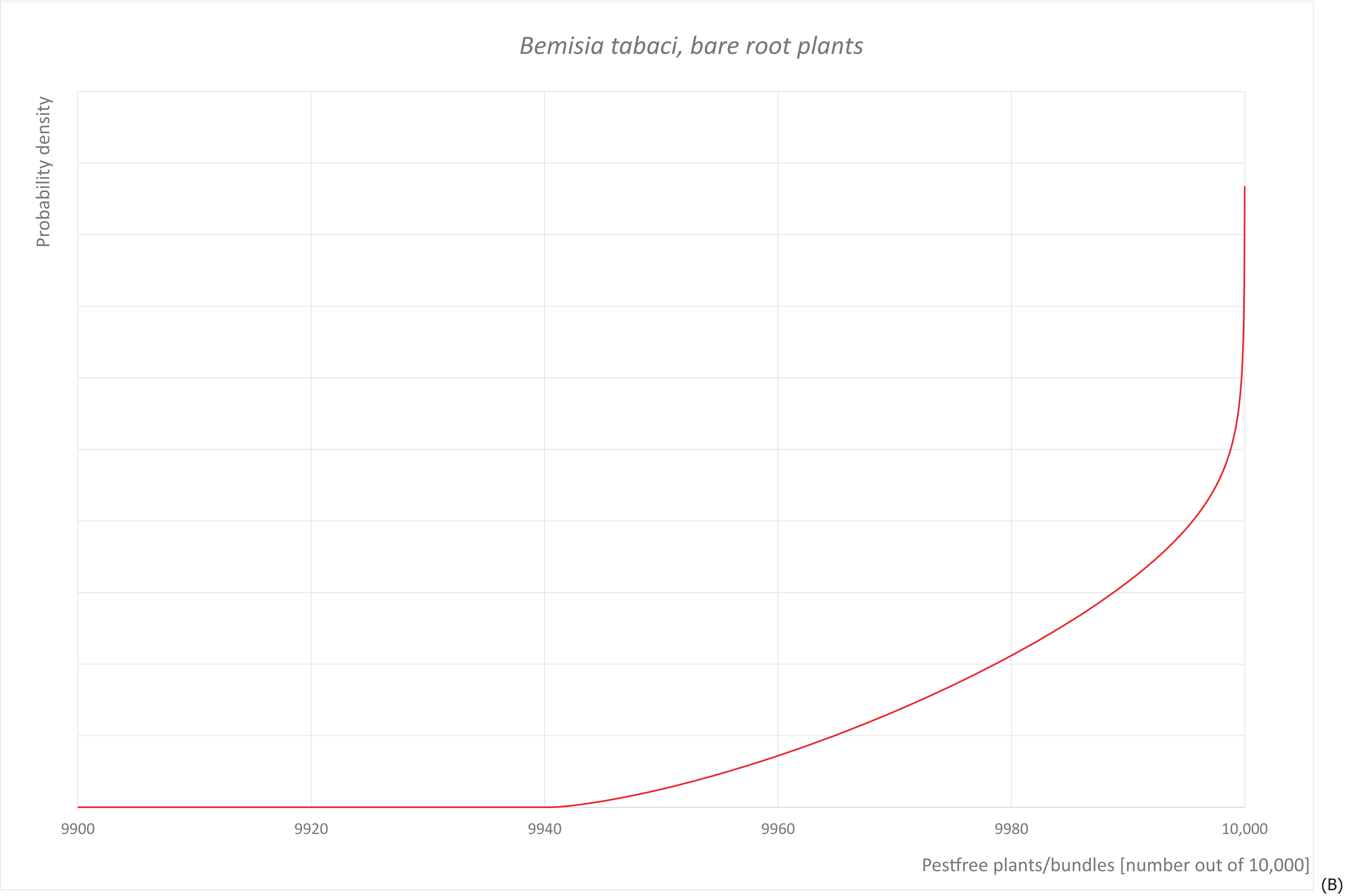
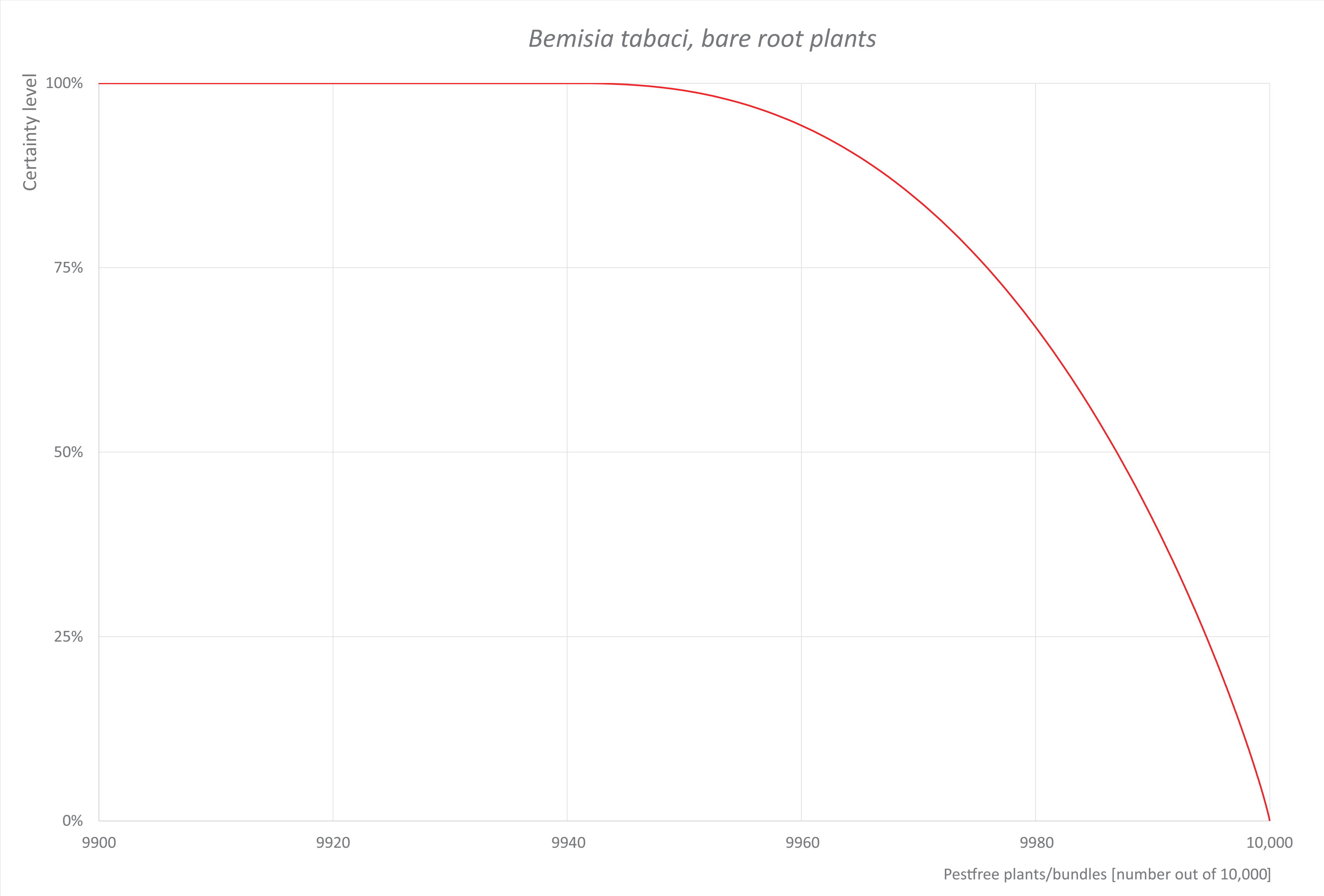


FIGURE A.1 (Continued)



(C)

FIGURE A.1 (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 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 plants/bundles.

A.1.6 | Overall likelihood of pest freedom for cell grown plants

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

This scenario assumes that the pest is not present in the nursery area.

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

This scenario assumes high pest pressure in and around nurseries. It also assumes, that cell grown plants may be stored nearby the greenhouses or be grown inside the greenhouses at the beginning of the cultivation, which makes it more likely that they could be infested with *B. tabaci*. Moreover, cell grown plants are exported with leaves.

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

The scenario assumes low values for the central scenario because *B. tabaci* is not expected to be present outdoors and because there is uncertainty about the host status of *B. tabaci* on *Salix*. In addition, cell grown plants are smaller compared to potted plants, so they are easier to inspect. However, it has also been taken into account that the pest is repeatedly intercepted in the UK in glasshouses, that visual inspections could miss the pest and that it is possible that there could be spread to plants grown outdoors from the glasshouse.

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

The Panel expresses the maximum uncertainty with the first quartile, and a lower uncertainty with the third quartile, mainly because plants are relatively small and easy to inspect. It is very unlikely to be present outdoors and *Salix* is not a major host. The pest is a quarantine pest in the UK and therefore more likely to be detected in the greenhouse where measures must be taken.

A.1.6.5 | Elicitation outcomes of the assessment of the pest freedom for *Bemisia tabaci* (European populations) on cell grown plants

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 *Bemisia tabaci* (European populations) 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	0					9		18		35					70
EKE	0.292	0.746	1.52	3.14	5.41	8.41	11.7	19.1	28.3	34.1	41.2	48.9	57.2	63.6	70.0

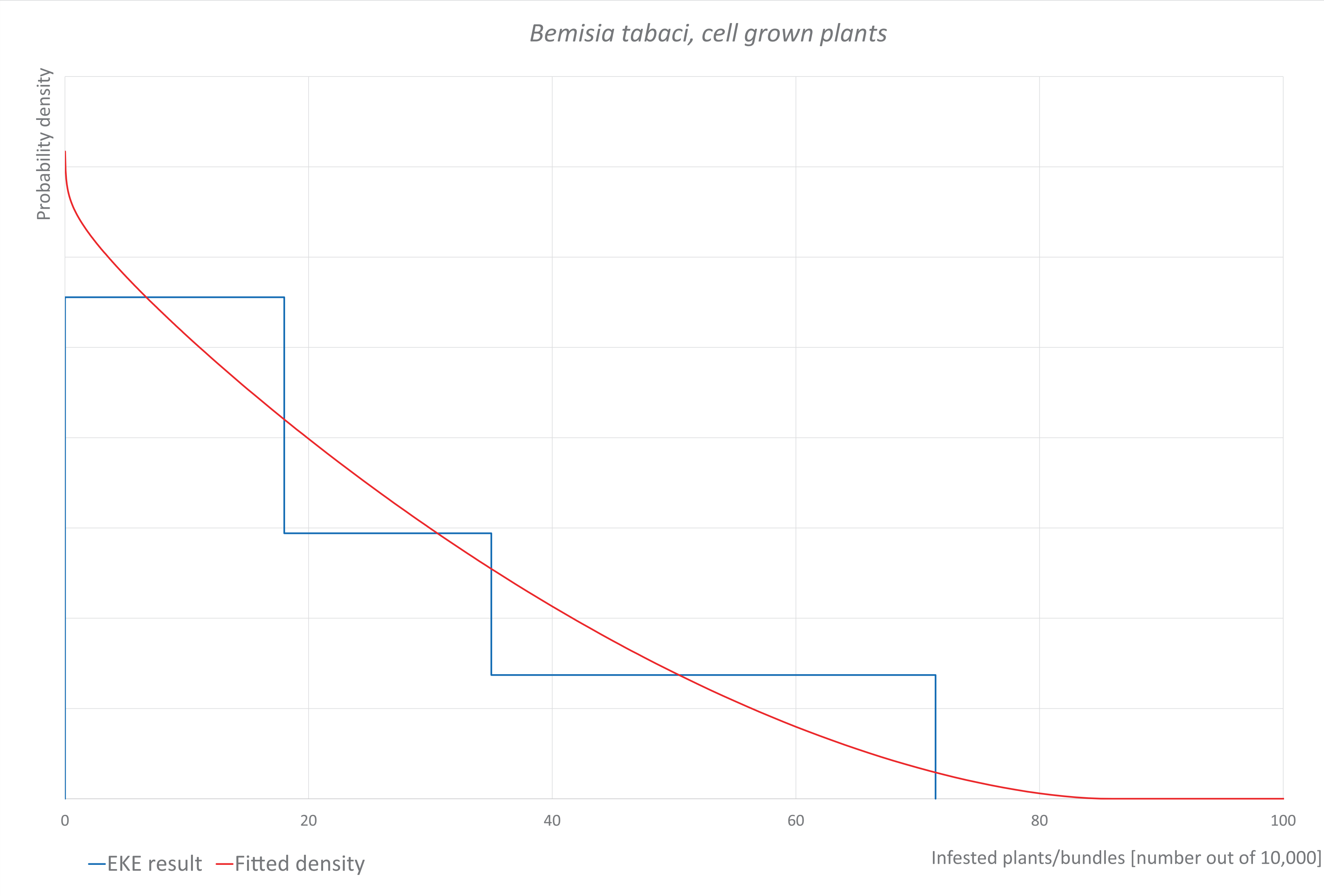
Note: The EKE results is the BetaGeneral (0.98178, 2.6842, 0, 85.5) distribution fitted with @Risk version 7.6.

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 *Bemisia tabaci* (European populations) per 10,000 plants/bundles calculated by Table A.3.

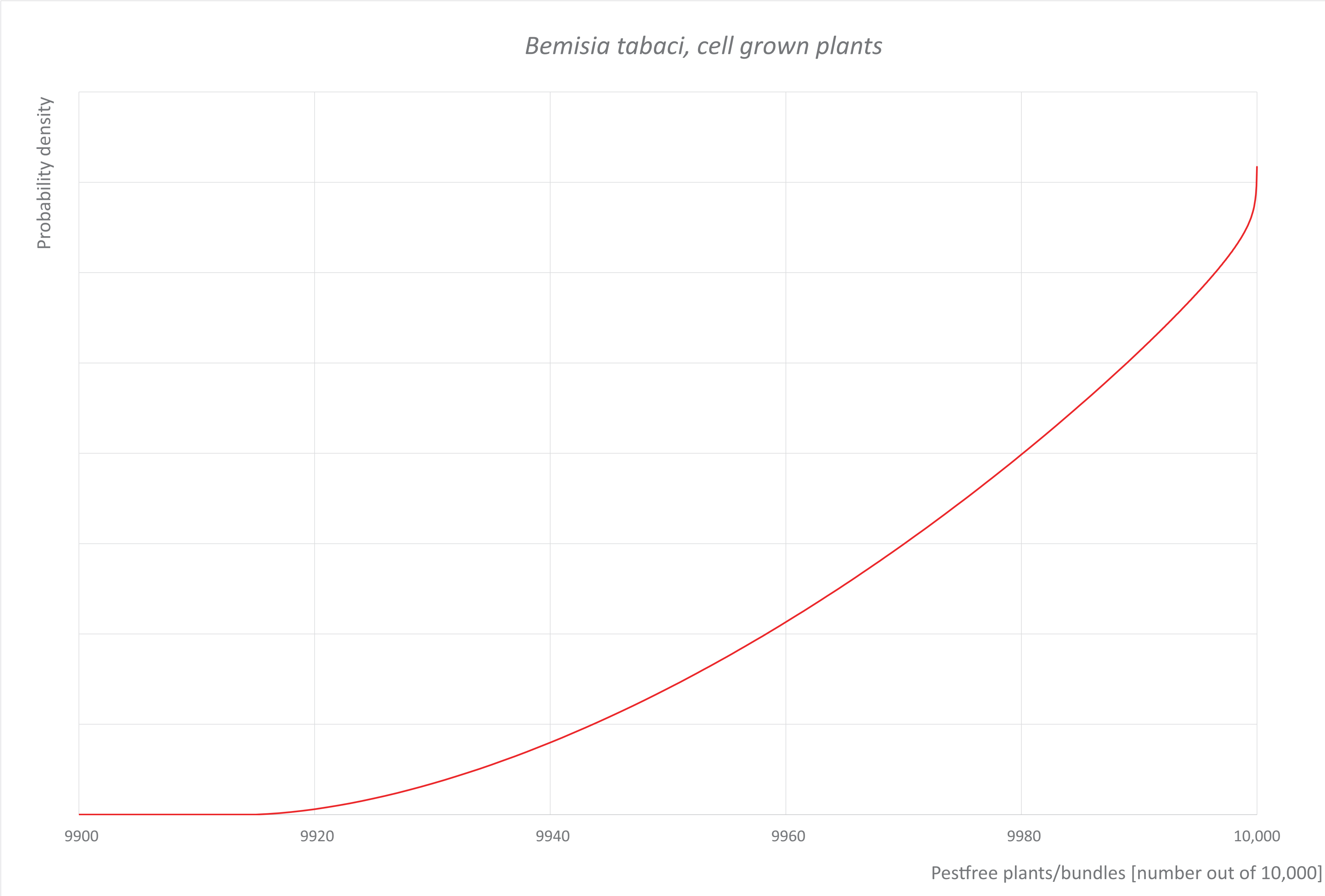
Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9930					9965		9982		9991					10,000
EKE results	9930	9936	9943	9951	9959	9966	9972	9981	9988	9992	9995	9997	9998	9999.3	9999.7

Note: The EKE results are the fitted values.



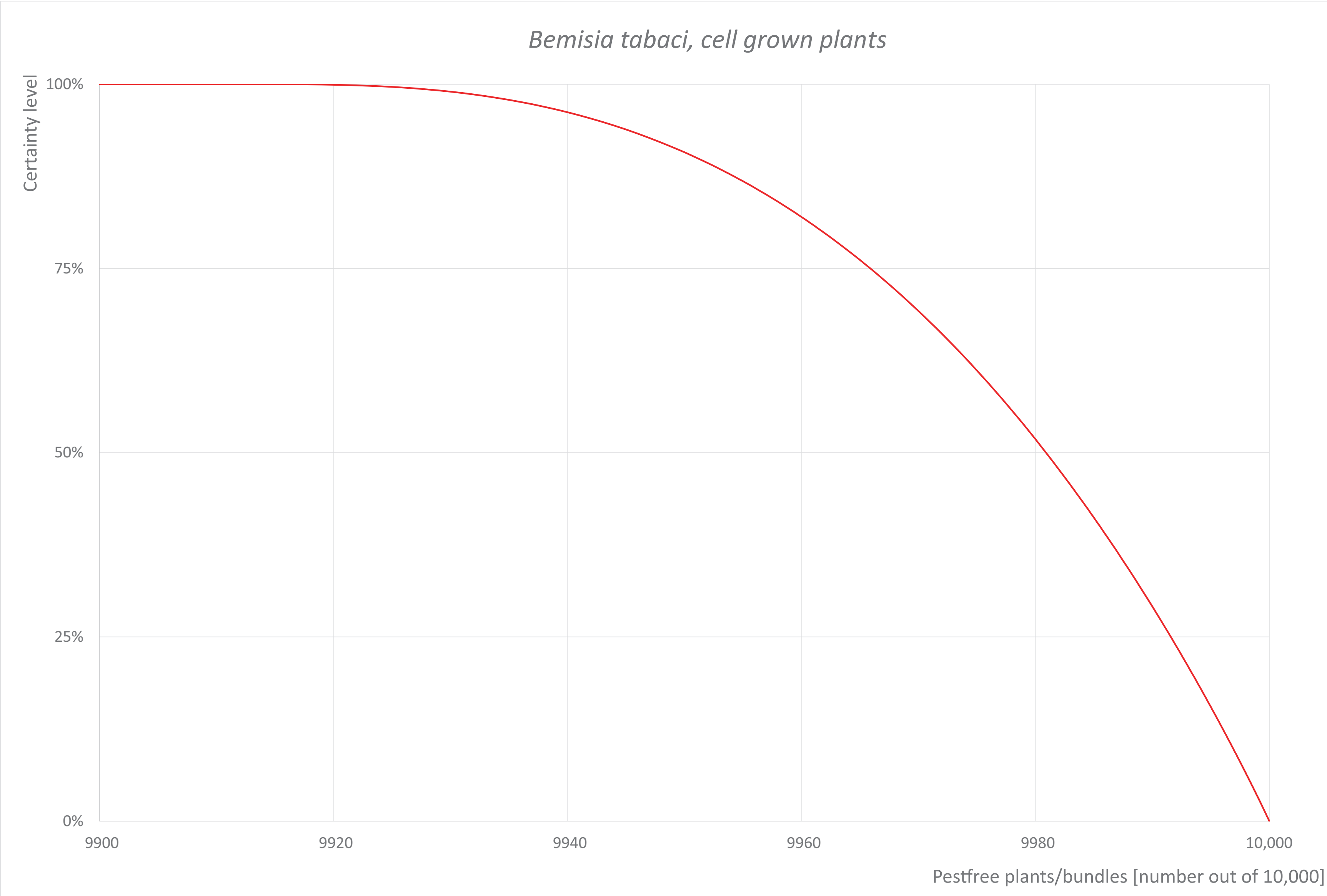
(A)

FIGURE A.2 (Continued)



(B)

FIGURE A.2 (Continued)



(C)

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.

A.1.7 | Overall likelihood of pest freedom for plants in pots

A.1.7.1 | Reasoning for a scenario which would lead to a reasonably low number of infected plants in pots

This scenario assumes that the pest is not present in the nursery area.

A.1.7.2 | Reasoning for a scenario which would lead to a reasonably high number of infected plants in pots

This scenario assumes high pest pressure in and around nurseries especially when in proximity with greenhouses. It also assumes, that plants in pots may be stored nearby the greenhouses or be grown inside the greenhouses at the beginning of the cultivation, which makes it more likely that they could be infested with *B. tabaci*. Moreover, plants in pots are exported with leaves. It also assumes high inspection difficulty in the canopy of large trees, so there are more possibilities that the pest is unnoticed.

A.1.7.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infected plants in pots (Median)

The scenario assumes low values for the central scenario because *B. tabaci* is not expected to be present outdoors and because there is uncertainty about the host status of *B. tabaci* on *Salix*. However, it has also been considered that the pest is repeatedly intercepted in the UK in glasshouses, that visual inspections could miss the pest and that it is possible that there could be spread to plants grown outdoors from the glasshouse.

