SCIENTIFIC OPINION

EFSA Journal

ADOPTED: 10 July 2020

doi: 10.2903/j.efsa.2020.6225

Commodity risk assessment of *Jasminum polyanthum* plants from *Israel*

EFSA Panel on Plant Health (PLH),
Claude Bragard, Katharina Dehnen-Schmutz, Francesco Di Serio, Paolo Gonthier, Marie-Agnès Jacques, Josep Anton Jaques Miret, Annemarie Fejer Justesen, Alan MacLeod, Christer Sven Magnusson, Panagiotis Milonas, Juan A Navas-Cortes, Stephen Parnell, Philippe Lucien Reignault, Hans-Hermann Thulke, Wopke Van der Werf, Antonio Vicent Civera, Jonathan Yuen, Lucia Zappalà, Elisavet Chatzivassiliou, Jane Debode, Charles Manceau, Ciro Gardi, Olaf Mosbach-Schulz and Roel Potting

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 all plant health risks posed by unrooted cuttings of *Jasminum polyanthum* produced in a protected environment (greenhouse) that are imported from Israel, taking into account the available scientific information, including the technical information provided by the NPPO of Israel by 15 March 2020. The relevance of an EU quarantine pest for this opinion was based on evidence that: (i) the pest is present in Israel; (ii) *Jasminum* is a host of the pest; and (iii) the pest can be associated with the commodity. The relevance of any other pest, not regulated in the EU, was based on evidence that: (i) the pest is present in Israel; (ii) the pest is absent in the EU; (iii) *Jasminum* is a host of the pest; (iv) the pest can be associated with the commodity and (v) the pest may have an impact and can pose a potential risk for the EU territory. Six species, the EU-quarantine pest *Scirtothrips dorsalis*, and the EU non-regulated pests *Aonidiella orientalis*, *Milviscutulus mangiferae*, *Paracoccus marginatus*, *Pulvinaria psidii* and *Colletotrichum siamense* fulfilled all relevant criteria and were selected for further evaluation. For these pests, the risk mitigation measures proposed in the technical dossier from Israel were evaluated taking into account the possible limiting factors. For these pests, an expert judgement is given on the likelihood of pest freedom taking into consideration the risk mitigation measures acting on the pest, including uncertainties associated with the assessment. The estimated degree of pest freedom varies among the pests evaluated, with *S. dorsalis* being the pest most frequently expected on the imported plants. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9,958 and 10,000 bags per 10,000 would be free of *S. dorsalis*.

Keywords: Jasmine, phytosanitary measures efficacy, plant health, plant pest, quarantine, plant cuttings

Requestor: European Commission

Question number: EFSA-Q-2020-00656

Correspondence: alpha@efsa.europa.eu

Panel members: Claude Bragard, Katharina Dehnen-Schmutz, Francesco Di Serio, Paolo Gonthier, Marie-Agnès Jacques, Josep Anton Jaques Miret, Annemarie Fejer Justesen, Alan MacLeod, Christer Sven Magnusson, Panagiotis Milonas, Juan A Navas-Cortes, Stephen Parnell, Roel Potting, Philippe L Reignault, Hans-Hermann Thulke, Wopke Van der Werf, Antonio Vicent, Jonathan Yuen and Lucia Zappalà.

Acknowledgements: EFSA wishes to acknowledge the important contribution of the trainee Laura Carotti. L. Carotti provided an essential contribute to the literature search, the compilation of the pest list and the pest data sheets and provided support in drafting and reviewing the Opinion.

Suggested citation: EFSA PLH Panel (EFSA Panel on Plant Health), Bragard C, Dehnen-Schmutz K, Di Serio F, Gonthier P, Jacques M.A, Jaques Miret JA, Justesen AF, MacLeod A, Magnusson CS, Milonas P, Navas-Cortes JA, Parnell S, Reignault PL, Thulke H-H, Van der Werf W, Civera AV, Yuen J, Zappalà L, Chatzivassiliou E, Debode J, Manceau C, Gardi C, Mosbach-Schulz O and Potting R, 2020. Scientific Opinion on the commodity risk assessment of *Jasminum polyanthum* plants from *Israel.* EFSA Journal 2020;18(8):6225, 78 pp. https://doi.org/10.2903/j.efsa.2020.6225

ISSN: 1831-4732

Table of contents

1. Introduction

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

1.1.1. Background

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

1.1.2. Terms of Reference

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

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

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

Furthermore, a standard methodology for the performance of "commodity risk assessment" based on the work already done by Member States and other international 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 *Jasminum polyanthum* from Israel taking into account the available scientific information, including the technical dossier provided by Israel.

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 *J. polyanthum* from Israel following the Guidance on commodity risk assessment for the evaluation of high-risk plant dossiers (EFSA PLH Panel, 2019a).

Considering that there is very little information available on pests associated with *J. polyanthum* the Panel decided to perform the search for pests associated with the genus *Jasminum* therefore all the plant species belonging to *Jasminum* genus were included in the search.

Pests listed as 'Regulated Non-Quarantine Pest' (RNQP)' in Commission Implementing Regulation (EU) 2019/2072 were not considered for further evaluation, in line with a letter from European Commission from 24 October 2019, Ref. Ares (2019)6579768 - 24/10/2019, on Clarification on EFSA mandate on High Risk Plants.