A.1.7.4 | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/interquartile range)

The Panel expresses the maximum uncertainty with the first quartile, and a slightly lower uncertainty with the third quartile, mainly because there is relatively high distance between the greenhouse and the commodity outside. Moreover, it is very unlikely that the pest is present outdoors and *Salix* is not a major host. The pest is a quarantine one in the UK and therefore it is more likely to be detected in the greenhouse where measures must be taken.

A.1.7.5 | Elicitation outcomes of the assessment of the pest freedom for *Bemisia tabaci* (European populations) on plants in pots

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

TABLE A.5 Elicited and fitted values of the uncertainty distribution of pest infection by *Bemisia tabaci* (European populations) per 10,000 plants.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0					10		20		40					75
EKE	0.247	0.681	1.47	3.19	5.72	9.15	12.9	21.5	32.2	38.8	46.7	54.9	63.3	69.5	75.1

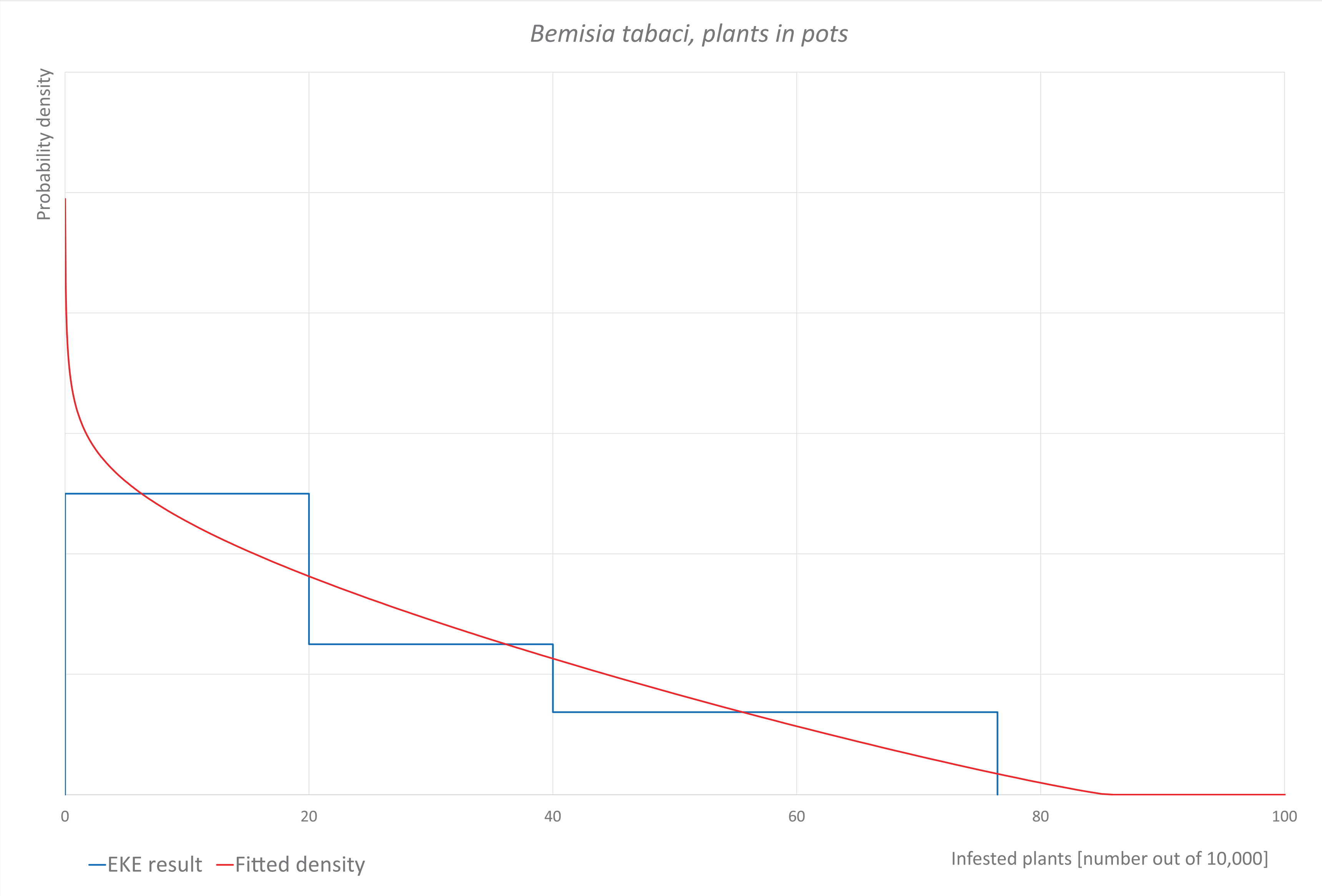
Note: The EKE result is the BetaGeneral (0.9073, 2.1215, 0, 85.5) distribution fitted with @Risk version 7.6.

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

TABLE A.6 The uncertainty distribution of plants free of *Bemisia tabaci* (European populations) per 10,000 plants calculated by Table A.5.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9925					9960		9980		9990					10,000
EKE results	9925	9931	9937	9945	9953	9961	9968	9978	9987	9991	9994	9997	9998.5	9999.3	9999.8

Note: The EKE results are the fitted values.



(A)

FIGURE A.3 (Continued)

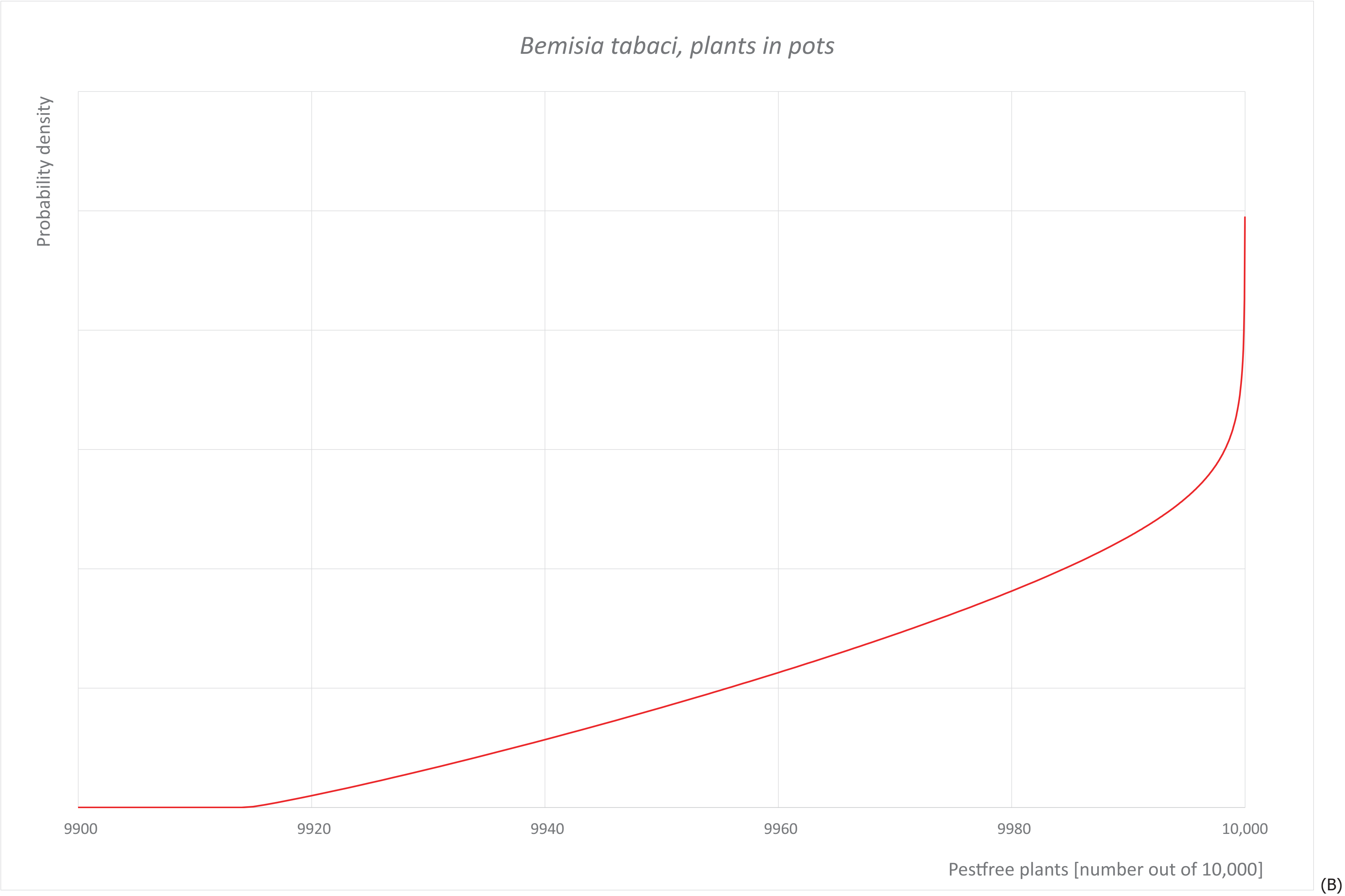
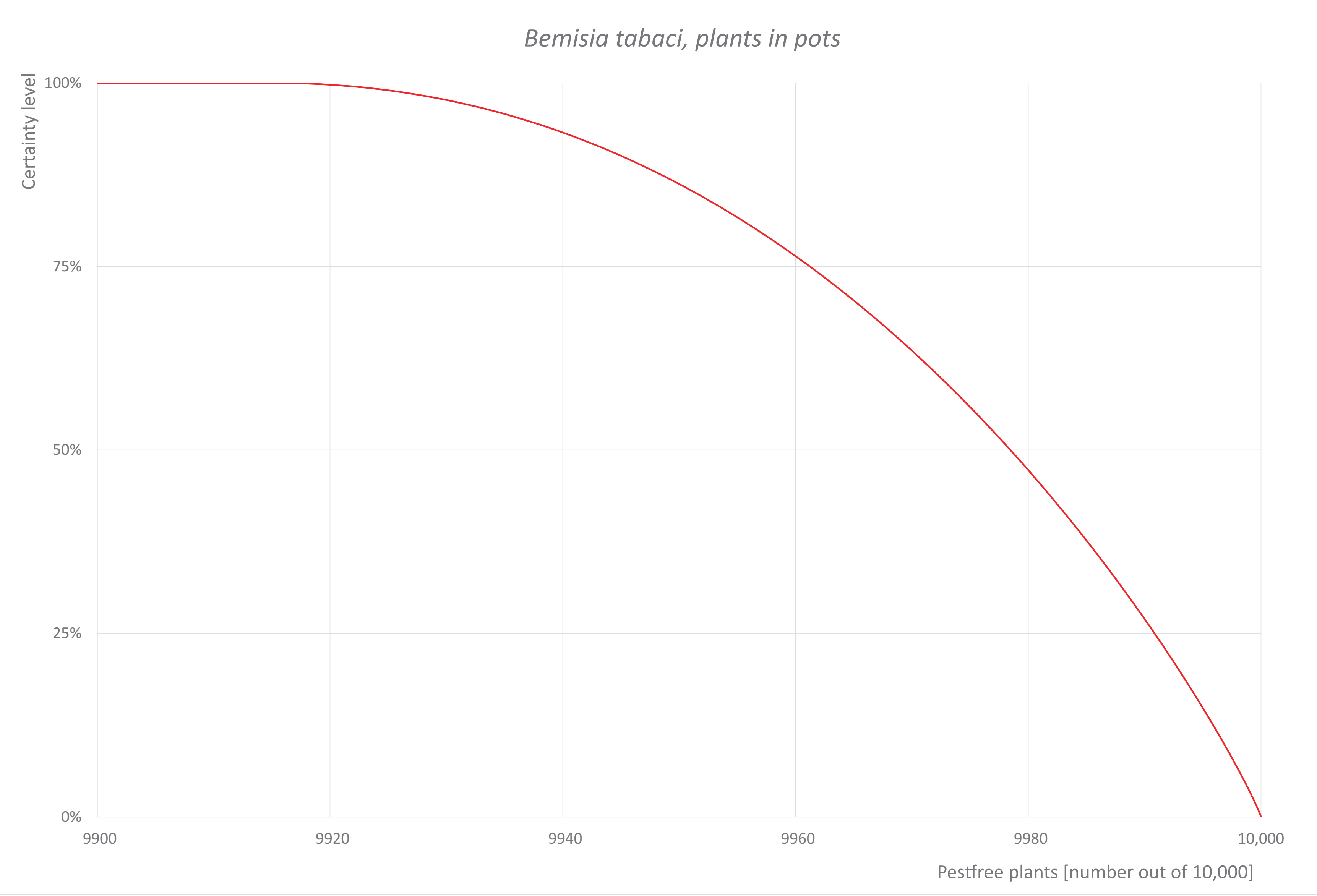


FIGURE A.3 (Continued)



(C)

FIGURE A.3 (A) Elicited uncertainty of pest infection per 10,000 plants (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 per 10,000 (i.e. = 1 – pest infection proportion expressed as percentage); (C) descending uncertainty distribution function of pest infection per 10,000 plants.

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A.2 | *ENTOLEUCA MAMMATA*

A.2.1 | Organism information

Taxonomic information	Current valid scientific name: *Entoleuca mammata* Synonyms: *Anthostoma blakei, Anthostoma morsei, Fuckelia morsei, Hypoxylon blakei, Hypoxylon holwayi, Hypoxylon mammatum, Hypoxylon morsei, Hypoxylon pauperatum, Hypoxylon pruinatum, Nemania mammata, Rosellinia pruinata, Sphaeria mammata, Sphaeria pruinata* (according to Index Fungorum) Name used in the EU legislation: *Entoleuca mammata* (Wahlenb.) Rogers and JU Order: Xylariales Family: Xylariaceae Common name: hypoxylon canker of poplar, canker of poplar, canker of aspen Name used in the Dossier: *Entoleuca mammata*
Group	Fungi
EPPO code	HYPOMA
Regulated status	*Entoleuca mammata* is listed in Annex III of Commission Implementing Regulation (EU) 2019/2072 as protected zone quarantine pest for Ireland and the UK (Northern Ireland). The pathogen is quarantine pest in China and Israel and is on the A1 list of Türkiye (EPPO, 2024a).
Pest status in the UK	*Entoleuca mammata* is present in the UK, with few occurrences in England, Wales, Channel Islands and Scotland (CABI, 2019; EPPO, 2024b; Granmo et al., 1999; Mathiassen, 1993).
Pest status in the EU	*Entoleuca mammata* is present in the following EU MS: Austria, Belgium, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Latvia, Lithuania, the Netherlands, Poland, Slovakia, Slovenia, Spain and Sweden (EFSA PLH Panel, 2023; EPPO, 2024b).
Host status on *Salix caprea* and *S. cinerea*	*Salix caprea* and *S. cinerea* are hosts of *E. mammata* (Granmo et al., 1999). Other reported hosts of *E. mammata* are *S. daphnoides, S. myrsinifolia, S. pentandra, S. phylicifolia* and *S. triandra* (EPPO, 2024c; Granmo et al., 1999; Mathiasen, 1993). In North America *Salix* is reported as a secondary host of *E. mammata* together with several other host genera (Manion & Griffin, 1986). In the central and northern Scandinavia willows seem to be the main hosts of *E. mammata*, mostly *S. caprea*, *S. pentandra* and *S. myrsinifolia* (Mathiasen, 1993). However, *E. mammata* is considered by Mathiasen (1993) as primary saprophyte on *Salix* species.
PRA information	Pest Risk Assessments available: – Pest categorisation of *Entoleuca mammata* (EFSA PLH Panel, 2017); – Express Pest Risk Analysis: *Entoleuca mammata* (Klejdysz et al., 2018); – UK Risk Register Details for *Entoleuca mammata* (DEFRA, 2023).
Other relevant information for the assessment	
Biology	*Entoleuca mammata* causes canker disease in *Populus tremuloides* and *P. tremula* as primary hosts, but other hardwood species can be also affected as minor hosts (EFSA PLH Panel, 2017). The fungus is also known as primary saprophyte on several *Salix* species (Mathiasen, 1993) but it can become a pathogen under certain conditions. *E. mammata* is thought to be native to North America and introduced into Europe several centuries ago (Kasanen et al., 2004). It is now largely spread in the temperate zones of the northern hemisphere in North America, Europe and Asia. *Entoleuca mammata* is present in Canada and in several states of the USA, mostly in the north. In Asia, it is only found in South Korea on decayed wood (Lee et al., 2000). In Europe, in addition to the mentioned EU MS and the UK (see above), it is also reported from Andorra, Bosnia and Herzegovina, Montenegro, North Macedonia, Russia (Southern Russia and Western Siberia), Serbia, Switzerland, Ukraine (CABI, 2019; EPPO, 2024c) and Norway (Granmo et al., 1999; NBIC, 2021). The ascospores of *E. mammata* can infect the living wood of the hosts penetrating in the periderm and invading tissues under bark through mechanical wounds and injuries, often caused by woodpeckers and insects (Anderson et al., 1979a; Ostry & Anderson, 1983); water stress can increase host susceptibility (EFSA PLH Panel, 2017, 2023). The pathogen is most commonly found on trees 15–40 years old, but all ages can be infected (EFSA PLH Panel, 2017; EPPO 2023). Infection usually starts from branches and twigs and then can spread to the main stem. *Entoleuca mammata* is most frequently found on stems about 1.5–2.5 m above the ground (Mathiasen, 1993). The cankers expand very rapidly (7–8 cm per month) in summer, and more slowly during winter; branches and stems can be girdled causing drying and breakage. *Entoleuca mammata* mostly develops in the range from 8 to 32°C; the optimum temperature is 28°C; toxins host-specific produced by the fungus are involved in pathogenesis (EPPO, 2023; EFSA PLH Panel, 2017; Stermer et al., 1984).

(Continued)

	The pathogen overwinters in host tissues as both mycelium and spores. Conidia are produced 5–14 months after infection, but their role in the disease transmission is considered not relevant and ascospores are the main source of inoculum (EFSA PLH Panel, 2017; Ostry & Anderson, 2009; Ostry, 2013). *Entoleuca mammata* can spread over long distances via windborne ascospores, which are produced 2–3 years after infection (Anderson et al., 1979b); cankers on felled trees on the ground continue to produce ascospores for 23 months (Ostry & Anderson, 2009). Ascospores are dispersed with a temperature above −4°C and wet weather; a minimum of 16°C is required for starting germination, which became rapid at 28–32°C (EFSA PLH Panel, 2017). Infected wood, mostly with bark, may be a pathway for passive spread of *E. mammata* in international trade; however, also young plants may carry ascospores or mycelium of the fungus, which can survive as a latent infection on living material inadvertently moved (EFSA PLH Panel, 2017; EPPO, 2024c). *Entoleuca mammata* is considered an important pathogen of poplars in the USA and Canada, causing economic losses of millions of dollars a year (Anderson et al., 1979b; EFSA PLH Panel, 2017; Ostry, 2013). In Europe, damage on *Populus tremula* has been reported in natural stands in France and Italy and in poplar plantations in Sweden and Estonia (EFSA PLH Panel, 2017; Lutter et al., 2019); however, the pathogen is generally known as a pest of low importance (EFSA PLH Panel, 2023).	
Symptoms	**Main type of symptoms**	Symptoms of *E. mammata* infection have been described especially for *Populus* species. Early symptoms of cankers on the bark appear as slightly sunken, yellowish-orange areas with an irregular border. Young cankers can be easily identified by removing the bark to expose the white mycelium in the cambial zone. The outer bark in older cankers is then lifted into blister-like patches and breaks away, exposing blackened areas prominently visible on green branches and trunks. Callus formation only occasionally develops because cankers spread very quickly (Anderson et al., 1979b; EPPO, 2023). Wilting of leaves may be observed when living trees are girdled by cankers, as well as sprouting of new shoots on stem and branches. Infected trees can be secondarily colonised by other fungi, accelerating the host decline (EPPO, 2023). *Entholeuca mammata* has been associated with canker in *Salix* in Wales (Mathiasen, 1993 citing Granmo et al. 1989).
	Presence of asymptomatic plants	The disease caused by *E. mammata* has a latent period and symptoms can appear only 2 years after the ascospore infection, therefore asymptomatic plants can be found (Ostry & Anderson, 2009).
	Confusion with other pests	Some *Hypoxylon* species present in Europe on deciduous trees (*H. confluens* and *H. udum*) show symptoms similar to those of *E. mammata* but can be easily distinguished in laboratory by the ascospore characteristics (EFSA PLH Panel, 2017).
Host plant range	According to Ostry and Anderson (2009), several genera of hardwood trees have been reported as hosts of *E. mammata* (Miller, 1961) but conclusive evidence for confirming saprophytic or pathogenic relationships on many of these hosts is largely lacking. The list of hosts of *E. mammata* includes: *Alnus sinuata, Betula* sp., *Fagus* sp., *Malus* sp., *Ostrya* sp., *Populus adenopoda, P. alba, P. balsamifera, P. grandidentata, P. nigra, P. tremula, P. tremuloides, P. trichocarpa, P.×wettsteini, Populus* hybrids, *Salix caprea, S. cinerea, S. daphnoides, S. myrisinifolia, S. pentandra, S. phylicifolia, S. triandra, Salix*, sp. and *Sorbus aucuparia* (EFSA PLH Panel, 2023; EPPO, 2024c; Ostry, 2013). In North America, *E. mammata* mainly infects the quacking aspen (*Populus tremuloides*); minor damage is recorded on *P. alleghaniensis*, *P. balsamifera, P. grandidentata* and various *Populus* hybrids. Other secondary hosts in North America are *Acer, Alnus, Betula, Carpinus, Fagus, Picea, Pyrus, Salix, Sorbus* and *Ulmus* (Manion & Griffin, 1986). In Europe, the main hosts are poplars, mostly *Populus tremula*; other hosts are *P. alba, P. nigra, P. trichocarpa* and the hybrid *P. tremula×P. tremuloides* (Ostry, 2013). In the central and northern Scandinavia willows seem to be the main hosts of *E. mammata*, mostly *Salix caprea, S. pentandra* and *S. myrsinifolia* (Mathiasen, 1993).	
Reported evidence of impact	*Entoleuca mammata* is an EU protected zone quarantine pest.	
Evidence that the commodity is a pathway	Plants for planting may carry ascospores and mycelium of *E. mammata* also as asymptomatic plants (EFSA PLH Panel, 2017; EPPO 2023) therefore the commodity is a pathway.	
Surveillance information	*Entoleuca mammata* is not a regulated pest for Great Britain and as such no specific measures are taken. This pest has been a Protected Zone in Northern Ireland for many years and exports to North Ireland from other areas of the UK are checked in accordance with the requirements (Dossier Section 5.1).	

A.2.2 | Possibility of pest presence in the nursery

A.2.2.1 | Possibility of entry from the surrounding environment

Entoleuca mammata is present in the UK in England, Wales, Channel Islands and Scotland (CABI, 2019; EPPO, 2024b). In Wales the pathogen was found on *Salix* sp. (Mathiassen, 1993).

Entoleuca mammata can easily spread with ascospores dispersed by air currents also over long distance and can infect *Acer campestre, A. pseudoplatanus, Fagus* spp. and *Populus* spp., which are present within 2 km from the nurseries in woodlands and hedgerows (Dossier Sections 1.1, 1.2 and 5.1).

Uncertainties:

- The presence of the pathogen on host plants in the surrounding area.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible for *E. mammata* to enter the nurseries from surrounding environment via ascospores transported by wind and air currents.

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

The starting materials of *S. caprea* and *S. cinerea* are either seeds, seedlings or cuttings. Seeds and seedlings are either from the UK (certified with UK Plant Passports) or the EU (mostly the Netherlands, Belgium and France) (certified with phytosanitary certificates) (Dossier Sections 1.1 and 1.2).

In addition to *S. capera* and *S. cinerea* plants, the nurseries also produce other plants (Dossier Sections 3.1., 3.2 and 5.1). Out of them, there are suitable hosts for the pathogen such as *Alnus* spp., *Fagus* spp., *Malus* spp., *Pyrus* spp., *Populus* spp., *Sorbus aucuparia* and *Ulmus* spp. 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 as a growing media, which is a mixture of coir, tree bark, wood fibre, etc., heat-treated by commercial suppliers during production to eliminate pests and diseases (Dossier Sections 1.1 and 1.2). There is no evidence that soil or growing media may be a pathway for *E. mammata*.

Uncertainties:

- Provenance of new plants other than *Salix* 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 via new seedlings of *Salix* spp. and 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.2.2.3. | Possibility of spread within the nursery

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

The pathogen can infect other suitable plants, such as *Alnus* spp., *Fagus* spp., *Malus* spp., *Populus* spp., *Sorbus* spp., etc. present within the nurseries (Dossier Sections 3.1, 3.2 and 5.1).

Once entered, ascospores of *E. mammata* could be produced on infected plants and naturally spread within the nurseries by air currents.

Uncertainties:

- Whether ascospores are produced on infected nursery plants.

Taking into consideration the above evidence and uncertainties, the Panel considers that the spread of the pathogen within the nurseries is possible by air currents.

A.2.3 | Information from interceptions

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

A.2.4 | Evaluation of the risk mitigation measures

In the table below, all risk mitigation measures currently applied in the UK are listed and an indication of their effectiveness on *E. mammata* is provided. The description of the risk mitigation measures currently applied in the UK is provided in the Table 7.

N	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Registration of production sites	Yes	The risk mitigation measure is expected to be effective in reducing the likelihood of presence of the pathogen on the commodity. Uncertainties: – None.
2	Physical separation	No	Not applicable.

(Continued)

N	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
3	Certified plant material	Yes	The risk mitigation measure is expected to be effective in reducing the likelihood of presence of the pathogen on the commodity. Uncertainties: – None.
4	Growing media	No	Not applicable.
5	Surveillance, monitoring and sampling	Yes	This measure could have some effect. *Entoleuca mammata* is not a regulated pest for Great Britain, and no specific measures on surveillance are taken. The pest has been a protected zone quarantine pest in Northern Ireland for many years and exports to North Ireland from other areas of the UK are checked in accordance with the requirements. Uncertainties: – Whether plants are subjected to annual surveys.
6	Hygiene measures	No	Not applicable.
7	Removal of infested plant material	Yes	This measure could have some effect. Uncertainties: – None.
8	Irrigation water	No	Not applicable.
9	Application of pest control products	Yes	Although little information exists on the efficacy of chemical treatments against *E. mammata* (Ostry, 2013), some of the fungicides used in the nursery targeting canker pathogens (Azoxystrobin, Pyrimethanil, Triazolinthione, Tebuconazole, Propamocarb Hydrochloride) could reduce the likelihood of the infection by the pathogen. Uncertainties: – The level of efficacy of fungicides in reducing infection of *E. mammata*.
10	Measures against soil pests	No	Not applicable.
11	Inspections and management of plants before export	Yes	This measure could have some effect, although asymptomatic stages may exist as reported on poplars. Uncertainties: – None.
12	Separation during transport to the destination	No	Not applicable.

A.2.5 | Overall likelihood of pest freedom for cuttings/graftwood

A.2.5.1. | Reasoning for a scenario which would lead to a reasonably low number of infected cuttings/graftwood

The scenario assumes the pathogen to be absent or with a low pressure of the pathogen in the nurseries and in the surroundings. Younger plants are exposed to the pathogen for only short period of time. The scenario also assumes that symptoms of the disease are visible and promptly detected during inspections.

A.2.5.2 | Reasoning for a scenario which would lead to a reasonably high number of infected cuttings/graftwood

The scenario assumes a high pressure of the pathogen in the nurseries and in the surroundings as suitable hosts are present. Older plants are exposed to the pathogen for longer period of time. The scenario also assumes that symptoms of the disease are not easily recognisable during inspections and that infections are asymptomatic.

A.2.5.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infected cuttings/graftwood (Median)

The scenario assumes a limited presence of the pathogen in the nurseries and the surroundings and that the plants are exposed to the pathogen for a sufficient period of time to cause infection through mechanical wounds. *Salix* species are suitable hosts.

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

The limited information on the occurrence of the pathogen in the UK including the nurseries and the surroundings results in high level of uncertainties for infection rates below the median. Otherwise, the pest pressure from the surroundings is expected to be low giving less uncertainties for rates above the median. The young age of plants would also leave less uncertainty for estimates above the median.

A.2.5.5 | Elicitation outcomes of the assessment of the pest freedom for *Entoleuca mammata* on cuttings/graftwood

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

TABLE A.7 Elicited and fitted values of the uncertainty distribution of pest infection by *Entoleuca mammata* per 10,000 bundles.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0					8		16		30					70
EKE	0.405	0.912	1.70	3.20	5.19	7.72	10.4	16.5	24.4	29.5	36.1	43.8	53.0	61.0	70.2

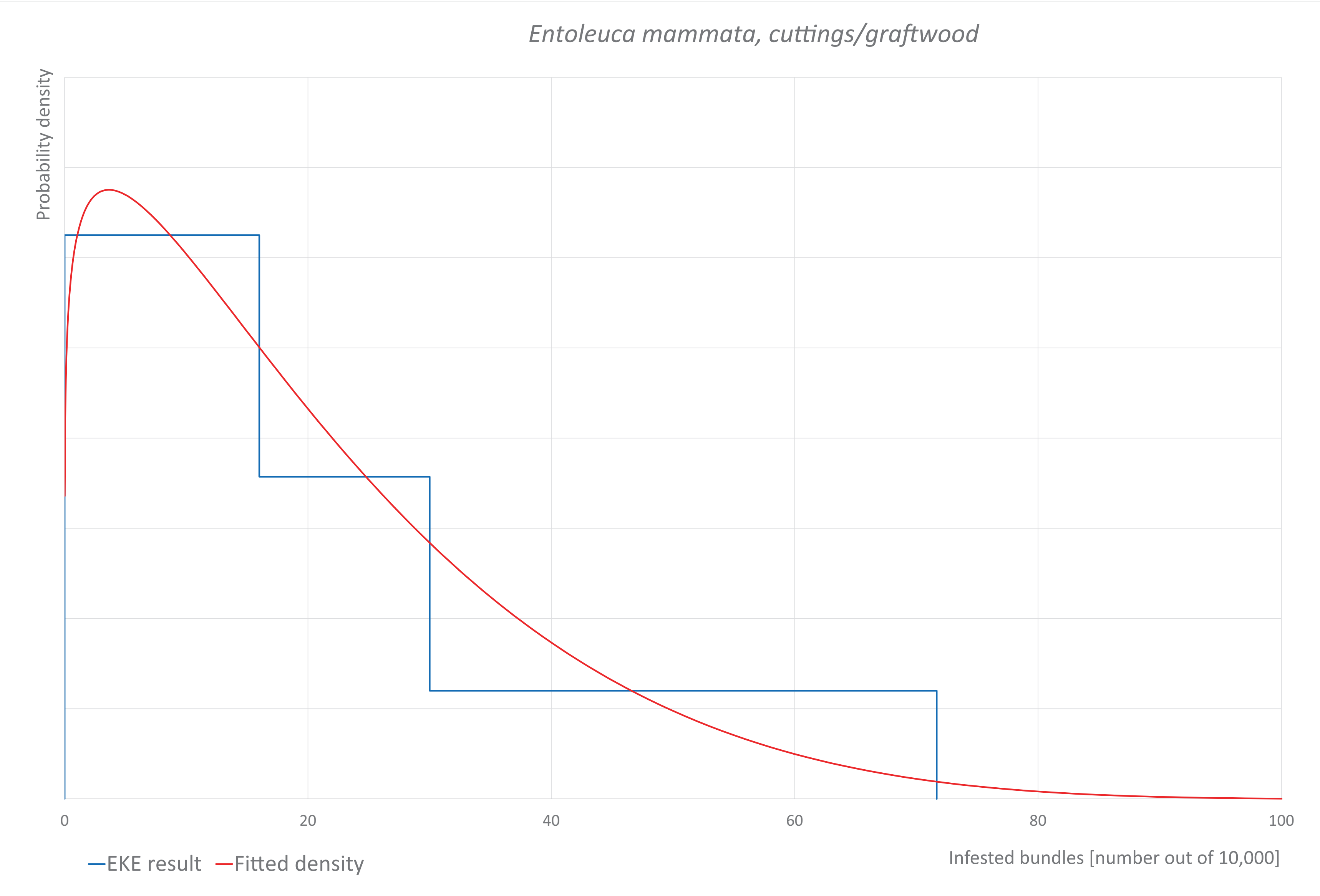
Note: The EKE result is the BetaGeneral (1.1421, 5.5388, 0, 120) distribution fitted with @Risk version 7.6.

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

TABLE A.8 The uncertainty distribution of plants free of *Entoleuca mammata* per 10,000 bundles calculated by Table A.7.

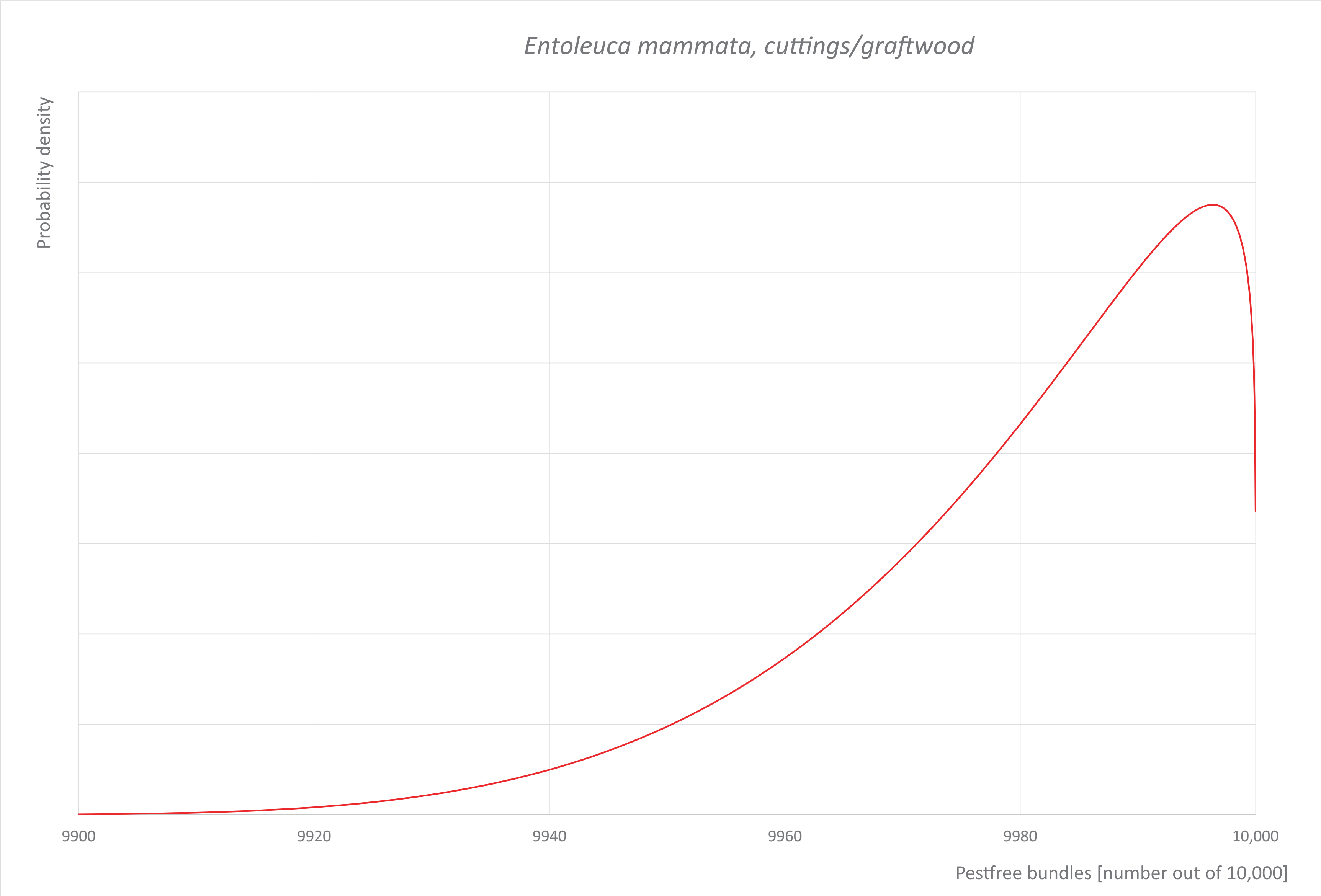
Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9930					9970		9984		9992					10,000
EKE results	9930	9939	9947	9956	9964	9971	9976	9983	9990	9992	9995	9997	9998	9999.1	9999.6

Note: The EKE results are the fitted values.



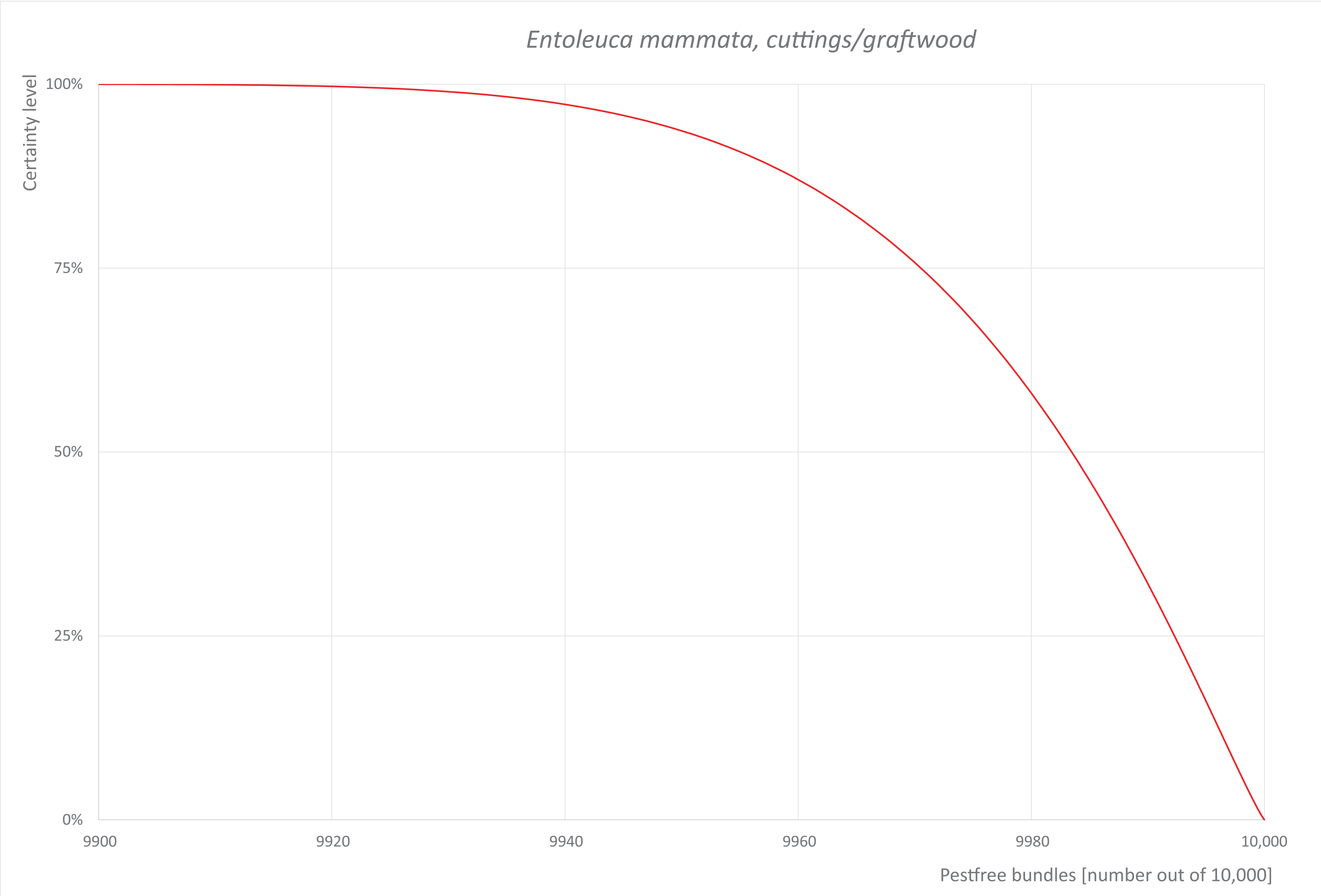
(A)

FIGURE A.4 (Continued)



(B)

FIGURE A.4 (Continued)



(C)

FIGURE A.4 (A) Elicited uncertainty of pest infection per 10,000 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 bundles per 10,000 (i.e. = 1 – pest infection proportion expressed as percentage); (C descending uncertainty distribution function of pest infection per 10,000 bundles.

A.2.6 | Overall likelihood of pest freedom for bare root plants

A.2.6.1 | Reasoning for a scenario which would lead to a reasonably low number of infected bare root plants

The scenario assumes the pest to be absent or with a low pressure in the nurseries and in the surroundings. Younger plants are exposed to the pathogen for only a short period of time. The scenario also assumes that symptoms of the disease are visible and promptly detected during inspections.

A.2.6.2 | 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. Older plants are exposed to the pathogen for a longer period of time. The scenario also assumes that symptoms of the disease are not easily recognisable during inspections and that infections are asymptomatic.

A.2.6.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infected bare root plants (Median)

The scenario assumes a limited presence of the pathogen in the nurseries and the surroundings and that the plants are exposed to the pathogen for a sufficient period of time to cause infection through mechanical wounds. *Salix* species are suitable hosts.