---

[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.

In its evaluation the Panel:

- Checked whether the provided information in the technical dossier (hereafter referred to as 'the Dossier') provided by the applicant (Ministry of Agriculture and Rural Development, Plant Protection & Inspection Services - PPIS) was sufficient to conduct a commodity risk assessment. When necessary, additional information was requested to the applicant.
- Selected the relevant union EU-regulated quarantine pests and protected zone quarantine pests (as specified in Commission Implementing Regulation (EU) 2019/2072[4], hereafter referred to as 'EU quarantine pests') and other relevant pests present in *Israel* and associated with the commodity.
- For those Union quarantine pests for which specific measures are in place for the import of the commodity from the specific country in Commission Implementing Regulation (EU) 2019/2072, the assessment was restricted to whether or not the applicant country applies those measures. The effectiveness of those measures was not assessed.
- For those Union quarantine pests for which no specific measures are in place for the import of the commodity from the specific applicant country and other relevant pests present in applicant country and associated with the commodity, the effectiveness of the measures described by the applicant in the dossier was assessed.

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

2. Data and methodologies

2.1. Data provided by the PPIS

The Panel considered all the data and information (hereafter called 'the Dossier') provided by PPIS of Israel on 30 October 2019, including the additional information provided by the PPIS of Israel on 15 March 2020, after EFSA's request. The Dossier is managed by EFSA.

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

Table 1: Structure and overview of the Dossier

Dossier section	Overview of contents	Filename
1.0	Initial request by Israel	EFSA-Q-2019-00656-I0009-Israel-Jasminum_polyanthum_Request.pdf
2.0	Technical dossier on *Jasminum polyanthum* (complete document)	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
3.0	**COMMODITY DATA**	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
3.1	Taxonomic information	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
3.2	Plants for planting specification (ISPM 36 – FAO, 2016)	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
3.7	Production period	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
3.8	Phytosanitary status and management	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
3.9	Intended use	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx

[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.

Dossier section	Overview of contents	Filename
3.10	Production area	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
3.11	Separation of production areas	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
3.12	Climatic classification	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
3.13	Pictures and description	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
4.0	**PESTS LIST**	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum_Pest list.docx
4.1	List of all the pests potentially associated with the commodity plant species or genus in the exporting country	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum_Pest list.docx
4.2	List of EU-regulated pests (Table D.1)	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum_Pest list.docx
4.3	List of non-regulated pests (Table D.2)	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum_Pest list.docx
	Details of the literature search according to Appendix B	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum_Pest list.docx
5.0	**DATA ON PHYTOSANITARY MITIGATION MEASURES**	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
5.1	Description of phytosanitary mitigation measures	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
5.2	Description of phytosanitary regulations	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
5.3	Description of surveillance and monitoring	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
5.4	Trade volume and frequencies	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
5.5	Description of post-harvest procedures	EFSA_Dossier-Q-2019-00656_Israel_Jasminum polyanthum.docx
6.0	Additional information provided by PPIS on date 15 March 2020	EFSA_Dossier-Q-2019-00656_0009-ISRAEL - Jasminum polyanthum - answer to additional questions.docx

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

The databases shown in Table 2 and the references listed below are the main sources used by the PPIS to compile the Dossier (details on literature searches can be found in the Dossier Section 4):

Table 2: Database sources used in the literature searches by PPIS

Acronym/ short title	Database name and service provider	URL of database	Justification for choosing database
CABI CPC	CABI Crop Protection CompendiumProvider: CAB International	https://www.cabi.org/cpc	EFSA recommendation
EPPO GD	EPPO Global DatabaseProvider: European and Mediterranean Plant Protection Organization	https://gd.eppo.int/	EFSA recommendation
Plant Pests of the Middle East	Plant Pests of the Middle EastProvider: The Robert H. Smith faculty of Agriculture, Food and Environment	http://www.agri.huji.ac.il/mepests/	A reliable source for plant pests in Israel

Avidov Z and Harpaz I, 1969. Plant Pests of Israel; translated, revised and updated, Jerusalem: Israel Universities Press.

Ben-Dov Y, 2001. *Pulvinaria psidii* Maskell a new soft scale in Israel. Alon Ha'Notea 55: 262-263 (in Hebrew with an English Summary).

Ben-Dov Y, 2012. The scale insects (Hemiptera: Coccoidea) of Israel—checklist, host plants, zoogeographical considerations and annotations on species. Israel Journal of Entomology, 41–42, 21–48.

Ben-Dov Y, 1995. The pest status of citrus scale insects in Israel (1984–1994). In: Peleg BA, Bar-Zakay I and Ascher KRS, eds. Proceedings of the VII International Symposium of Scale Insect Studies, Bet Dagan, Israel, June 12–17 1994. *Israel Journal of Entomology*, 29, 261–264.

Bink-Moenen RM and Gerling D, 1992. Aleyrodidae of Israel. Bollettino del Laboratorio de Entomologia Agraria Filippo Silvestri, 47, 3–49.