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

The limited information on occurrence of the pathogen in the UK including the nurseries and the surroundings results in high level of uncertainties for infection 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.2.6.5 | Elicitation outcomes of the assessment of the pest freedom for *Entoleuca mammata* on bare root plants

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

TABLE A.9 Elicited and fitted values of the uncertainty distribution of pest infection by *Entoleuca mammata* 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	0					15		29		50					120
EKE	1.25	2.45	4.11	7.00	10.6	14.9	19.3	29.2	41.7	49.8	60.5	73.1	88.8	103	120

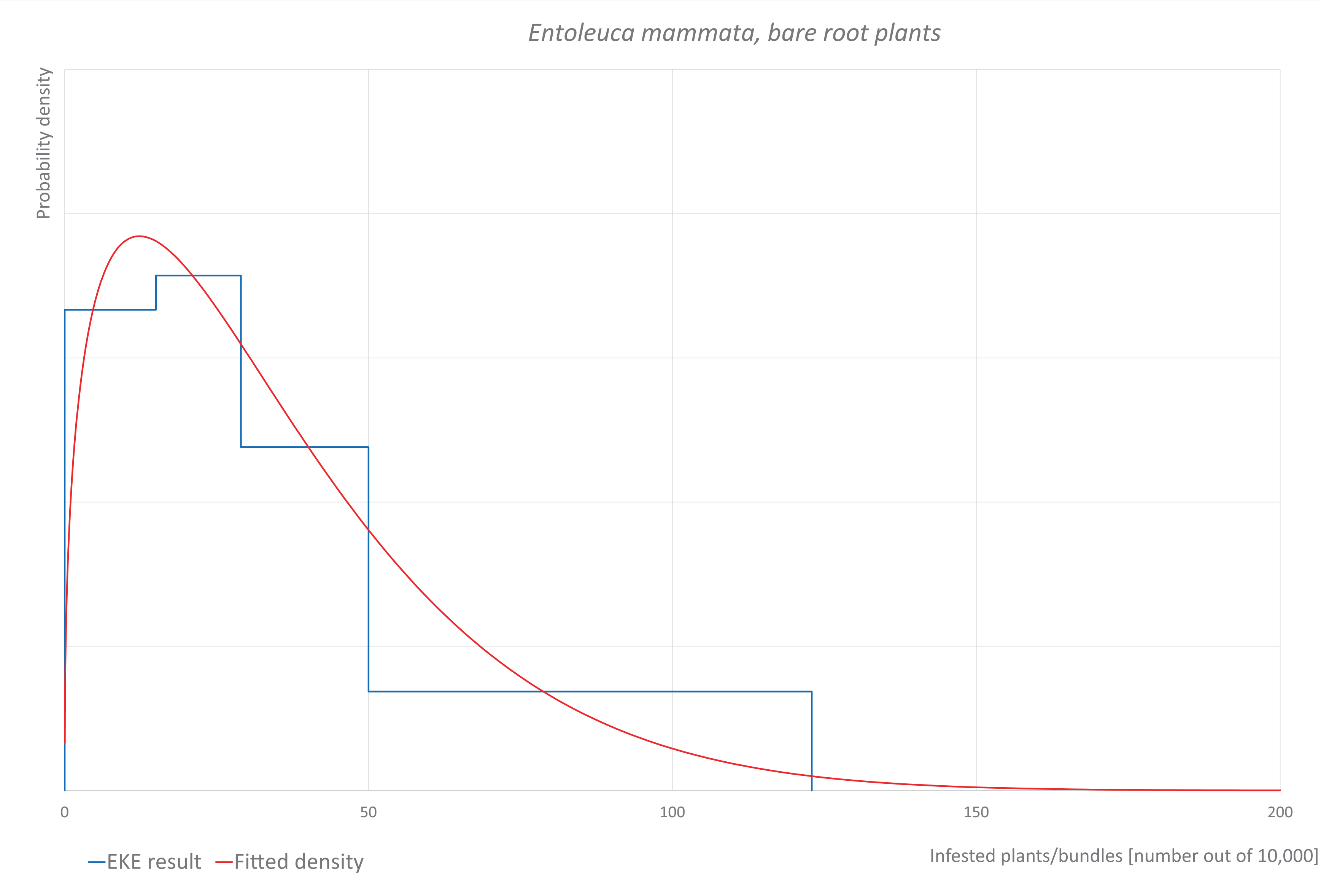
Note: The EKE result is the BetaGeneral (1.3991, 10.013, 0, 290) distribution fitted with @Risk version 7.6.

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.10.

TABLE A.10 The uncertainty distribution of plants free of *Entoleuca mammata* per 10,000 plants/bundles calculated by Table A.9.

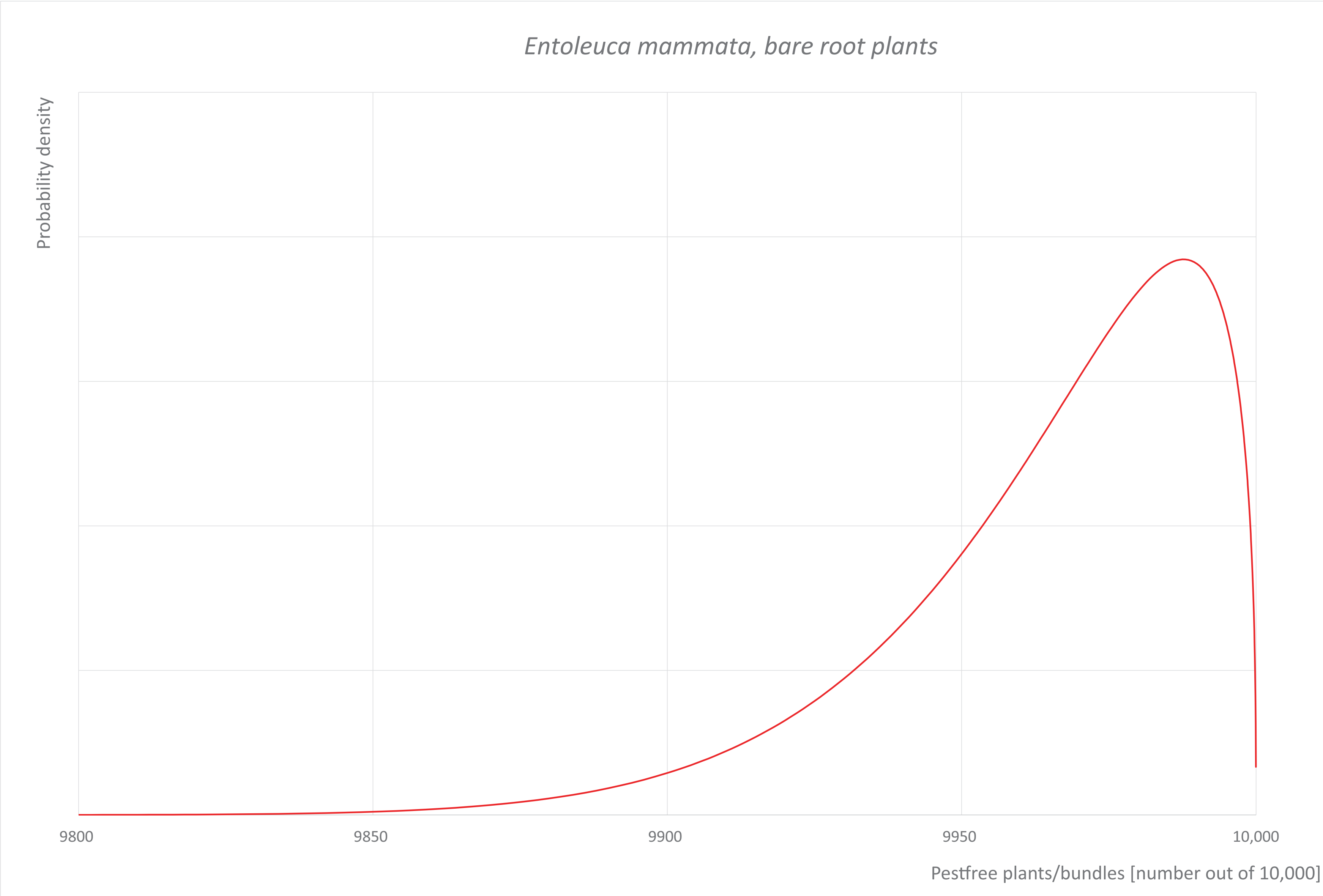
Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9880					9950		9971		9985					10,000
EKE results	9880	9897	9911	9927	9940	9950	9958	9971	9981	9985	9989	9993	9996	9998	9999

Note: The EKE results are the fitted values.



(A)

FIGURE A.5 (Continued)



(B)

FIGURE A.5 (Continued)

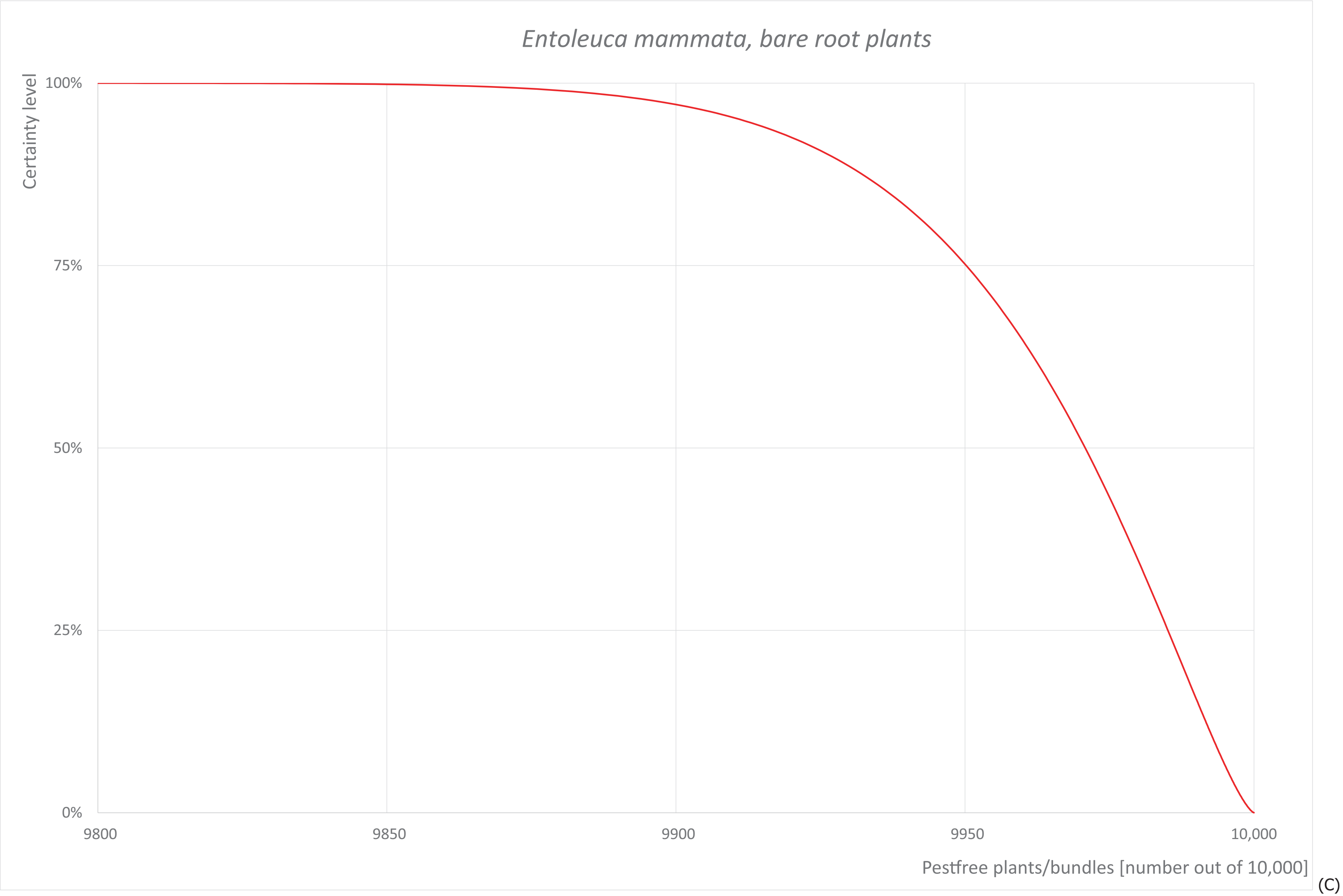


FIGURE A.5 (A) Elicited uncertainty of pest infection per 10,000 plants/bundles (histogram in blue – vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (B) uncertainty of the proportion of pest free bare root plants/bundles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

A.2.7 | Overall likelihood of pest freedom for cell grown plants

A.2.7.1 | Reasoning for a scenario which would lead to a reasonably low number of infected cell grown plants

The scenario assumes the pest to be absent or with a low pressure in the nurseries and in the surroundings. Younger plants are exposed to the pathogen for only a short period of time. The scenario also assumes that symptoms of the disease are visible and promptly detected during inspections.

A.2.7.2 | Reasoning for a scenario which would lead to a reasonably high number of infected cell grown plants

The scenario assumes a high pressure of the pathogen in the nurseries and in the surroundings as suitable hosts are present. Older plants are exposed to the pathogen for a longer period of time. Cell grown plants are in close proximity to each other which increases the humidity and hence provides good growth conditions for *E. mammata*. The scenario also assumes that symptoms of the disease are not easily recognisable during inspections and that infections are asymptomatic.

A.2.7.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infected cell grown plants (Median)

The scenario assumes a limited presence of the pathogen in the nurseries and the surroundings and that the plants are exposed to the pathogen for a sufficient period of time to cause infection through mechanical wounds. Plants are very young and therefore they display a limited susceptibility to the pathogen. *Salix* species are suitable hosts.

A.2.7.4 | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/interquartile range)

The limited information on occurrence of the pathogen in the UK including the nurseries and the surroundings results in high level of uncertainties for infection rates below the median. Otherwise, the pest pressure from the surroundings is expected to be low giving less uncertainties for rates above the median. The young age of plants would also leave less uncertainty for estimates above the median.

A.2.7.5 | Elicitation outcomes of the assessment of the pest freedom for *Entoleuca mammata* on cell grown plants

The following Tables show the elicited and fitted values for pest infection (Table A.11) and pest freedom (Table A.12).

TABLE A.11 Elicited and fitted values of the uncertainty distribution of pest infection by *Entoleuca mammata* 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	0					10		20		40					90
EKE	0.351	0.873	1.75	3.54	6.04	9.34	12.9	21.2	32.0	38.9	47.8	57.9	69.6	79.4	90.0

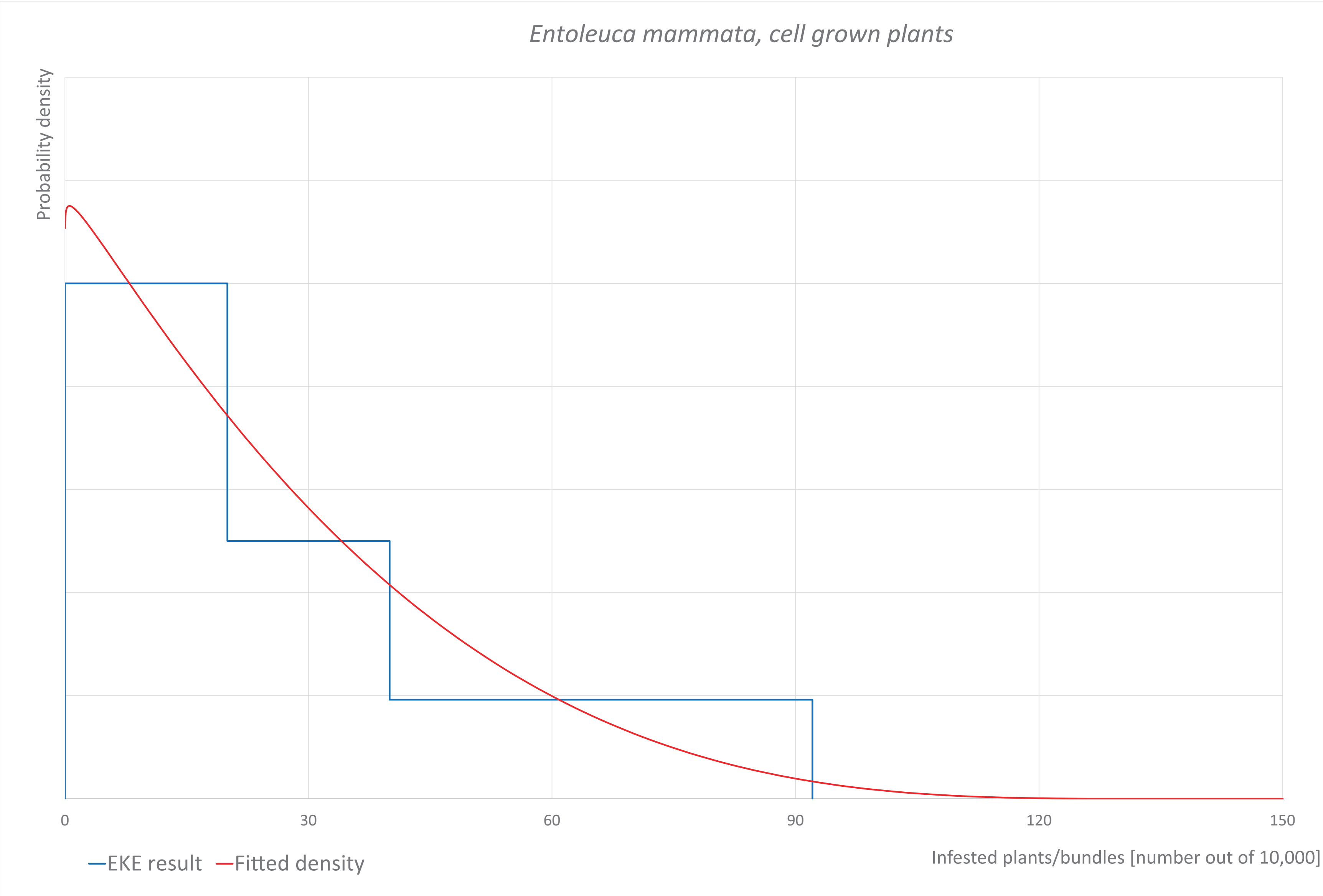
Note: The EKE results is the BetaGeneral (1.0126, 3.9819, 0, 131) distribution fitted with @Risk version 7.6.

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.12.

TABLE A.12 The uncertainty distribution of plants free of *Entoleuca mammata* per 10,000 plants/bundles calculated by Table A.11.

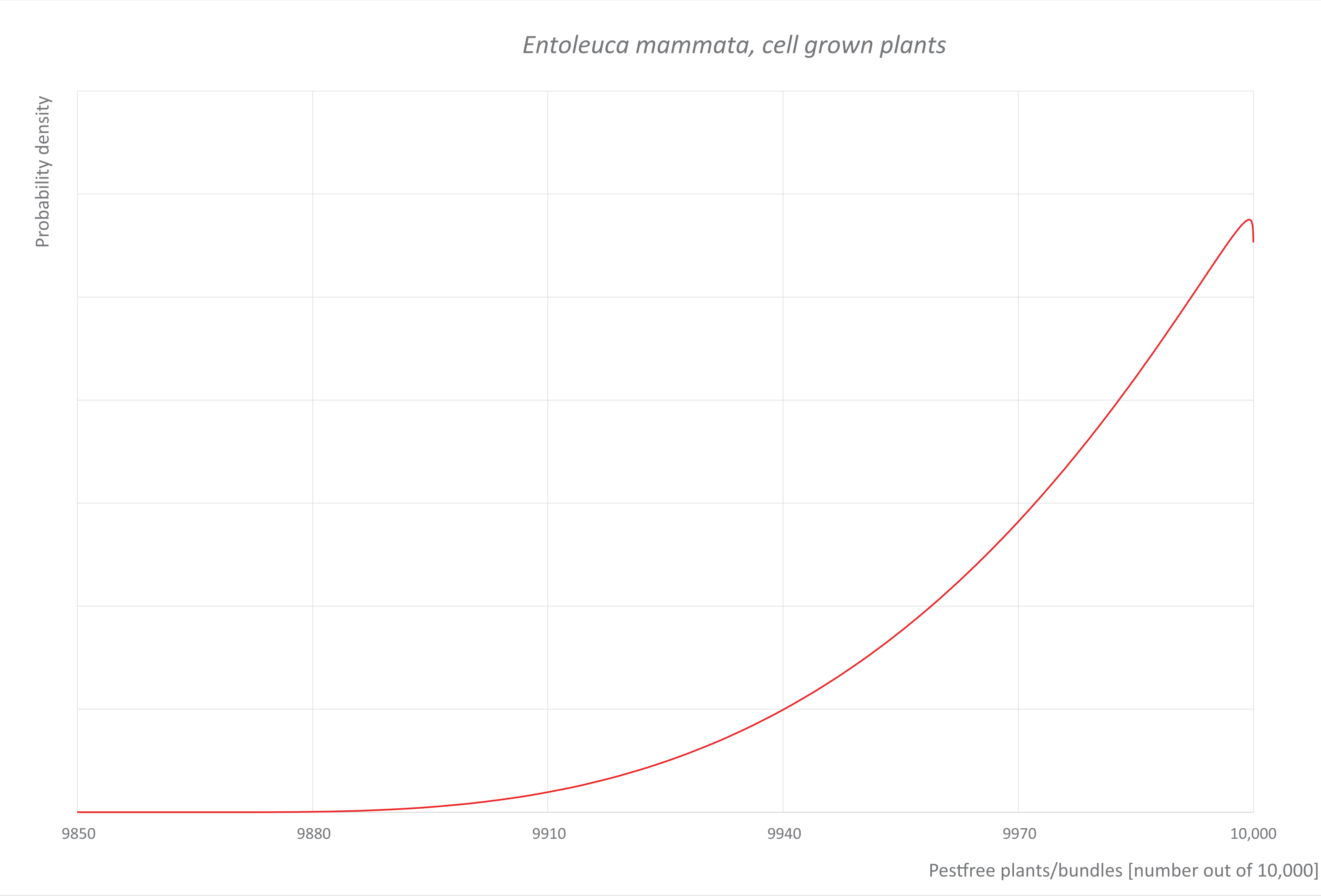
Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9910					9960		9980		9990					10,000
EKE results	9910	9921	9930	9942	9952	9961	9968	9979	9987	9991	9994	9996	9998	9999.1	9999.6

Note: The EKE results are the fitted values.



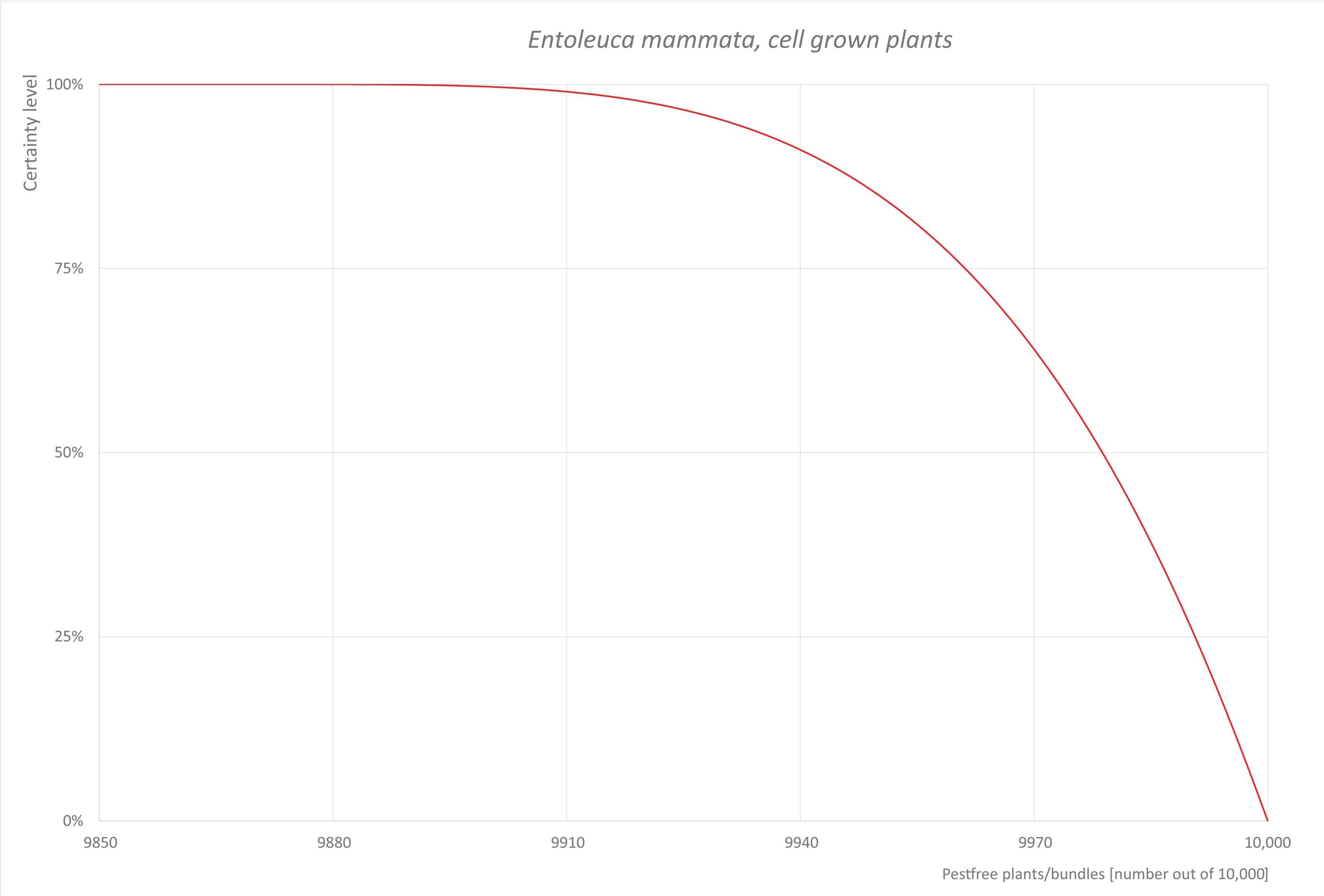
(A)

FIGURE A.6 (Continued)



(B)

FIGURE A.6 (Continued)



(C)

FIGURE A.6 (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.

A.2.8 | Overall likelihood of pest freedom for plants in pots

A.2.8.1 | Reasoning for a scenario which would lead to a reasonably low number of infected plants in pots

The scenario assumes the pest to be absent or with a low pressure in the nurseries and in the surroundings. Younger plants are exposed to the pathogen for only a short period of time. The scenario also assumes that symptoms of the disease are visible and promptly detected during inspections.

A.2.8.2 | 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. Older plants are exposed to the pathogen for a longer period of time. The scenario also assumes that symptoms of the disease are not easily recognisable during inspections and that infections are asymptomatic.

A.2.8.3 | 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 that the plants are exposed to the pathogen for a sufficient period of time to cause infection through mechanical wounds. *Salix* species are suitable hosts.

A.2.8.4 | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/interquartile range)

The limited information on occurrence of the pathogen in the UK including the nurseries and the surroundings results in high level of uncertainties for infection 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.2.8.5 | Elicitation outcomes of the assessment of the pest freedom for *Entoleuca mammata* on plants in pots

The following Tables show the elicited and fitted values for pest infection (Table A.13) and pest freedom (Table A.14).

TABLE A.13 Elicited and fitted values of the uncertainty distribution of pest infestation by *Entoleuca mammata* per 10,000 plants.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0					20		39		80					170
EKE	0.604	1.56	3.22	6.69	11.6	18.2	25.4	42.2	63.6	77.3	94.6	114	135	153	171

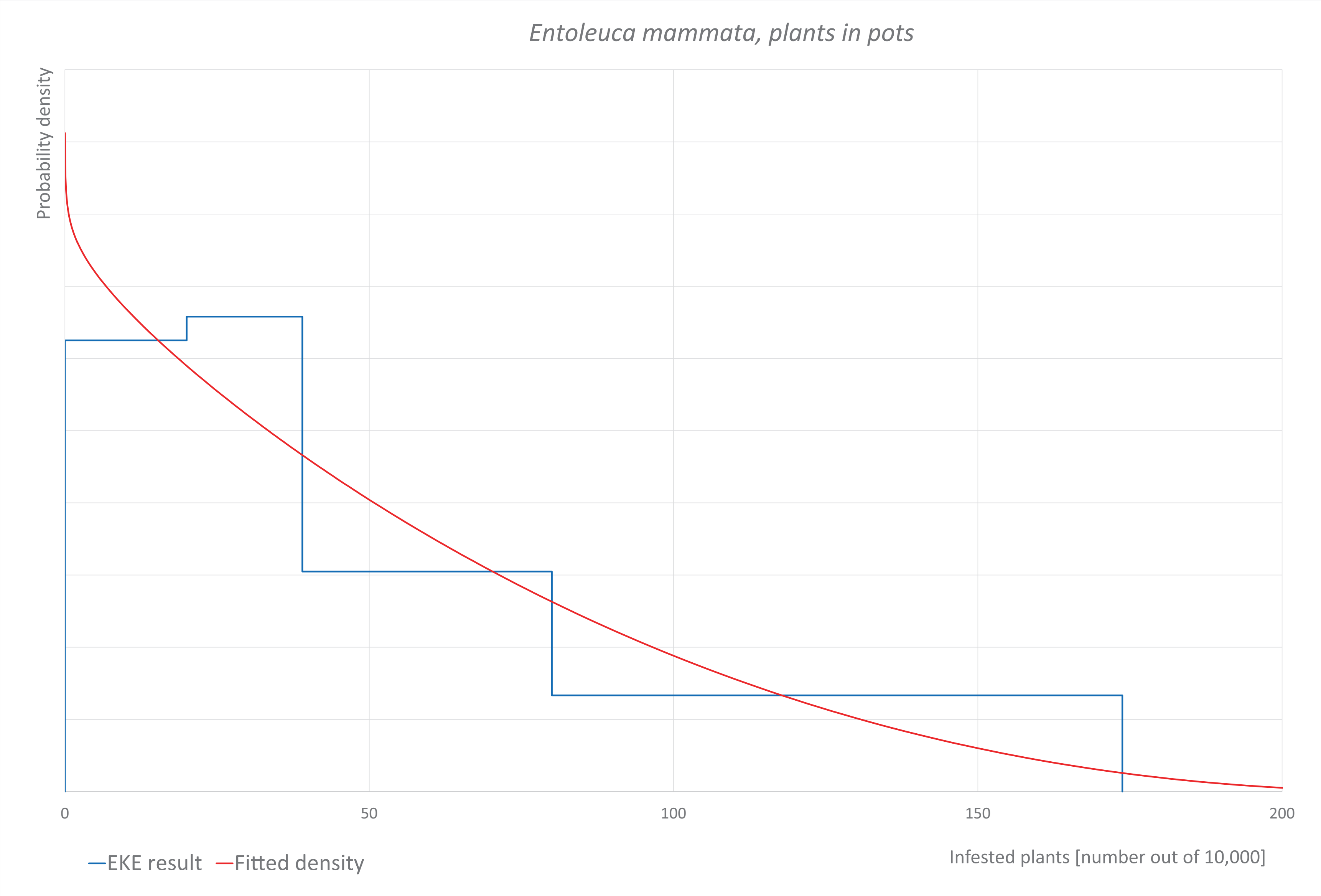
Note: The EKE results is the BetaGeneral (0.96971, 3.2104, 0, 225) distribution fitted with @Risk version 7.6.

Based on the numbers of estimated infected bundles the pest freedom was calculated (i.e. = 10,000 – number of infected plants per 10,000). The fitted values of the uncertainty distribution of the pest freedom are shown in Table A.14.

TABLE A.14 The uncertainty distribution of plants free of *Entoleuca mammata* per 10,000 plants calculated by Table A.13.

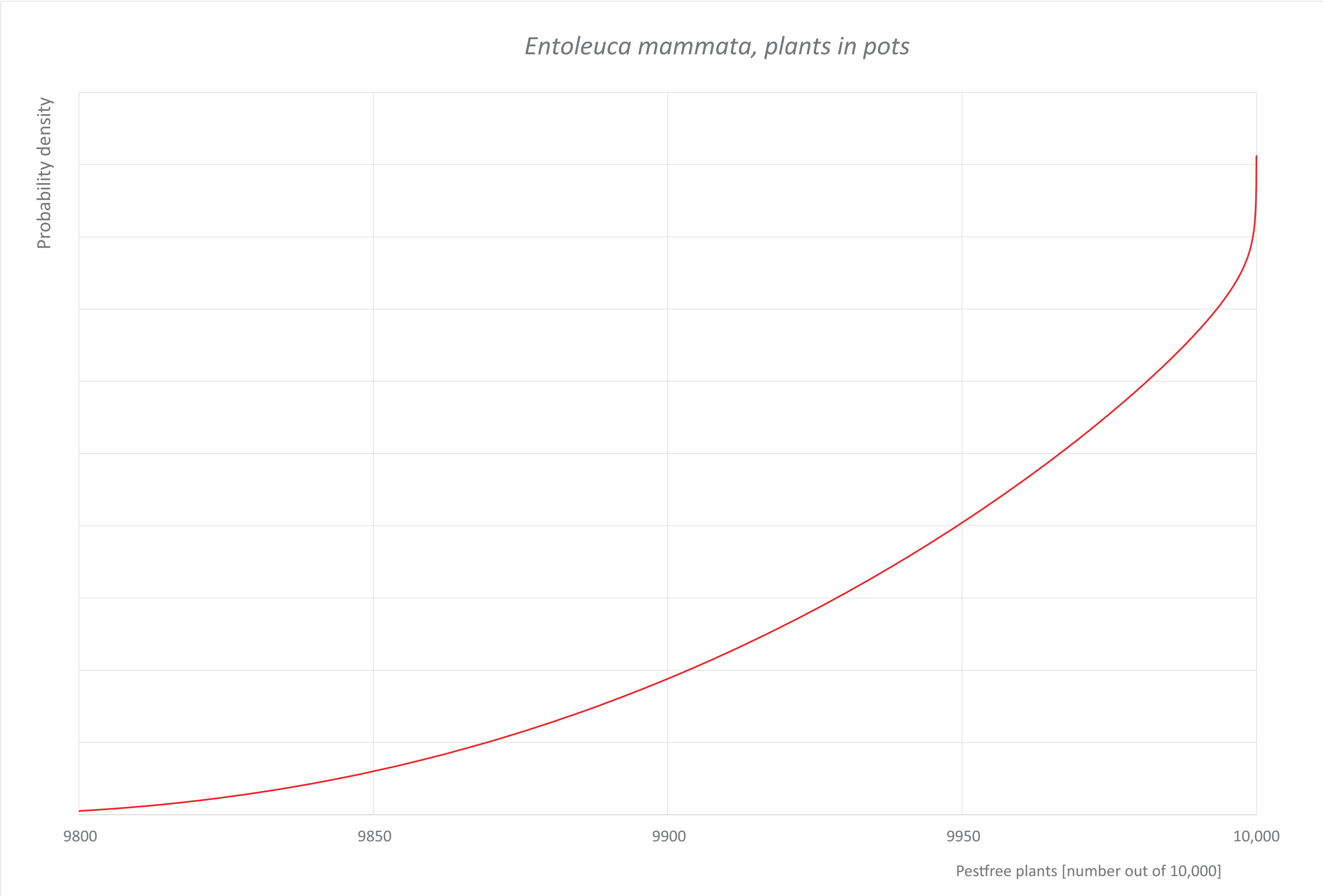
Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9830					9920		9961		9980					10,000
EKE results	9829	9847	9865	9886	9905	9923	9936	9958	9975	9982	9988	9993	9997	9998	9999.4

Note: The EKE results are the fitted values.



(A)

FIGURE A.7 (Continued)



(B)

FIGURE A.7 (Continued)

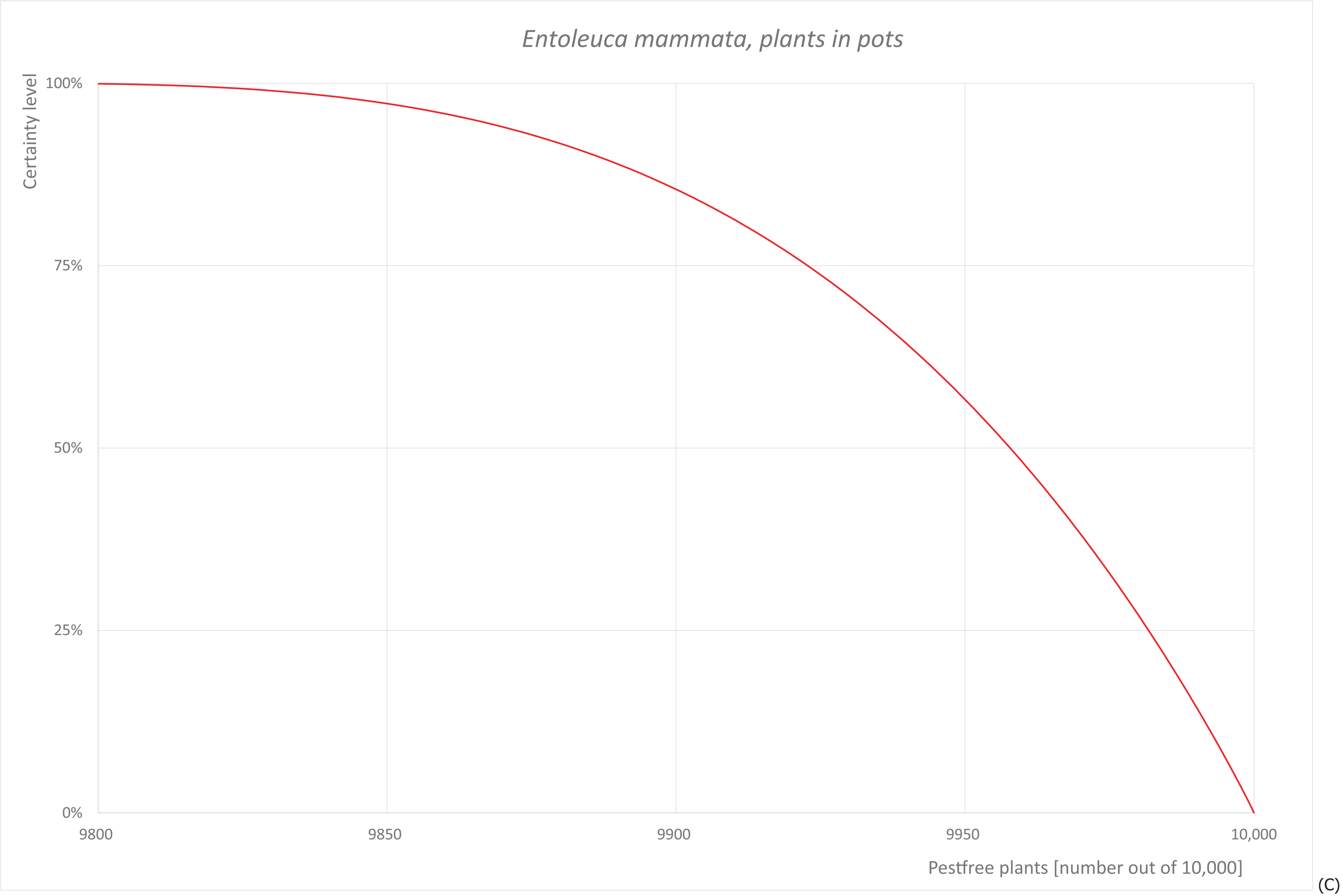


FIGURE A.7 (A) Elicited uncertainty of pest infection per 10,000 plants (histogram in blue – vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (B) uncertainty of the proportion of pest-free plants per 10,000 (i.e. = 1 – pest infection proportion expressed as percentage); (C) descending uncertainty distribution function of pest infection per 10,000 plants.

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A.3 | *PHYTOPHTHORA RAMORUM* (NON-EU ISOLATES)

A.3.1 | 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

(Continues)

(Continued)

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, Serbia, Switzerland, Türkiye and EAEU (=Eurasian Economic Union: Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia) (EPPO, 2024b).
Pest status in the UK	*Phytophthora ramorum* is present in the UK (Brown & Brasier, 2007; Dossier Section 2.0; CABI, 2020; EPPO, 2024c). According to the Dossier Section 2.0, European isolates of *P. ramorum* are present in the UK: not widely distributed and under official control. It has been found in most regions of the UK, but it is more often reported in wetter, western regions.
Pest status in the EU	*Phytophthora ramorum* is present in the EU and it is currently reported in the following EU MSs: Belgium, Croatia, Denmark, Finland (transient), France, Germany, Ireland, Luxembourg, the Netherlands, Poland, Portugal and Slovenia (EPPO, 2024c).
Host status on *Salix caprea* and *S. cinerea*	*Salix caprea* is reported as a proven host of *P. ramorum* as Koch's postulates have been completely fulfilled (APHIS USDA, 2022; Cave et al., 2008). According to ANSES (2018) *S. caprea* has a low to moderate susceptibility towards *P. ramorum*, with high uncertainty. There is no information on whether *P. ramorum* can also attack *Salix cinerea*. However, the pathogen has been reported as associated with another *Salix* species (i.e. *Salix babylonica*) (APHIS USDA, 2022).
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 Panel on Plant Health, 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 to other close or carried by wind and rain to 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). *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 (Davidson et al., 2002; Brasier, 2008). 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 *P. 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).

(Continued)

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. According to Sandsford et al. (2009) *P. ramorum* causes leaf blight and dieback on *S. caprea*. There is no information on the symptoms caused to other *Salix* spp. plants.
	Presence of asymptomatic plants	If roots are infected by *P. ramorum*, the plants can be without aboveground symptoms for months until 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 (EPPO, 2006).
Host plant range	*Phytophthora ramorum* has a very wide host range, which is expanding. Main host plants include *Camellia* spp., *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*, *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*, *Kalmia* spp., *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* (Cave et al., 2008; APHIS USDA, 2022; EPPO, 2024d; Farr & Rossman, 2024).	
Reported evidence of impact	*Phytophthora ramorum* is an EU quarantine pest.	
Evidence that the commodity is a pathway	*Phytophthora ramorum* was continuously intercepted in the EU on different plant species intended for planting (EUROPHYT, 2024; TRACES-NT, 2024) and according to EFSA PLH Panel (2011), *P. ramorum* can travel with plants for planting. Therefore, plants for planting are a possible pathway of entry for *P. ramorum*.	
Surveillance information	*Phytophthora ramorum*: at growing sites: infested plants are destroyed and potentially infested plants are 'held' (prohibited from moving). The UK has a containment policy in the wider environment with official action taken to remove infected trees (Dossier Sections 1.1 and 1.2). As part of an annual survey at ornamental retail and production sites (frequency of visits determined by a decision matrix), *P. 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 Sections 1.1 and 1.2). *Salix* is a component of the annual ornamental survey which covers many taxa. Whilst *Salix* is primarily targeted for *Phytophthora ramorum*, the UK inspectors look for a range of symptoms that may indicate pest and diseases across multiple hosts (Dossier Section 5.1).	

A.3.2 | Possibility of pest presence in the nursery

A.3.2.1 | 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 wetter, western regions (Dossier Section 2.0).

The possible entry of *P. ramorum* from surrounding environment to the nurseries may occur through aerial dissemination, water, animals, machinery and footwear (Brasier, 2008; Davidson et al., 2002).

Phytophthora ramorum has wide host range and can infect number of different plants. Suitable plants like *Acer pseudoplatanus*, *Camellia* spp., *Castanea sativa, Fagus sylvatica, Fraxinus* spp., *Larix kaempferi*, *Larix* spp., *Quercus robur*, *Quercus* spp., *Prunus laurocerasus*, *Rhododendron* spp., *Taxus baccata* and *Viburnum* spp. are present in hedges and woodland in the surrounding areas of nurseries (Dossier Sections 1.1, 1.2 and 5.1).

Uncertainties:

- The dispersal range of *P. ramorum* sporangia.
- distance of the nurseries to sources of 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 surrounding environment. In the surrounding area, suitable hosts are present and the pathogen can spread by wind, rain and infested soil propagules on feet of animals entering the nurseries.

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

The starting materials of *S. caprea* and *S. cinerea* are either seeds, seedlings or cuttings. Seeds and seedlings are either from the UK (certified with UK Plant Passports) or the EU (mostly the Netherlands, Belgium and France) (certified with phytosanitary certificates) (Dossier Sections 1.1 and 1.2).

In addition to *Salix* plants, the nurseries also produce other plants (Dossier Sections 3.1, 3.2 and 5.1). These include many suitable hosts for the pathogen (such as *Abies* spp., *Acer* spp., *Arbutus* spp., *Calluna* spp., *Castanea sativa*, *Castanea* spp., *Fagus sylvatica*, *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 Sections 1.1 and 1.2). *Phytophthora ramorum* is able to survive in soil (Shishkoff, 2007) and therefore could potentially enter with infested soil/growing media. However, the growing media is certified and heat-treated by commercial suppliers during production to eliminate pests and diseases (Dossier Sections 1.1 and 1.2).

Uncertainties:

- No information is available on the provenance of plants other than *Salix* used for plant production in the area of 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 *Salix* 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.3.2.3 | Possibility of spread within the nursery

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

The pathogen can infect other suitable plants (such as *Abies* spp., *Acer* spp., *Arbutus* spp., *Calluna* spp., *Castanea sativa*, *Castanea* spp., *Fagus sylvatica*, *Fagus* spp., *Larix* spp., *Quercus* spp., *Prunus* spp., *Viburnum* spp., etc.) present within the nurseries and hedges surrounding the nurseries (*Prunus* spp., *Taxus baccata*) (Dossier Sections 1.1, 1.2, 3.1, 3.2 and 5.1).