Dafny-Yelln M, Brudoley R, Nasralla S, Maray T, Safadi P, Safadi AM, Freeman S, Kfir S, Levi O, Meron M and Shamian S, 2013. *Rosellinia necatrix* in deciduous orchards- evaluation of pathogen distribution. *'Alon Hanotea',* 69, 40–44. http://www.perot.org.il/Alon/201310/9.pdf

Halperin J, Brosh S and Eshed N, 1989. Annotated list of noxious organisms in ornamental plants in Israel. The Ministry of Agriculture, Extension Service, Tel Aviv, 92 pp. (in Hebrew, with English summary).

Mendel Z, Protasov R, Blumberg D, Gross S, Erel E and Spodek M, 2016. Mealybug pests on fruit trees in Israel. 'Alon Hanotea', 71.

Novoselsky T and Freidberg A, 2012. Note: *Corythauma ayyari* (Drake) (Hemiptera: Heteroptera: Tingidae)—a new pest of ornamentals in Israel. *Phytoparasitica*. 41. https://doi.org/10.1007/s12600-012-0273-x

Pellizzari G, 1994. The *Ceroplastes* species (Homoptera: Coccoidea) of the Mediterranean basin with emphasis on *C. japonicus* Green. Annales- Societe Entomologique de France, 30, 175–192.

Reuveny H, Farkash Z and Levi-Shaked A, 2009. Control of the olive scale Parlatoria oleae (Colvee) in Israel. 'Alon Hanotea', 63, 22–27. http://www.perot.org.il/Alon/0609/4.pdf

Rittner O and Biel I, 2017. First record of *Acherontia styx* (Westwood, 1848) (Lepidoptera: Sphingidae) from Israel. Israel Journal of Entomology, 47, 19–20.

Rosen D, 1980. Integrated control of citrus pests in Israel. In: Russ K and Berger H, eds. Proceedings. International symposium of IOBC/WPRS on integrated control in agriculture and forestry. Vienna, 8–12th October 1979. International Organization for Biological Control of Noxious Animals and Plants, West Palearctic Regional Section. Vienna Austria, 289–292.

Soo-Jung S and Jungyoun J, 2014. "A Checklist of Whiteflies (Hemiptera: Aleyrodidae) Intercepted on Imported Plants in Korea 2005–2013. Insecta Mundi, 860. http://digitalcommons.unl.edu/insectamundi/860

Spodek M, Watson G and Mendel Z, 2016. The pink hibiscus mealybug, *Maconellicoccus hirsutus* (Green) (Hemiptera: Coccomorpha: Pseudococcidae), a new threat to Israel's agriculture and horticulture. EPPO Bulletin, 46. https://doi.org/10.1111/epp.12288

Younis M, Seplyarsky V and Nestel D, 2013. Olive moth (Prays oleae): an important pest of olives in Israel. 'Alon Hanotea', 67, 36–38. http://www.perot.org.il/Alon/201303/9.pdf

2.2. Literature searches performed by EFSA

Literature searches were undertaken by EFSA to complete a list of pests potentially associated with *Jasminum*. Two searches were combined: (i) a general search to identify pests of *Jasminum* in different databases and (ii) a tailored search to identify whether these pests are present or not in Israel and the European Union (EU). The searches were run between 8 November 2019 and 27 November 2019. 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 *Jasminum*. 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 the genus *Jasminum*

Database	Platform/link
Aphids on World Plants	http://www.aphidsonworldsplants.info/C_HOSTS_AAIntro.htm
CABI Crop Protection Compendium	https://www.cabi.org/cpc/
Database of Insects and their Food Plants	http://www.brc.ac.uk/dbif/hosts.aspx
Database of the World's Lepidopteran Hostplants	https://www.nhm.ac.uk/our-science/data/hostplants/search/index.dsml
EPPO Global Database	https://gd.eppo.int/
EUROPHYT	https://webgate.ec.europa.eu/europhyt/
Leaf-miners	http://www.leafmines.co.uk/html/plants.htm
Nemaplex	http://nemaplex.ucdavis.edu/Nemabase2010/PlantNematodeHostStatusDDQuery.aspx
Plant Viruses Online	http://bio-mirror.im.ac.cn/mirrors/pvo/vide/famindex.htm
Scalenet	http://scalenet.info/associates/
Spider Mites Web	https://www1.montpellier.inra.fr/CBGP/spmweb/advanced.php
USDA ARS Fungi Database	https://nt.ars-grin.gov/fungaldatabases/fungushost/fungushost.cfm
Index Fungorum	http://www.indexfungorum.org/Names/Names.asp
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 IndexFSTA, KCI-Korean Journal Database, Russian Science Citation Index, MEDLINESciELO Citation Index, Zoological Record)	Web of Science https://www.webofknowledge.com
World Agroforestry	http://www.worldagroforestry.org/treedb2/speciesprofile.php?Spid=1749
Catalog of the Cecidomyiidae (Diptera) of the world	https://www.ars.usda.gov/ARSUserFiles/80420580/Gagne_2014_World_Cecidomyiidae_Catalog_3rd_Edition.pdf
Catalog of the Eriophoidea (Acarina: Prostigmata) of the world.	https://www.cabi.org/isc/abstract/19951100613
National Database of Pests Present in Israel	https://www.moag.gov.il/en/Pages/SearchNegaim.aspx
The scale insects (Hemiptera: Coccoidea) of Israel—checklist, host plants, zoogeographical considerations and annotations on species	http://www.entomology.org.il/sites/default/files/pdfs/Ben-Dov-final.pdf
List of the Hawaiian Coccoidea (Homoptera: Sternorhyncha)	https://scholarspace.manoa.hawaii.edu/bitstream/10125/11125/23_387-424.pdf

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, 2019a).