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

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.3.3 | Information from interceptions

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

A.3.4 | Evaluation of the risk mitigation measures

In the table below, all risk mitigation measures currently applied in the UK are listed and an indication of their effectiveness on *P. ramorum* is provided. The description of the risk mitigation measures currently applied in the UK is provided in the Table 7.

N	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Registration of production sites	Yes	The registration and the release of the UK plant passport should be enough to warrant pest-free plant material for a quarantine pest in the UK. *Phytophthora ramorum* is a quarantine organism in the UK and targeted by this measure. Uncertainties: – Whether disease symptoms on *Salix* sp. and other host plants are recognisable during plant passport inspections.
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 *Salix* sp. 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 *Salix* sp. and other host plants are recognisable, particularly at an early stage of infection
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 measures	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	Yes	This measure could have some effect by preventing root contact with soil where the pathogen may be present. Uncertainties: – None.
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 *Salix* sp. are recognisable, particularly at an early stage of infection.
12	Separation during transport to the destination	No	Not relevant

A.3.5 | Overall likelihood of pest freedom for cuttings/graftwood

A.3.5.1 | Reasoning for a scenario which would lead to a reasonably low number of infected cuttings/graftwood

The scenario assumes a low pressure of the pathogen in the nurseries and in the surroundings. The plants are exposed to the pathogen for only short period of time. The scenario assumes *Salix* spp. to be minor hosts for the pathogen. The scenario also assumes that symptoms of the disease are visible and promptly detected during inspections.

A.3.5.2 | Reasoning for a scenario which would lead to a reasonably high number of infected cuttings/graftwood

The scenario assumes a high pressure of the pathogen in the nurseries and in the surroundings as suitable hosts are present. The scenario assumes that the pathogen causes bark infections on the commodity. The scenario also assumes that symptoms of the disease are not easily recognisable during inspections.

A.3.5.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infected cuttings/graftwood (Median)

The scenario assumes a limited presence of the pathogen in the nurseries and the surroundings, and a limited susceptibility of *Salix* spp. The pathogen is a regulated quarantine pest in the UK and under official control.

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

The limited information on the occurrence of the pathogen in the nurseries and the surroundings and on the susceptibility of *Salix* spp. results in high level of uncertainties for infection 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.3.5.5 | Elicitation outcomes of the assessment of the pest freedom for *Phytophthora ramorum* (non-EU isolates) on cuttings/graftwood

The following Tables show the elicited and fitted values for pest infection (Table A.15) and pest freedom (Table A.16).

TABLE A.15 Elicited and fitted values of the uncertainty distribution of pest infection by *Phytophthora ramorum* (non-EU isolates) per 10,000 bundles.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0					8		15		35					70
EKE	0.117	0.365	0.865	2.06	3.96	6.68	9.79	17.3	27.1	33.3	41.0	49.1	57.7	64.1	70.1

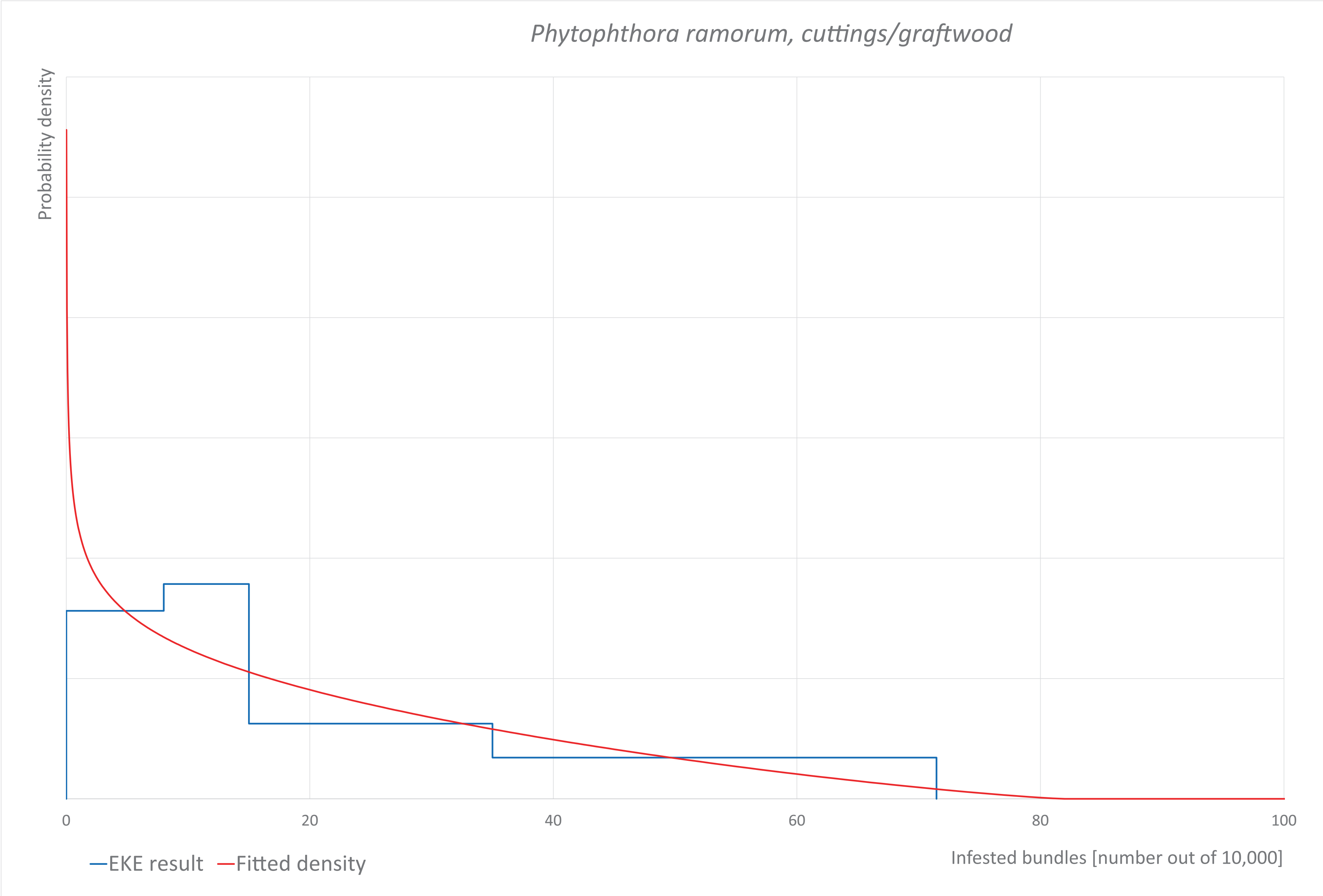
Note: The EKE results is the BetaGeneral (0.80639, 2.2251, 0, 82) distribution fitted with @Risk version 7.6.

Based on the numbers of estimated infected bundles the pest freedom was calculated (i.e. = 10,000 – number of infected bundles per 10,000). The fitted values of the uncertainty distribution of the pest freedom are shown in Table A.16.

TABLE A.16 The uncertainty distribution of plants free of *Phytophthora ramorum* (non-EU isolates) per 10,000 bundles calculated by Table A.15.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9930					9965		9985		9992					10,000
EKE results	9930	9936	9942	9951	9959	9967	9973	9983	9990	9993	9996	9998	9999.1	9999.6	9999.9

Note: The EKE results are the fitted values.



(A)

FIGURE A.8 (Continued)

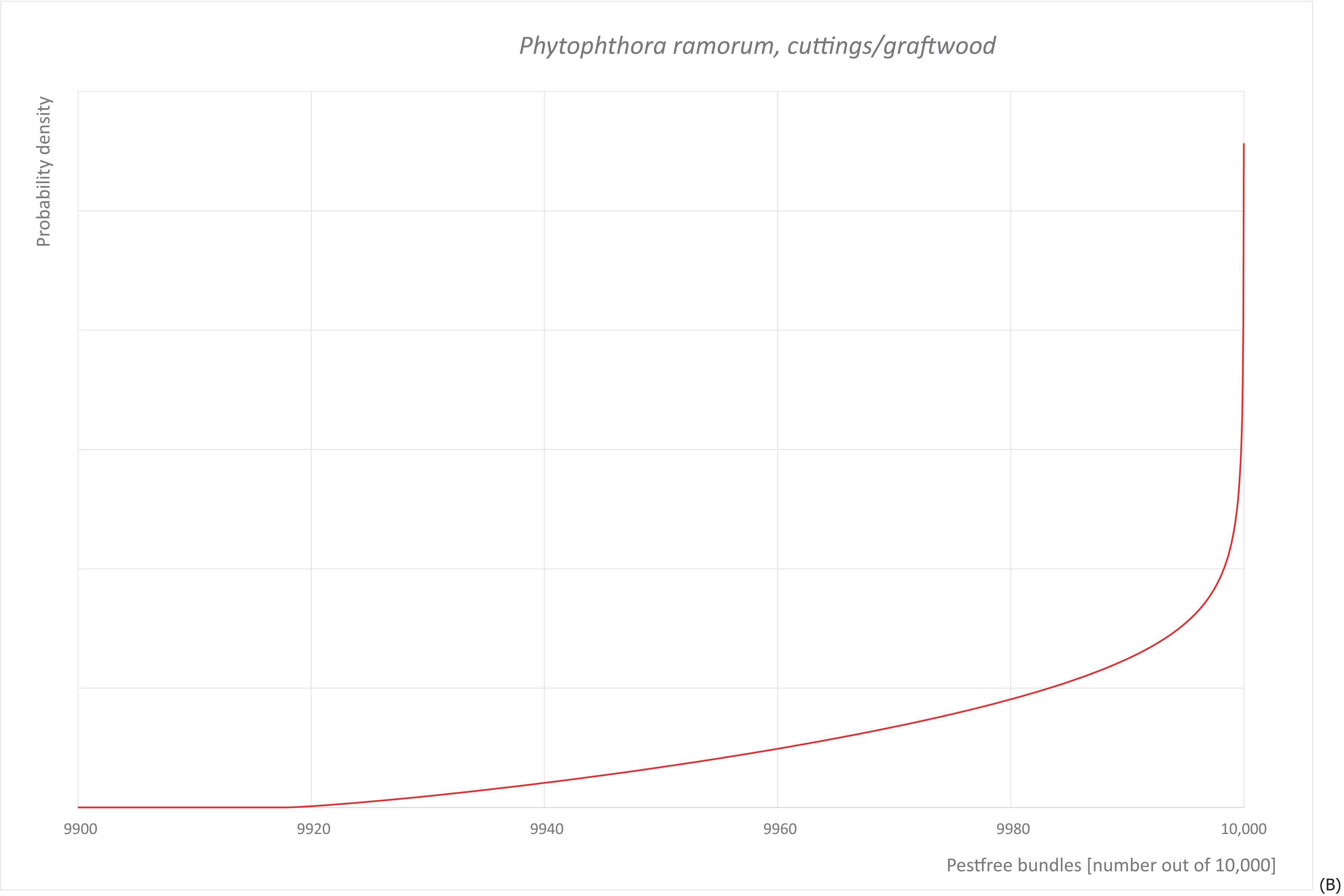
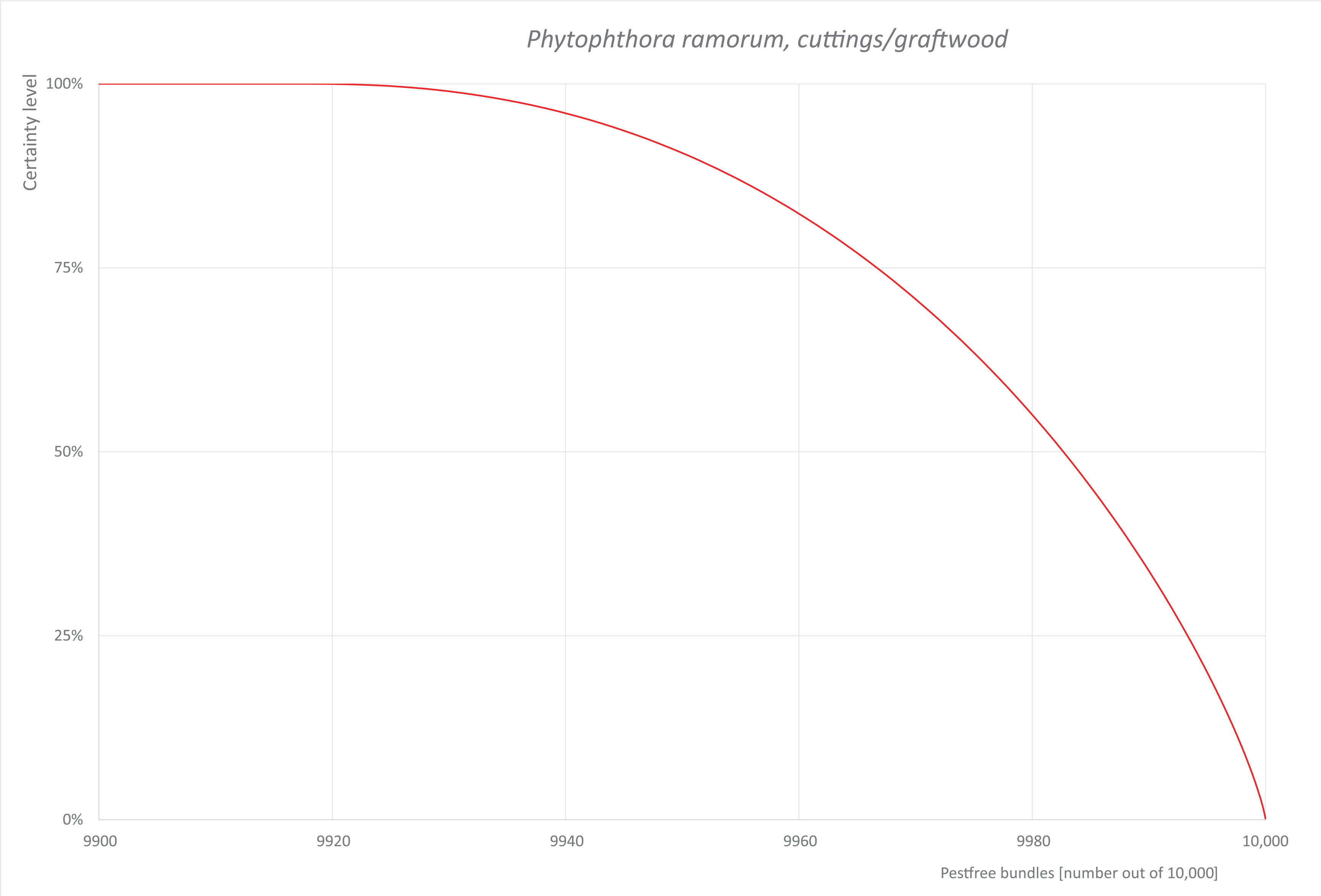


FIGURE A.8 (Continued)



(C)

FIGURE A.8 (A) Elicited uncertainty of pest infection per 10,000 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 bundles per 10,000 (i.e. = 1 – pest infection proportion expressed as percentage); (C) descending uncertainty distribution function of pest infection per 10,000 bundles.

A.3.6 | Overall likelihood of pest freedom for bare root plants

A.3.6.1 | 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 plants are exposed to the pathogen for only short period of time and are exported without leaves. The scenario assumes *Salix* spp. to be minor hosts for the pathogen. The scenario also assumes that symptoms of the disease are visible and promptly detected during inspections.

A.3.6.2 | 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 scenario assumes that the pathogen infects bark and leaves, which may still be present on the plants at the time of export. Older trees are more likely to become infected due to longer exposure time and larger size. The scenario also assumes that symptoms of the disease are not easily recognisable during inspections.

A.3.6.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infected bare root plants (Median)

The scenario assumes a limited presence of the pathogen in the nurseries and the surroundings, and a limited susceptibility of *Salix* spp. The pathogen is a regulated quarantine pest in the UK and under official control.

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

The limited information on the occurrence of the pathogen in the nurseries and the surroundings and on the susceptibility of *Salix* spp. results in high level of uncertainties for infection 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.3.6.5 | Elicitation outcomes of the assessment of the pest freedom for *Phytophthora ramorum* (non-EU isolates) on bare root plants

The following Tables show the elicited and fitted values for pest infection (Table A.17) and pest freedom (Table A.18).

TABLE A.17 Elicited and fitted values of the uncertainty distribution of pest infection by *Phytophthora ramorum* (non-EU isolates) 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	0					25		50		95					250
EKE	1.43	3.10	5.60	10.3	16.4	24.2	32.5	51.5	76.6	93.4	116	143	178	211	251

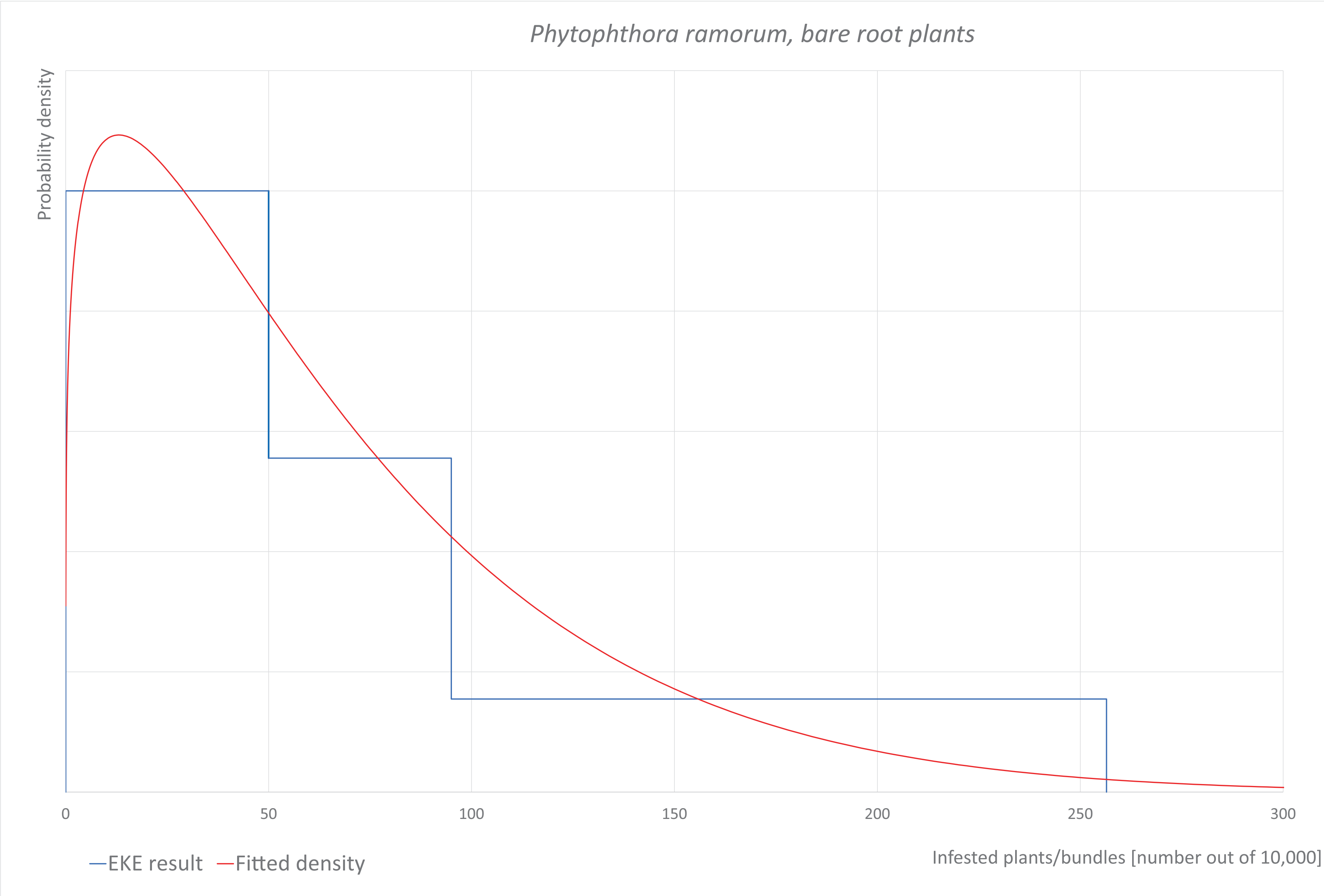
Note: The EKE results is the BetaGeneral (1.2038, 12.944, 0, 780) distribution fitted with @Risk version 7.6.

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.18.

TABLE A.18 The uncertainty distribution of plants free of *Phytophthora ramorum* (non-EU isolates) per 10,000 plants/bundles calculated by Table A.17.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9750					9905		9950		9975					10,000
EKE results	9749	9789	9822	9857	9884	9907	9923	9948	9968	9976	9984	9990	9994	9997	9999

Note: The EKE results are the fitted values.