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

In the second step, the proposed risk mitigation measures for each relevant pest were evaluated in terms of efficacy or compliance with EU requirements as explained in Section 1.2.

A conclusion on the likelihood of the commodity being free from each of the relevant pest was determined and uncertainties identified using expert judgements.

Pest freedom was assessed by estimating the number of infested/infected bags out of 10,000 exported bags containing 50 cuttings.

2.3.1. Commodity data

Based on the information provided by the PPIS, the characteristics of the commodity are summarised.

2.3.2. Identification of pests potentially associated with the commodity

To evaluate the pest risk associated with the importation of *J. polyanthum* from Israel, a pest list was compiled. The pest list is a compilation of all identified plant pests associated with *Jasminum* based on information provided in the Dossier Section 4.0 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 plants (i.e. *Jasminum* sp., *Jasminum* spp. and *Jasminum polyanthum*) 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 commodities imported from Israel, at species and genus level, from 1995 to present.

The search strategy used for Web of Science Databases was designed combining common names for pests and diseases, terms describing symptoms of plant diseases and the scientific and common names of the commodity. All pests already retrieved using the other databases were removed from the search terms in order to be able to reduce the number of records to be screened.

The established search string is detailed in Appendix B and was run on 15 November 2019.

The titles and abstracts of the scientific papers retrieved were screened and the pests associated with *Jasminum* (i.e. *Jasminum* sp., *Jasminum* spp. and *Jasminum polyanthum*) 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® Pest list of *Jasminum* in Appendix D) includes all identified pests that use *Jasminum* as host according to the Interpretation of Terms of Reference.

The EU quarantine pests that are regulated as a group in the Commission Implementing Regulation (EU) 2019/2072 were considered and evaluated separately at species level.

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).

For those Union quarantine pests for which specific measures are in place for the import of the commodity from Israel in Commission Implementing Regulation (EU) 2019/2072, the assessment was restricted to whether Israel applies those measures. The effectiveness of those measures was not assessed.

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

2.3.3. Listing and evaluation of risk mitigation measures

All currently used risk mitigation measures are listed and evaluated. When evaluating the likelihood of pest freedom at origin, the following types of potential infection sources for *J. polyanthum* in nurseries were considered (see also Figure 1):

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

The risk mitigation measures adopted in the plant nurseries (as communicated by the PPIS) were evaluated with Expert Knowledge Elicitation (EKE) according to the Guidance on uncertainty analysis in scientific assessment (EFSA Scientific Committee, 2018).

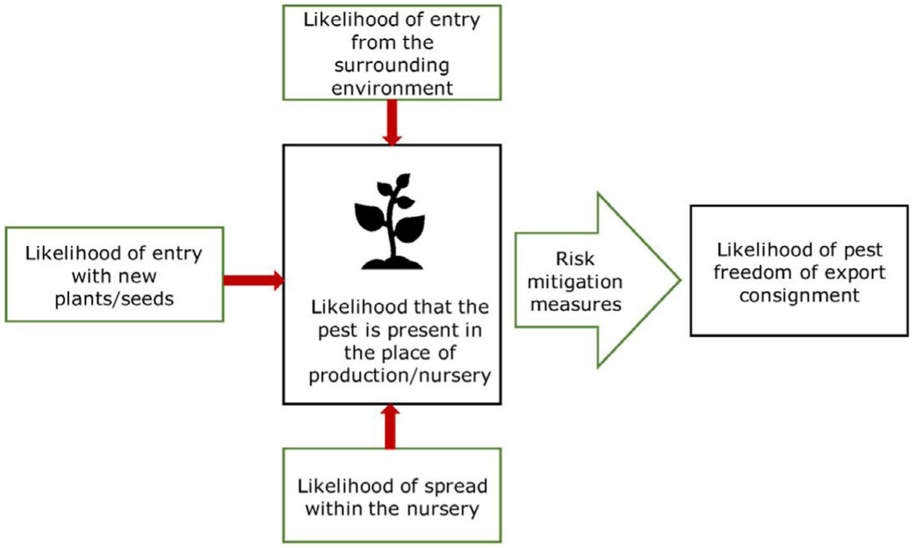

Figure 1: Conceptual framework to assess likelihood that plants are exported free from relevant pests. Source EFSA PLH Panel (2019b)

Information on the biology, estimates of likelihood of entry of the pest to the nursery and spread within the nursery, and the effect of the measures on a specific pest is summarised in pest data sheets compiled for each pest selected for further evaluation (see Appendix A).