(A)

FIGURE A.9 (Continued)

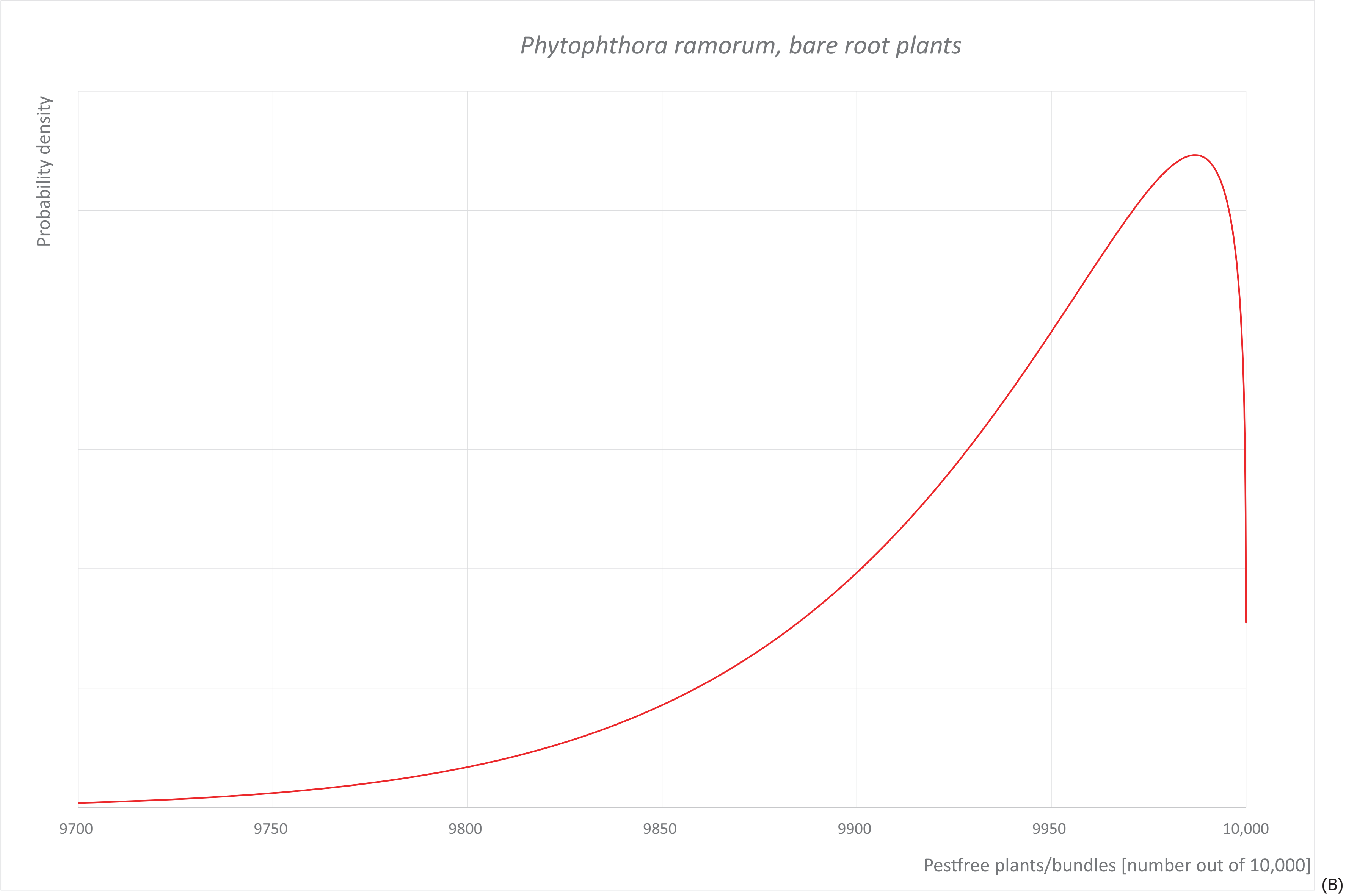


FIGURE A.9 (Continued)

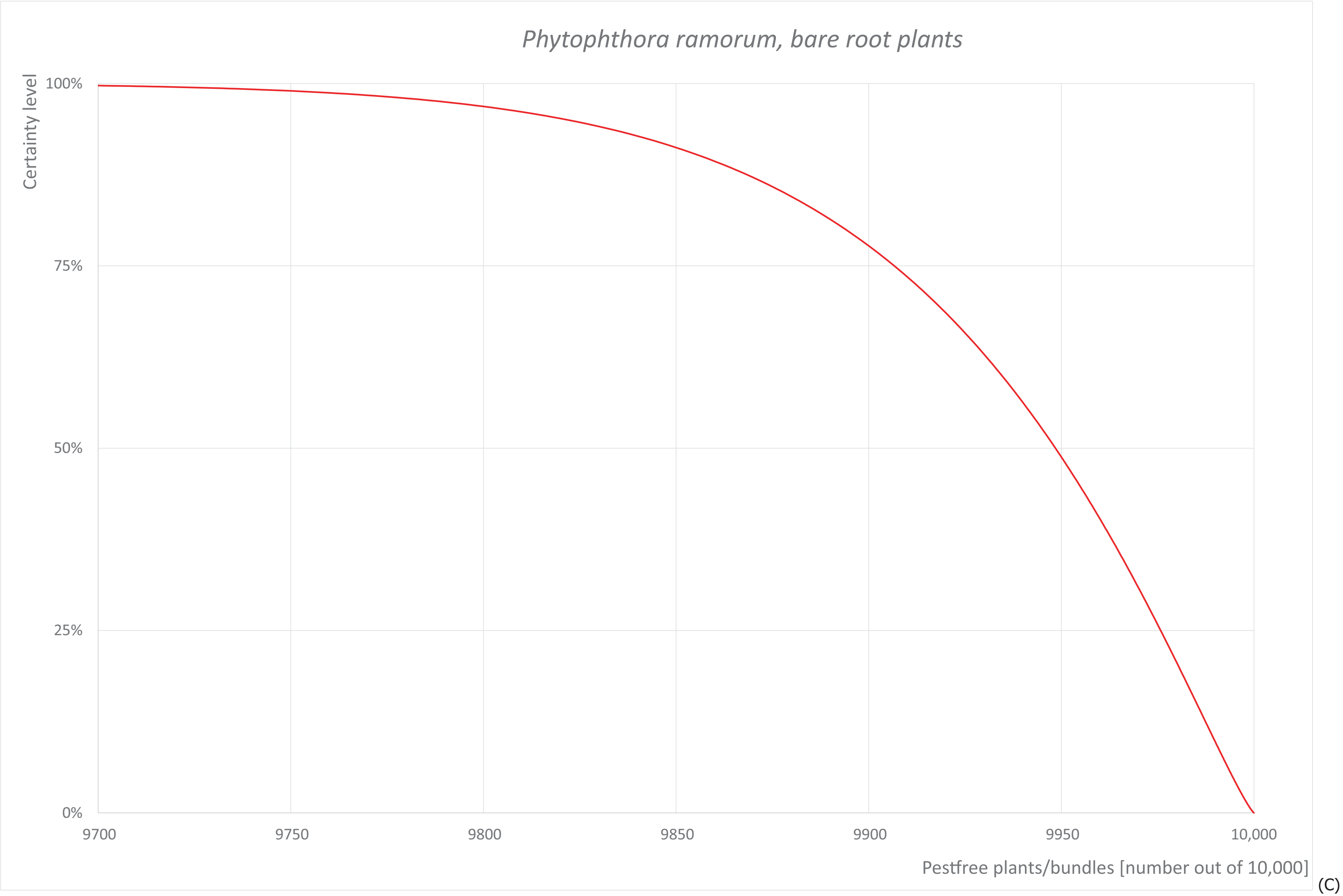


FIGURE A.9 (A) Elicited uncertainty of pest infection per 10,000 plants/bundles (histogram in blue – vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (B) uncertainty of the proportion of pest-free plants/bundles per 10,000 (i.e. = 1 – pest infection proportion expressed as percentage); (C) descending uncertainty distribution function of pest infection per 10,000 plants/bundles.

A.3.7 | Overall likelihood of pest freedom for cell grown plants

A.3.7.1 | Reasoning for a scenario which would lead to a reasonably low number of infected cell grown plants

The scenario assumes a low pressure of the pathogen in the nurseries and in the surroundings. Younger plants are exposed to the pathogen for only short period of time. The scenario assumes *Salix* spp. to be a minor hosts for the pathogen. The scenario also assumes that symptoms of the disease are visible and promptly detected during inspections.

A.3.7.2 | Reasoning for a scenario which would lead to a reasonably high number of infected cell grown plants

The scenario assumes a high pressure of the pathogen in the nurseries and in the surroundings as suitable hosts are present. The scenario assumes that the pathogen infects bark and leaves, which are present on the plants at the time of export. The scenario also assumes that symptoms of the disease are not easily recognisable during inspections.

A.3.7.3 | Reasoning for a central scenario equally likely to over- or underestimate the number of infected cell grown plants (Median)

The scenario assumes a limited presence of the pathogen in the nurseries and the surroundings, and a limited susceptibility of *Salix* spp. The pathogen is a regulated quarantine pest in the UK and under official control.

A.3.7.4 | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/interquartile range)

The limited information on the occurrence of the pathogen in the nurseries and the surroundings and on the susceptibility of *Salix* spp. results in high level of uncertainties for infection 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.3.7.5 | Elicitation outcomes of the assessment of the pest freedom for *Phytophthora ramorum* (non-EU isolates) on cell grown plants

The following Tables show the elicited and fitted values for pest infection (Table A.19) and pest freedom (Table A.20).

TABLE A.19 Elicited and fitted values of the uncertainty distribution of pest infection by *Phytophthora ramorum* (non-EU isolates) 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	0					22		45		80					200
EKE	1.45	3.04	5.37	9.63	15.1	21.9	29.0	45.2	66.1	79.8	98.0	120	147	171	201

Note: The EKE results is the BetaGeneral (1.2583, 9.4279, 0, 480) distribution fitted with @Risk version 7.6.

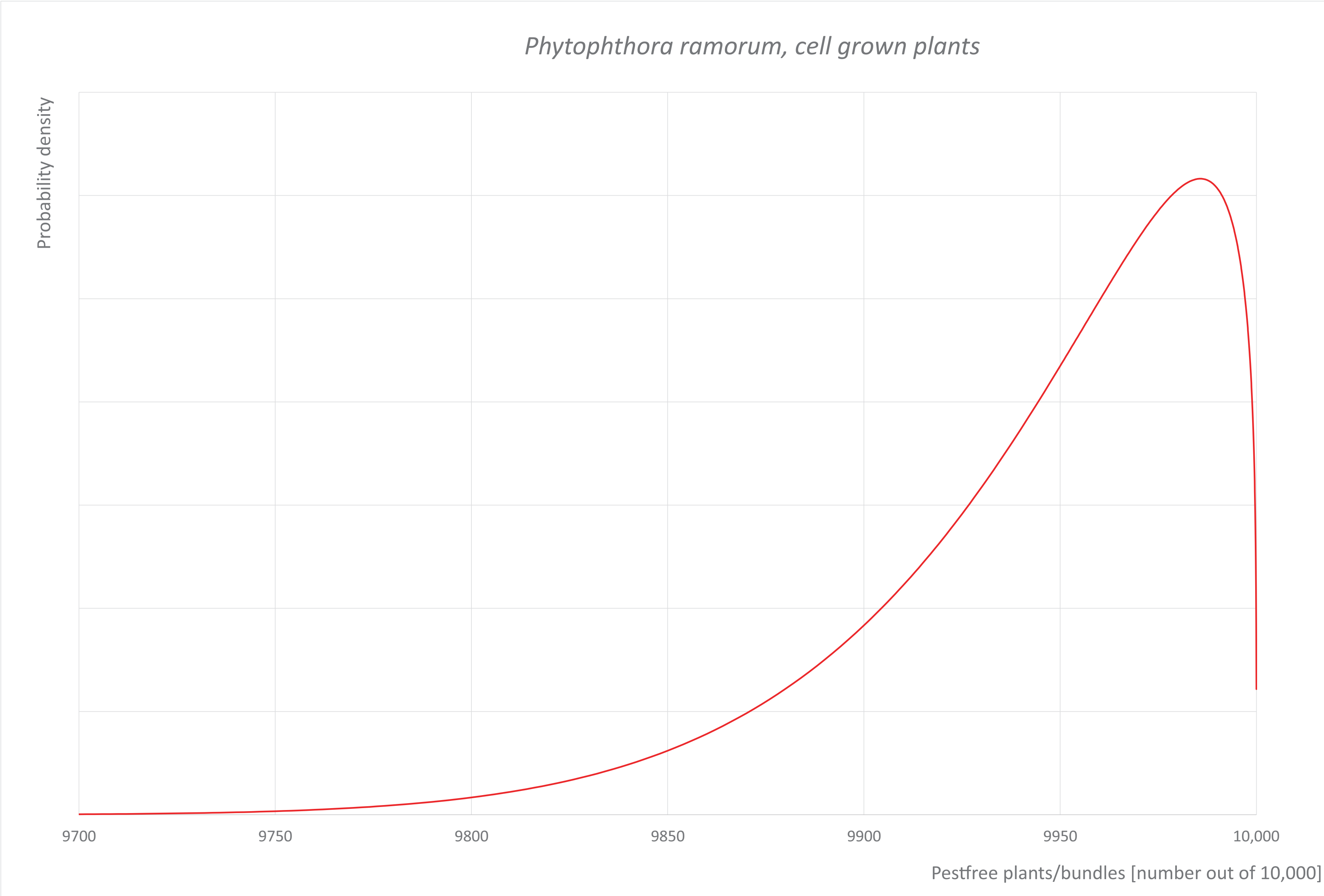
Based on the numbers of estimated infected bundles the pest freedom was calculated (i.e. = 10,000 – number of infected plants/bundles per 10,000). The fitted values of the uncertainty distribution of the pest freedom are shown in Table A.20.

TABLE A.20 The uncertainty distribution of plants free of *Phytophthora ramorum* (non-EU isolates) per 10,000 plants/bundles calculated by Table A.19.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9800					9920		9955		9978					10,000
EKE results	9799	9829	9853	9880	9902	9920	9934	9955	9971	9978	9985	9990	9995	9997	9999

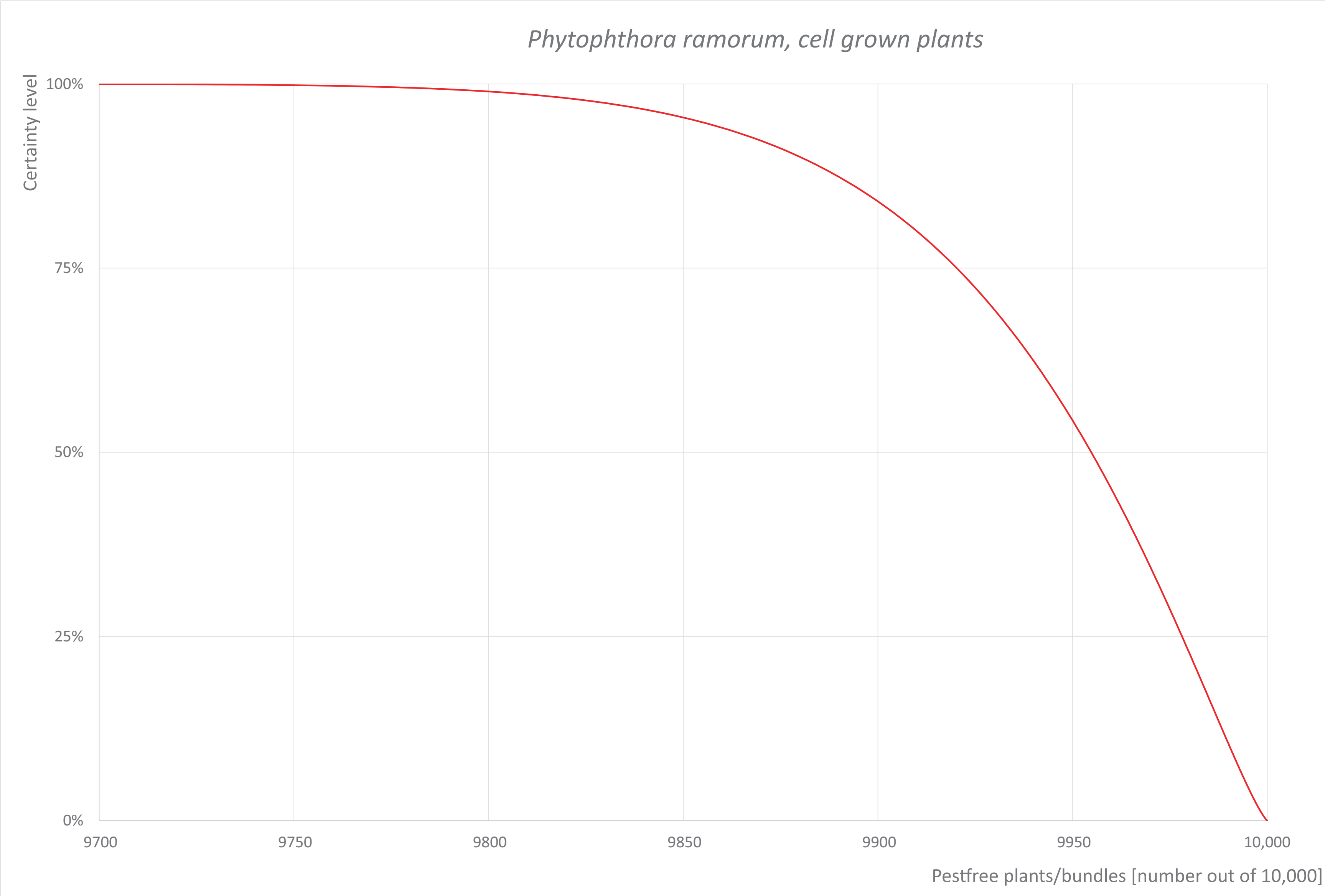
Note: The EKE results are the fitted values.

FIGURE A.10 (Continued)



(B)

FIGURE A.10 (Continued)



(C)

FIGURE A.10 (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.

A.3.8 | Overall likelihood of pest freedom for plants in pots

A.3.8.1 | 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. Plants are exported without leaves. The scenario assumes *Salix* spp. to be minor hosts for the pathogen. The scenario also assumes that symptoms of the disease are visible and promptly detected during inspections.

A.3.8.2 | 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 scenario assumes that the pathogen infects bark and leaves, which are present on the plants at the time of export. Older trees are more likely to become infected due to longer exposure time and larger size. The scenario also assumes that symptoms of the disease are not easily recognisable during inspections.

A.3.8.3 | 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 *Salix* spp. Most of the trees will be younger than 15 years at the time of export. The pathogen is a regulated quarantine pest in the UK and under official control.

A.3.8.4 | Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/interquartile range)

The limited information on the occurrence of the pathogen in the nurseries and the surroundings and on the susceptibility of *Salix* spp. results in high level of uncertainties for infection 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.3.8.5 | Elicitation outcomes of the assessment of the pest freedom for *Phytophthora ramorum* (non-EU isolates) on plants in pots

The following Tables show the elicited and fitted values for pest infection (Table A.21) and pest freedom (Table A.22).

TABLE A.21 Elicited and fitted values of the uncertainty distribution of pest infection by *Phytophthora ramorum* (non-EU isolates) per 10,000 plants.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0					35		70		145					350
EKE	1.17	2.94	5.93	12.1	20.8	32.4	45.1	75.0	114	140	174	214	262	303	350

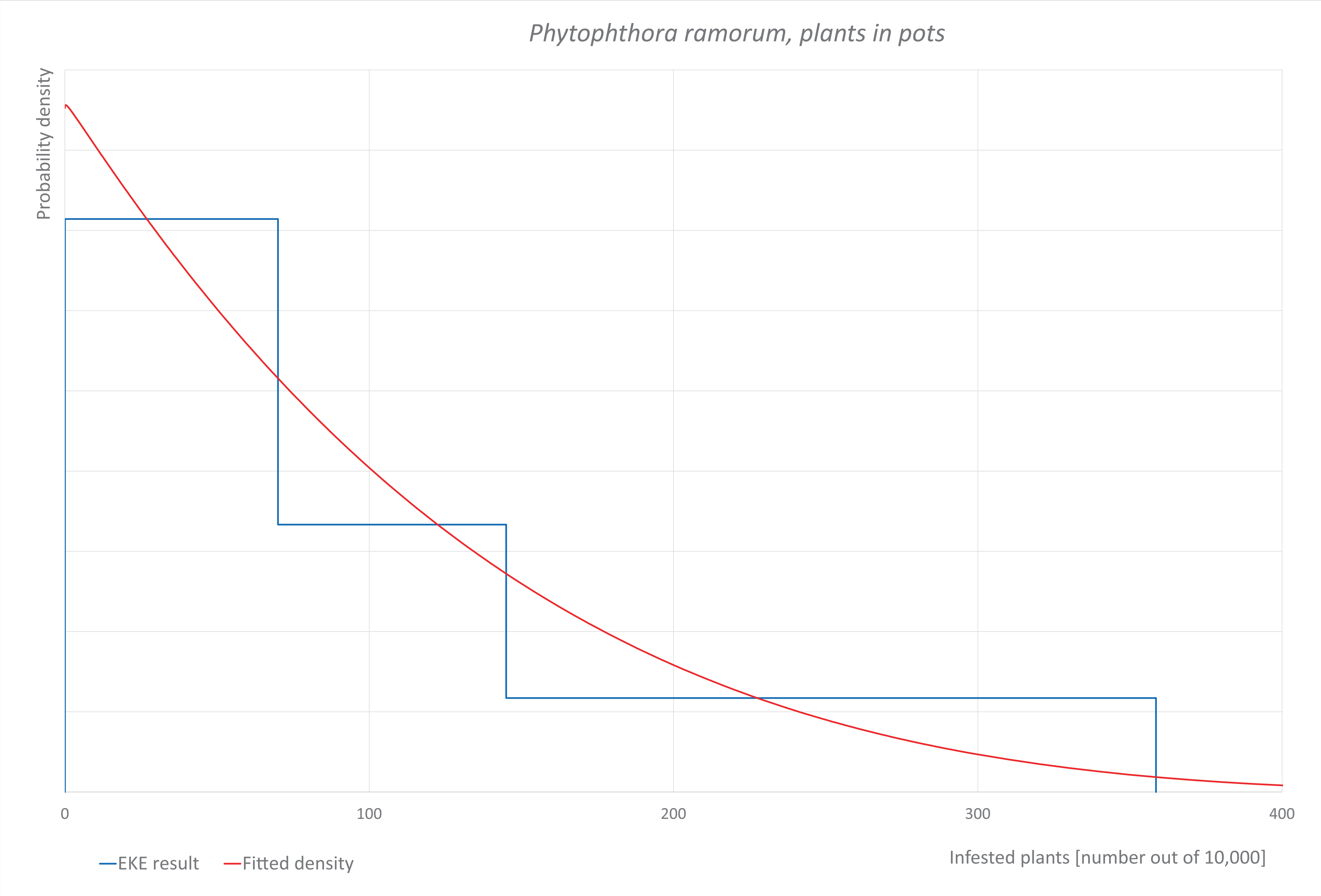
Note: The EKE results is the BetaGeneral (1.0019, 5.1135, 0, 590) distribution fitted with @Risk version 7.6.