To estimate the pest freedom of the commodity, an EKE was performed following EFSA guidance (Annex B.8 of EFSA Scientific Committee, 2018). The commodity exported to the EU are unrooted cuttings of *J. polyanthum* put in plastic bags each one containing 50 cuttings. Therefore, 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 bags of *J. polyanthum* unrooted cuttings will be infested with the relevant pest when arriving in the EU?'. The EKE question was common to all pests for which the pest freedom of the commodity was estimated. For a cluster of pests (with common main biological features), a full EKE was performed on one representative of the cluster, and a reduced EKE focusing on the differences for each other members of the cluster. 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, 2018a). 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 commodity to be imported is *J. polyanthum* (common name: jasmine; family: Oleaceae) plants of the cultivar White. The plants are unrooted cuttings derived from production plants that are up to 1 year old.

The cuttings are packed in bags (50 cuttings per bag) delivered to EU nurseries for propagation.

According to ISPM 36 (FAO, 2016), the commodity can be classified as 'unrooted cuttings'.

3.2. Description of the production areas

The *J. polyanthum* plants for export are grown in designated closed greenhouses with a polyethylene roof and 50 mesh net walls. Cultivation of *J. polyanthum* is physically separated from other crops; however, the greenhouse designated for export may include the following plant genera: *Anisodontea, Pentas, Thunbergia* and *Tibouchina* (Dossier Section 6.0).

Figure 2 presents the current site of *Jasminum polyanthum* cultivation in Israel: Kefar Hanagid.

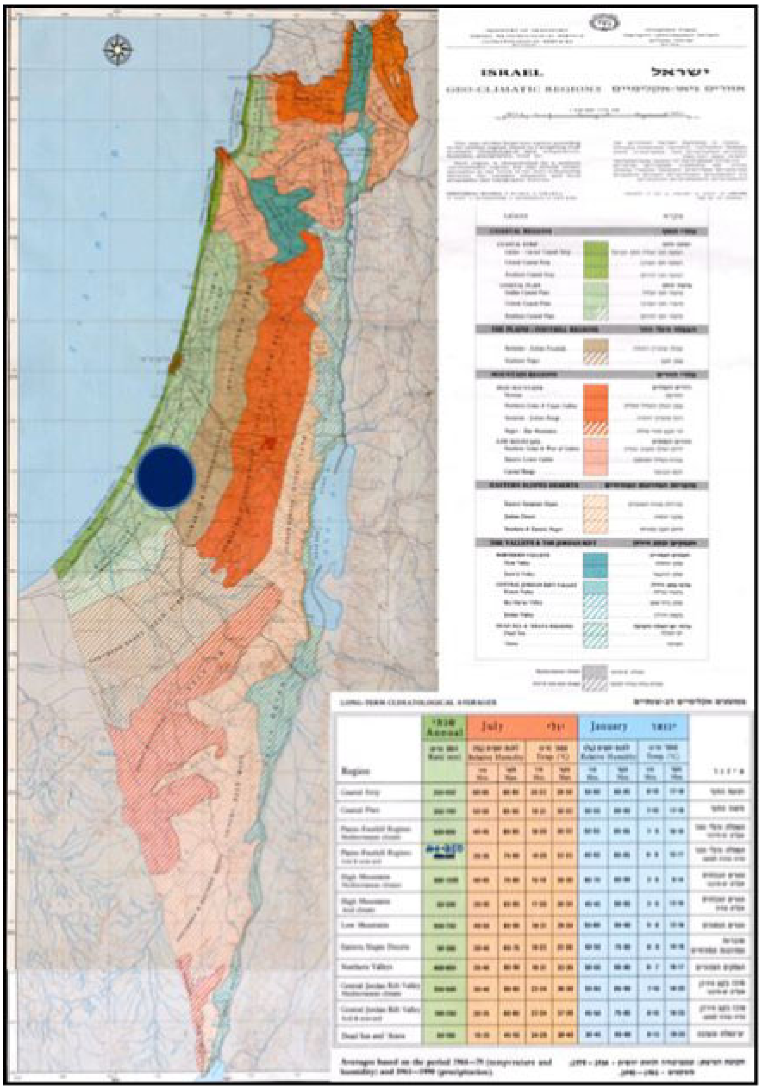

Figure 2: Location of the production areas of *Jasminum polyanthum* in Israel

Based on the global Köppen–Geiger climate zone classification (Kottek et al., 2006), the climate of the production area of *J. polyanthum* in Israel is classified as Csa (Figure 3).

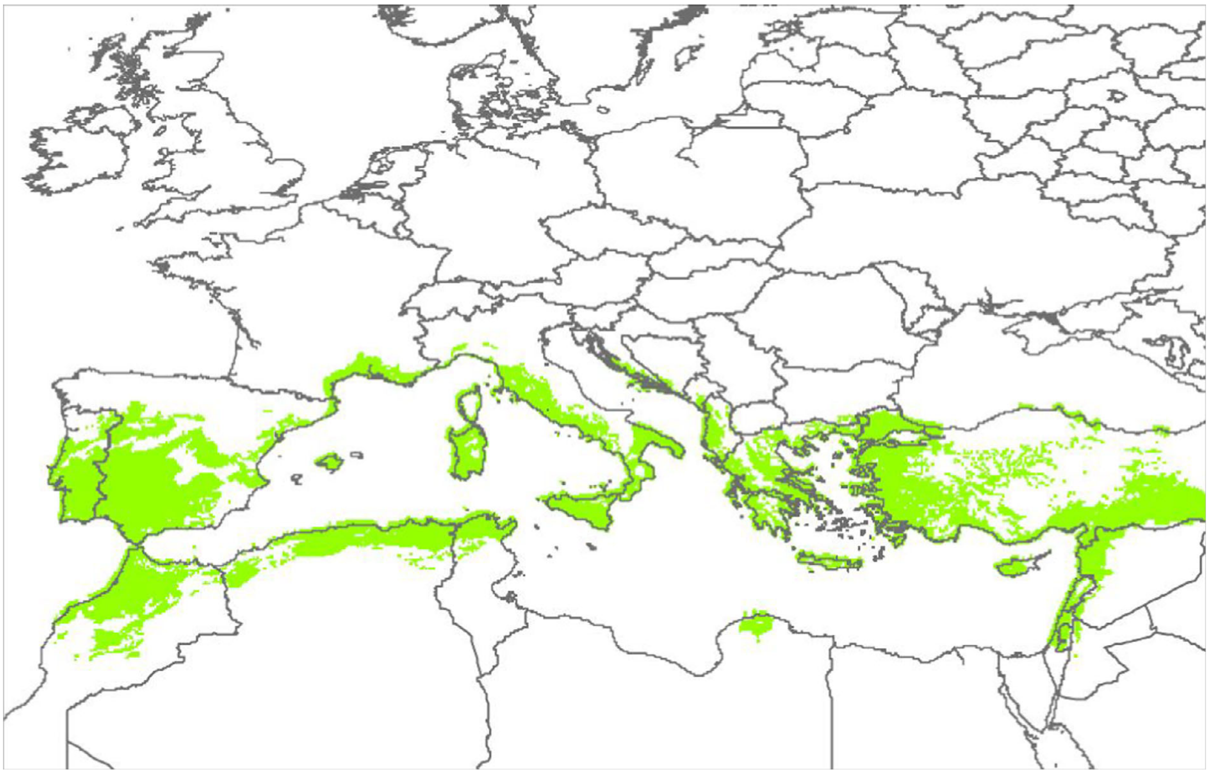

Figure 3: Distribution of Köppen–Geiger climate subgroup Csa areas (Mediterranean hot summer climate) in the Mediterranean Basin (MacLeod and Korycinska, 2019)

3.3. Production and handling processes

3.3.1. Growing conditions

The jasmine mother plants are cultivated in a dedicated closed greenhouse with polyethylene roof and 50 mesh net walls, in which they remain throughout the cultivation period. The cultivation of mother plants is performed in detached medium bags on top of tables in the greenhouse.

Mother plants are planted in a growing media consisting of 50% peat and 50% tuff in black 4 l plastic bags. The bags are placed on the tables inside the closed greenhouse and the plants remain in the same bags throughout the cultivation period. The medium and bags used for planting are always new (never recycled). Cultivation site, tables and irrigation systems are disinfested with hypochlorite prior to each cultivation cycle.

The greenhouse containing production plants (from which cuttings designated for export originate) may include plants of the following genera: *Anisodontea*, *Pentas*, *Thunbergia* and *Tibouchina*; however, these are always maintained on separate tables (with a distance of 50 cm between tables). Tools are never transferred between plant species and are always disinfected with hypochlorite prior to every treatment. Harvest takes place from plants, up to 1 year from planting.

Appropriate insecticides and acaricides are applied to the plants regularly in a preventative manner, during the cultivation period. Details on pesticides treatments are reported in Table 4.

Table 4: Details of pesticides treatments applied in the greenhouse (Dossier Section 5.1)

Pesticide/s used (active substance/s)	Scientific name of the target pest species	Targeted life stage of the pests	Timing of the treatment	Dose used for each treatment	Use the information reported in the officially approved label	Restrictions if any	Estimation of efficacy
Flonicamid	Aphids	Mother plants during growth	Periodically, in a preventative manner	50%	Spraying	N/A	High
Floramite and Bifenazate	Spider mites	Mother plants during growth	Periodically, in a preventative manner	240 g Floramite/ 1 L Bifenazate	Spraying	N/A	High

3.3.2. Source of planting material

The source of the mother plant is local and internal, meaning plants that have been bred in the same nursery and the same greenhouse where the production plants are cultivated for cuttings production (Dossier 6.0).

3.3.3. Production cycle

In July, production plants are planted inside the black bags in the growing media. From August until June, up to 1 year, the production plants are trimmed when needed and the cuttings are harvested (Table 5).

Table 5: *Jasminum polyanthum* crop phenology, harvesting and processing, during the growing season in Israel (Dossier Section 3.7)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Israel seasons	**Summer**		**Autumn**			**Winter**			**Spring**			**Summer**	
Planting of production plants													
Cutting of production plants (harvest)													

3.3.4. Pest monitoring during production

The cultivation site is under control and inspection by PPIS inspectors during the entire growing and delivery season. In fact, all mother plants for the production of cutting to be exported from Israel originate from nurseries that are approved by PPIS and are under PPIS inspection.

Further to the PPIS inspections every 21 days, the producers carry out regular comprehensive self-inspections, once a week. This inspection is performed by the nursery agronomists and according to the PPIS inspector's instructions. The results are recorded in the nursery logbook and every adverse finding is reported immediately to the inspector. The logbook is regularly reviewed during the inspector visits to the site. Whenever a harmful organism of interest is found at any production site, the grower is required to inform PPIS and to treat the site as appropriate. During consecutive inspections, if there is no further evidence to the presence of the pest, the PPIS considers the site of production to be free from this harmful organism.