Based on the numbers of estimated infected bundles the pest freedom was calculated (i.e. = 10,000 – number of infected plants per 10,000). The fitted values of the uncertainty distribution of the pest freedom are shown in Table A.22.

TABLE A.22 The uncertainty distribution of plants free of *Phytophthora ramorum* (non-EU isolates) per 10,000 plants calculated by Table A.21.

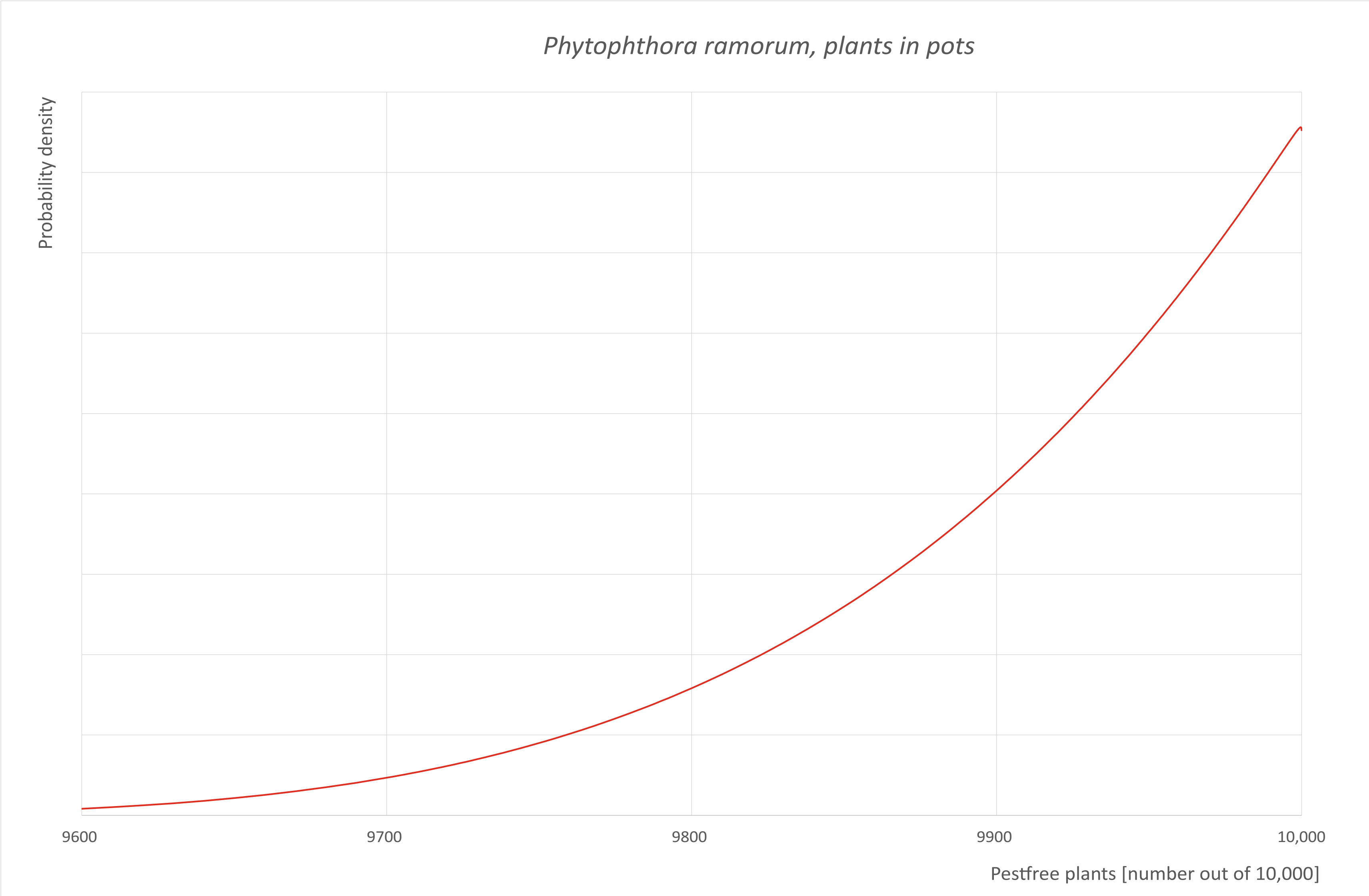
Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9650					9855		9930		9965					10,000
EKE results	9650	9697	9738	9786	9826	9860	9886	9925	9955	9968	9979	9988	9994	9997	9999

Note: The EKE results are the fitted values.



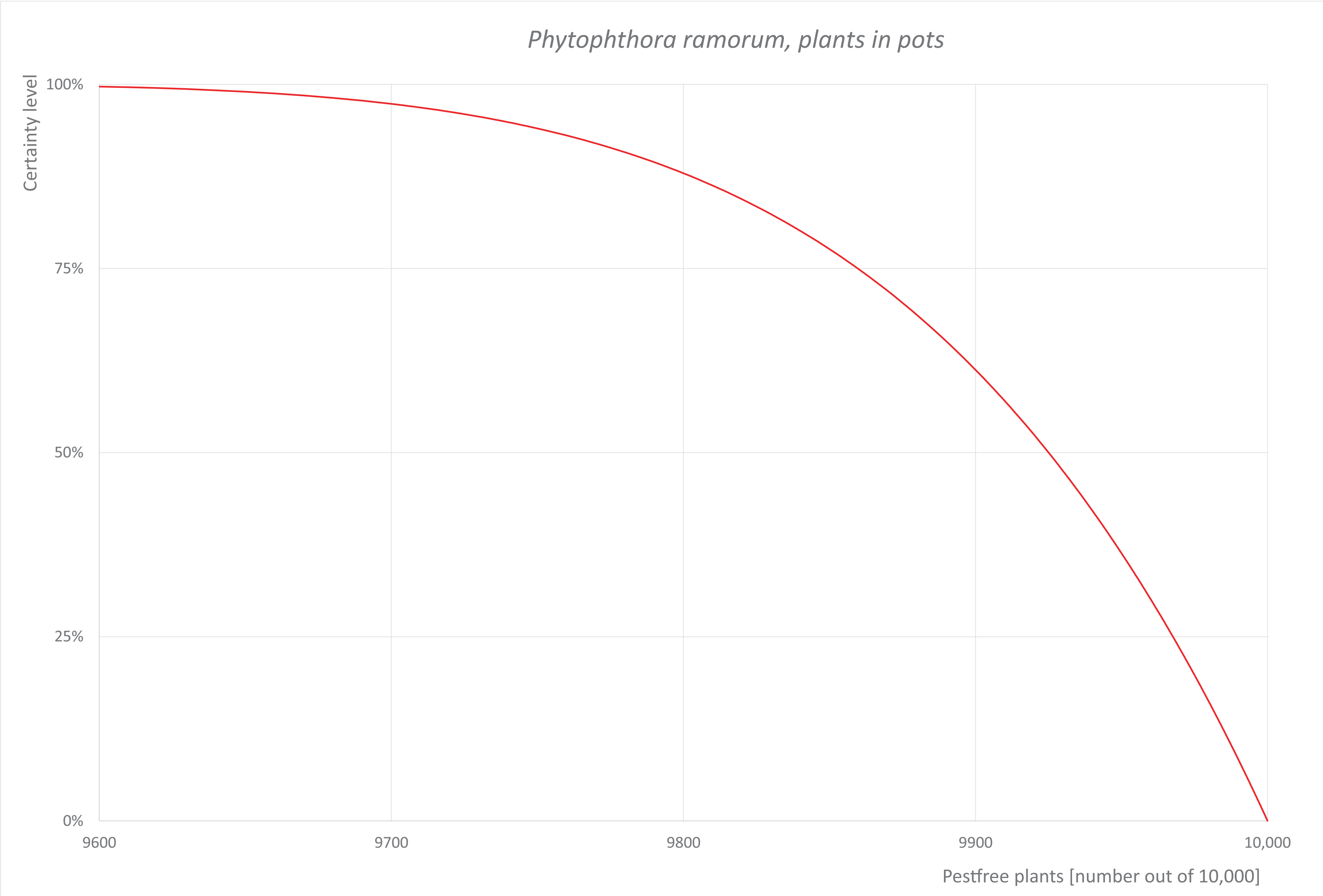
(A)

FIGURE A.11 (Continued)



(B)

FIGURE A.11 (Continued)



(C)

FIGURE A.11 (A) Elicited uncertainty of pest infection per 10,000 plants (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 per 10,000 (i.e. = 1 – pest infection proportion expressed as percentage); (C) descending uncertainty distribution function of pest infection per 10,000 plants.

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APPENDIX B

Web of Science All Databases Search String

In the Table B.1, the search string for *Salix caprea* used in Web of Science is reported. Totally, 392 papers were retrieved. Titles and abstracts were screened, and 39 pests were added to the list of pests (see Appendix F).

In the Table B.2, the search string for *Salix cinerea* used in Web of Science is reported. Totally, 229 papers were retrieved. Titles and abstracts were screened, and 25 pests were added to the list of pests (see Appendix F).

TABLE B.1 String for *Salix caprea*.

Web of Science All databases	**TOPIC:** "Salix caprea" OR "S. caprea" OR "Capraea vulgaris" OR "Nectopix caprea" OR "Salix caprea var. tomentosa" OR "Salix tomentosa" OR "common sallow" OR "goat willow" OR "great sallow" OR "palm willow" OR "pussy willow" **AND** **TOPIC:** pathogen* OR pathogenic bacteria OR fung* OR oomycet* OR myce* OR bacteri* OR virus* OR viroid* OR insect$ OR mite$ OR phytoplasm* OR arthropod* OR nematod* OR disease$ OR infecti* OR damag* OR symptom* OR pest$ OR vector OR hostplant$ OR "host plant$" OR host OR "root lesion$" OR decline$ OR infestation$ OR damage$ OR symptom$ OR dieback* OR "die back*" OR "malaise" OR aphid$ OR curculio OR thrip$ OR cicad$ OR miner$ OR borer$ OR weevil$ OR "plant bug$" OR spittlebug$ OR moth$ OR mealybug$ OR cutworm$ OR pillbug$ OR "root feeder$" OR caterpillar$ OR "foliar feeder$" OR virosis OR viroses OR blight$ OR wilt$ OR wilted OR canker OR scab$ OR rot OR rots OR rotten OR "damping off" OR "damping-off" OR blister$ OR "smut" OR mould OR mold OR "damping syndrome$" OR mildew OR scald$ OR "root knot" OR "root-knot" OR rootknot OR cyst$ OR "dagger" OR "plant parasitic" OR "parasitic plant" OR "plant$parasitic" OR "root feeding" OR "root$feeding" **NOT** **TOPIC:** "winged seeds" OR metabolites OR *tannins OR climate OR "maple syrup" OR syrup OR mycorrhiz* OR "carbon loss" OR pollut* OR weather OR propert* OR probes OR spectr* OR antioxidant$ OR transformation OR RNA OR DNA OR "Secondary plant metabolite$" OR metabol* OR "Phenolic compounds" OR Quality OR Abiotic OR Storage OR Pollen* OR fertil* OR Mulching OR Nutrient* OR Pruning OR drought OR "human virus" OR "animal disease*" OR "plant extracts" OR immunological OR "purified fraction" OR "traditional medicine" OR medicine OR mammal* OR bird* OR "human disease*" OR biomarker$ OR "health education" OR bat$ OR "seedling$ survival" OR "anthropogenic disturbance" OR "cold resistance" OR "salt stress" OR salinity OR "aCER method" OR "adaptive cognitive emotion regulation" OR nitrogen OR hygien* OR "cognitive function$" OR fossil$ OR *toxicity OR Miocene OR postglacial OR "weed control" OR landscape

TABLE B.2 String for *Salix cinerea*.

Web of Science All databases	**TOPIC:** "Salix cinerea" OR "S. cinerea" OR "Capraea cinerea" OR "Salix aurita var. cinerea" OR "Vimen cinerea" OR "common sallow" OR "grey sallow" OR "grey willow" **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 *Salix caprea* and *Salix cinerea*

TABLE C.1 Plant taxa reported in the Dossier Sections 3.1 and 3.2 to be present in the nurseries of *Salix caprea* and *Salix cinerea*.

Number	Plant taxa	Number	Plant taxa
1	*Abelia*	164	*Knautia*
2	*Abies alba*	165	*Kniphofia*
3	*Abies fraserii*	166	*Laburnum*
4	*Abies grandis*	167	*Lamium*
5	*Abies nobilis*	168	*Larix*
6	*Abies nordmanniana*	169	*Larix × decidua*
7	*Acacia*	170	*Larix × eurolepsis*
8	*Acanthus*	171	*Lavandula*
9	*Acer*	172	*Lavatera*
10	*Acer campestre*	173	*Leucanthemum*
11	*Acer macrocarpa*	174	*Leucothoe*
12	*Acer platanoides*	175	*Leycesteria*
13	*Acer pseudoplatanus*	176	*Leymus*
14	*Achillea*	177	*Liatris*
15	*Acorus*	178	*Ligularia*
16	*Actaea*	179	*Ligustrum*
17	*Agapanthus*	180	*Liquidambar*
18	*Agastache*	181	*Liriope*
19	*Ajuga*	182	*Lithodora*
20	*Akebia*	183	*Lobelia*
21	*Alchemilla*	184	*Lonicera*
22	*Allium*	185	*Lonicera nitida*
23	*Alnus*	186	*Lonicera periclymenum*
24	*Alnus cordata*	187	*Lupinus*
25	*Alnus glutinosa*	188	*Luzula*
26	*Alnus incana*	189	*Lysimachia*
27	*Alnus rubra*	190	*Magnolia*
28	*Alstroemeria*	191	*Mahonia*
29	*Amelanchier*	192	*Malus*
30	*Ammonophylla*	193	*Malus sylvestris*
31	*Anemanthele*	194	*Matteuccia*
32	*Anemone*	195	*Meconopsis*
33	*Aquilegia*	196	*Metasequoia glyptostroboides*
34	*Arbutus*	197	*Miscanthus*
35	*Armeria*	198	*Molinia*
36	*Artemisia*	199	*Monarda*
37	*Arum*	200	*Myrtus*
38	*Aruncus*	201	*Nandina*
39	*Asplenium*	202	*Nemesia*
40	*Astelia*	203	*Nepeta*
41	*Aster*	204	*Nothofagus*
42	*Astilbe*	205	*Olearia*
43	*Astrantia*	206	*Ophiopogon*
44	*Athyrium*	207	*Osmanthus*
45	*Aucuba*	208	*Osmunda*
46	*Baptisia*	209	*Pachysandra*

(Continues)

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
47	*Berberis*	210	*Pachystegia*
48	*Bergenia*	211	*Paeonia*
49	*Betula*	212	*Panicum*
50	*Betula pendula*	213	*Pennisetum*
51	*Betula pubescens*	214	*Penstemon*
52	*Blechnum*	215	*Perovskia*
53	*Brachyglottis*	216	*Persicaria*
54	*Brunnera*	217	*Philadelphus*
55	*Buddleja*	218	*Phlomis*
56	*Buxus*	219	*Phlox*
57	*Calamagrostis*	220	*Phormium*
58	*Calluna*	221	*Photinia*
59	*Campanula*	222	*Phygelius*
60	*Carex*	223	*Physocarpus*
61	*Carpinus*	224	*Physostegia*
62	*Carpinus betulus*	225	*Picea abies*
63	*Caryopteris*	226	*Picea orientalis*
64	*Castanea*	227	*Picea ormorika*
65	*Castanea sativa*	228	*Picea sitchensis*
66	*Ceanothus*	229	*Pinus*
67	*Cedrus atlantica*	230	*Pinus peuce*
68	*Centaurea*	231	*Pinus pinaster*
69	*Centranthus*	232	*Pinus pungens glauca*
70	*Ceratostigma*	233	*Pinus sylvestris*
71	*Chaenomeles*	234	*Pittosporum*
72	*Chamaecyparis*	235	*Platanus*
73	*Choisya*	236	*Polemonium*
74	*Cistus*	237	*Polygonatum*
75	*Clematis*	238	*Polypodium*
76	*Convolvulus*	239	*Polystichum*
77	*Coprosma*	240	*Populus*
78	*Coreopsis*	241	*Populus nigra*
79	*Cornus*	242	*Populus tremula*
80	*Cornus sanguinia*	243	*Potentilla*
81	*Cortaderia*	244	*Primula*
82	*Corydalis*	245	*Prunus*
83	*Corylus*	246	*Prunus avium*
84	*Corylus avellana*	247	*Prunus cera*
85	*Cosmos*	248	*Prunus laurocerasus*
86	*Cotinus*	249	*Prunus lusitanica*
87	*Cotoneaster*	250	*Prunus padus*
88	*Cotoneaster lacteus*	251	*Prunus spinosa*
89	*Crataegus*	252	*Pseudotsuga menziesii*
90	*Crataegus monogyna*	253	*Pulmonaria*
91	*Crocosmia*	254	*Pyracantha*
92	*Cryptomeria japonica*	255	*Pyrus*
93	*Cupressocyparis*	256	*Quercus*
94	*Cupressocyparis leylandii*	257	*Quercus ilex*
95	*Cupressus*	258	*Quercus petraea*

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
96	*Cynoglossum*	259	*Quercus robur*
97	*Cytisus*	260	*Quercus rubra*
98	*Dahlia*	261	*Rhamnus*
99	*Daphne*	262	*Rhus*
100	*Delosperma*	263	*Ribes*
101	*Delphinium*	264	*Robinia*
102	*Deschampsia*	265	*Rosa*
103	*Deutzia*	266	*Rosa canina*
104	*Dicentra*	267	*Rosa rugosa*
105	*Diervilla*	268	*Rosmarinus*
106	*Digitalis*	269	*Rudbeckia*
107	*Doronicum*	270	*Salix*
108	*Dryopteris*	271	*Salix aurita*
109	*Echinacea*	272	*Salix caprea*
110	*Echinops*	273	*Salix cinerea*
111	*Elaeagnus*	274	*Salix pentandra*
112	*Epimedium*	275	*Salix viminalis*
113	*Eremurus*	276	*Salvia*
114	*Erigeron*	277	*Sambucus*
115	*Eriophorum*	278	*Sanguisorba*
116	*Eriostemon*	279	*Santolina*
117	*Eryngium*	280	*Scabiosa*
118	*Erysimum*	281	*Schizostylis*
119	*Escallonia*	282	*Sedum*
120	*Eucalyptus*	283	*Senecio*
121	*Eucalyptus glaucescens*	284	*Sequoia sempervirens*
122	*Euonymus*	285	*Sequoiadendron giganteum*
123	*Euphorbia*	286	*Sesleria*
124	*Exochorda*	287	*Sorbaria*
125	*Fagus*	288	*Sorbus*
126	*Fagus sylvatica*	289	*Sorbus aria*
127	*Fargesia*	290	*Sorbus aucuparia*
128	*Fatsia*	291	*Sorbus torminalis*
129	*Festuca*	292	*Spiraea*
130	*Filipendula*	293	*Stachys*
131	*Foeniculum*	294	*Stachyurus*
132	*Forsythia*	295	*Stipa*
133	*Fuchsia*	296	*Symphoricarpos*
134	*Galium*	297	*Symphytum*
135	*Garrya*	298	*Syringa*
136	*Gaura*	299	*Taxodium distichum*
137	*Genista*	300	*Taxus*
138	*Geranium*	301	*Taxus baccata*
139	*Geum*	302	*Tellima*
140	*Griselinia*	303	*Thalictrum*
141	*Hakonechloa*	304	*Thuja*
142	*Halimium*	305	*Thuja plicata*
143	*Hebe*	306	*Thymus*
144	*Hedera*	307	*Tiarella*

(Continues)

TABLE C.1 (Continued)

Number	Plant taxa	Number	Plant taxa
145	*Helenium*	308	*Tilia*
146	*Helichrysum*	309	*Tilia cordata*
147	*Helleborus*	310	*Tilia platanoides*
148	*Hemerocallis*	311	*Trachelospermum*
149	*Heuchera*	312	*Tradescantia*
150	*Heucherella*	313	*Tricyrtis*
151	*Hippophae*	314	*Trollius*
152	*Hosta*	315	*Tsuga heterophylla*
153	*Houttuynia*	316	*Ulex*
154	*Hydrangea*	317	*Ulmus*
155	*Hypericum*	318	*Ulmus glabra*
156	*Iberis*	319	*Uncinia*
157	*Ilex*	320	*Verbena*
158	*Imperata*	321	*Veronica*
159	*Iris*	322	*Viburnum*
160	*Jasminum*	323	*Viburnum opulus*
161	*Juglans nigra*	324	*Vinca*
162	*Juniperus*	325	*Weigela*
163	*Juniperus communis*	326	*Yucca*

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 air borne contamination could take place and is entirely isolated from any outside exposure (Dossier Sections 1.1 and 1.2).

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

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

APPENDIX E

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

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

N	Pest name	EPPO code	Group	Pest present in the UK	Present in the EU	*Salix* confirmed as a host (reference)	Pest can be associated with the commodity	Impact	Justification for inclusion in this list
1	*Takahashia japonica*	TAKAJA	TAKAJA	Yes	Limited	*Salix chaenomeloides* (Takahashi & Tachikawa, 1956)	Yes	Uncertain	Uncertainty on the impact

APPENDIX F

Excel file with the pest list of *Salix caprea* and *Salix cinerea*

Appendix F is available in the Supporting Information section.