Further diagnostic procedures may be performed according to requirements of the importing country and in the case of inspection findings that necessitate identification of a causative agent (Dossier Section 5.3).

3.3.5. Post-harvest processes and export procedure

The unrooted cuttings are stored at 6°C, in a box inside a refrigerator in the cultivation greenhouse, so that cuttings do not exit the greenhouse prior to shipment.

Fifty cuttings are packed per bag, and 30 bags are packed per carton. *J. polyanthum* cuttings are exported from Israel to the EU all year round for an annual export volume of 300,000 cuttings (6,000 bags, 200 cartons per annum).

4. Identification of pests potentially associated with the commodity

The search for potential pests associated with *Jasminum* rendered 455 species (see Microsoft Excel® file in Appendix D).

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.

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

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

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

Pests that fulfilled all three criteria were selected for further evaluation.

Of the 14 EU-quarantine pest species evaluated, one pest, *Scirtothrips dorsalis,* present in Israel and known to use *Jasminum* as host and to be associated with the commodity was selected for further evaluation (Table 6).

There is a record from 1973 of *Jasminum* as a host plant for *Xiphinema americanum* (Siddiqui et al., 1973). However, nowadays *X. americanum* is recognised as a complex of species (EFSA PLH Panel, 2018b) from which seven are regulated in the EU. It is unknown which *Xiphinema* species uses *Jasminum* as a host; therefore, only the seven regulated *Xiphinema* species were listed and evaluated.

Table 6: Overview of the evaluation of the 14 EU-quarantine pest species known to use *Jasminum* as a host plant for their relevance for this Opinion

No.	Pest name according to the EU legislation[(a)]	EPPO code	Group	Presence in Israel	*Jasminum* confirmed as a host (reference)	Pest can be associated with the commodity[(b)]	Pest relevant for the opinion
1	*Scirtothrips dorsalis*	SCITDO	Insects	Yes	Yes (Scott-Brown et al., 2018)	**Yes**	**Yes**
2	*Spodoptera litura*	PRODLI	Insects	No	Yes (Database of the World's Lepidopteran Hostplants)		**No**
3	*Tobacco ringspot virus*	TRSV00	Virus	No	Yes (Waterworth, 1971)		**No**
4	*Tomato ringspot virus*	TORSV0	Virus	No	Yes (Gera and Zeidan, 2006)		**No**
5	*Tomato leaf curl New Delhi virus*	TOLCND	Virus	No	Yes (Moriones et al., 2017)		**No**
6	*Xiphinema americanum sensu stricto*	XIPHAA	Nematodes	No	Uncertain (Siddiqui et al., 1973)		**No**

No.	Pest name according to the EU legislation[(a)]	EPPO code	Group	Presence in Israel	*Jasminum* confirmed as a host (reference)	Pest can be associated with the commodity[(b)]	Pest relevant for the opinion
7	*Xiphinema bricolense*	XIPHBC	Nematodes	No	Uncertain (Siddiqui et al., 1973)		**No**
8	*Xiphinema californicum*	XIPHCA	Nematodes	No	Uncertain (Siddiqui et al., 1973)		**No**
9	*Xiphinema inaequale*	XIPHNA	Nematodes	No	Uncertain (Siddiqui et al., 1973)		**No**
10	*Xiphinema intermedium*	XIPHIM	Nematodes	No	Uncertain (Siddiqui et al., 1973)		**No**
11	*Xiphinema rivesi* (non-EU populations)	XIPHRI	Nematodes	No	Uncertain (Siddiqui et al., 1973)		**No**
12	*Xiphinema tarjanense*	XIPHTA	Nematodes	No	Uncertain (Siddiqui et al., 1973)		**No**
13	*Ageratum enation virus*	AEV000	Virus	No	Yes (Marwal et al., 2013)		**No**
14	*Cotton leaf curl Kokhran virus*	CLCUKV	Virus	No	Yes (Akram et al., 2017)		**No**

(a): Commission Implementing Regulation (EU) 2019/2072.
(b): The question if the pest can be associated with the commodity is evaluated if the previous two questions are answered with 'yes'.

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

The information provided by PPIS, integrated with the search EFSA performed, was evaluated in order to assess whether there are other potentially relevant pests of *Jasminum* present in the country of export. For these potential pests that are not quarantine in the EU, pest risk assessment information on the probability of introduction, establishment, spread and impact is usually lacking. Therefore, these non-quarantine pests that are potentially associated with *Jasminum* were also evaluated to determine their relevance for this opinion based on evidence that:

a) the pest is present in Israel;
b) the pest (i) is absent or (ii) has a limited distribution (not more than three MSs) in the EU and it is under official control at least in one of the MSs where it is present;
c) *Jasminum* 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.

Pests that fulfilled all five criteria were selected for further evaluation.

Based on the information collected, 441 potential pests known to be associated with *Jasminum* were evaluated for their relevance to this opinion. Species were excluded from further evaluation when at least one of the conditions listed above (a-e) was not met. Details can be found in the Appendix D (Microsoft Excel® file). Of the evaluated EU non-quarantine pests, four insects (*Aonidiella orientalis, Milviscutulus mangiferae, Paracoccus marginatus and Pulvinaria psidii*) and one fungus (*Colletotrichum siamense*) were selected for further evaluation because they met all of the selection criteria. More information on these five pest species can be found in the pest data sheets (Appendix A).

4.3. Overview of interceptions

Data on the interception of harmful organisms on plants of *Jasminum* can provide information on some of the organisms that can be present on *Jasminum* plants in trade. According to EUROPHYT online (accessed on 12 February 2020), there were no interceptions of plants for planting of *Jasminum* from Israel destinated to the EU Member States due to the presence of harmful organisms between the years 1995 and 12/02/2020.

4.4. List of potential pests not further assessed

From the pests not selected for further evaluation, the Panel highlighted six species that can potentially have an impact (see Appendix C) but for which the currently available evidence does not provide reasons for further evaluation in this opinion. The detailed reason is provided for each species in Appendix C.

4.5. Summary of pests selected for further evaluation

The six pests identified to be present in Israel while having potential for association with *Jasminum* destined for export are listed in Table 7. The effectiveness of the risk mitigation measures applied to the commodity was evaluated for these selected pests.

Table 7: 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	*Scirtothrips dorsalis*	SCITDO	*Scirtothrips dorsalis*	Thripidae	Insects	EU Quarantine Pest according to Commission Implementing Regulation (EU) 2019/2072
2	*Aonidiella orientalis*	AONDOR	N/A	Diaspididae	Insects	Not regulated in EU
3	*Milviscutulus mangiferae*	MILVMA	N/A	Coccidae	Insects	Not regulated in EU
4	*Paracoccus marginatus*	PACOMA	N/A	Pseudococcidae	Insects	Not regulated in EU
5	*Pulvinaria psidii*	PULVPS	N/A	Coccidae	Insects	Not regulated in EU
6	*Colletotrichum siamense*	COLLSM	N/A	Glomerellaceae	Fungi	Not regulated in EU

5. Risk mitigation measures

For each selected pest (Table 7), the Panel assessed the possibility that it could be present in *J. polyanthum* nursery and assessed the probability that pest freedom of a consignment is achieved by the proposed risk mitigation measures acting on the pest under evaluation.

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

5.1. Possibility of pest presence in the export nurseries

For each selected pest (Table 7), the Panel evaluated the likelihood that the pest could be present in a *J. polyanthum* nursery by evaluating the possibility that *J. polyanthum* in the export nursery are 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.

5.2. Risk mitigation measures applied in Israel

With the information provided by the PPIS (Dossier Sections 3 and 5), the Panel summarised the risk mitigation measures (see Table 8) that are currently applied in the production nurseries.

Table 8: Overview of currently applied risk mitigation measures for *Jasminum polyanthum* plants designated for export to the EU from Israel

	Risk reduction option	Current measures in Israel
1	Growing plants in isolation	The mother plants designated for export are grown in dedicated insect-proof greenhouses. Plants are grown in plastic bags placed on a table
2	Soil treatment	Plants are grown in bags with new growing media, consisting of 50% peat and 50% tuff
3	Insecticide treatment	During the growing season, plants are treated preventatively with Flonicamid (pyridine, systemic) against aphids and with Floramite (bifenazate) against spider mites
4	Official Supervision by PPIS	All plants for planting exported from Israel originate from nurseries that are approved by PPIS and are under PPIS inspection
5	Inspections of nurseries that export plants	Every 21 days, the PPIS of Israel carries out an official inspection in the nursery and an additional regular comprehensive self-inspection is performed weekly

5.3. Evaluation of the current measures for the selected pests including uncertainties

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

The Panel assumes that insecticides are registered in Israel, and that the applications are effective in reducing the pest to an acceptable level. If there are serious uncertainties or evidence of pest presence despite application of the pesticide (e.g. reports of interception at import), this will be considered in the EKE on the effectiveness of the measures.

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 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 selected pest is given in the sections below (Sections 5.3.1–5.3.6). The outcome of the EKE regarding pest freedom after the evaluation of the currently proposed risk mitigation measures is summarised in Section 5.3.7.

During the expert elicitation, it was decided to evaluate the scales insects as a group because they have similar biology, starting with *Aonidiella orientalis* for which more information were available. The results on *Milviscutulus mangiferae*, *Paracoccus marginatus* and *Pulvinaria psidii* were done in comparative manner, focussing on differences between the three species and *A. orientalis.*

5.3.1. Overview of the evaluation of *Scirtothrips dorsalis*

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 bags	**9,958** out of 10,000 bags	**9,987** out of 10,000 bags	**9,994** out of 10,000 bags	**9,997** out of 10,000 bags	**9,999** out of 10,000 bags
Proportion of infested bags[5]	**1** out of 10,000 bags	**3** out of 10,000 bags	**6** out of 10,000 bags	**13** out of 10,000 bags	**42** out of 10,000 bags

[5] The 'number of pest-free bags per 10,000' is calculated as '10,000 - Number of infested bags per 10,000' and reordered from small to large to obtain the percentiles.

Summary of the information used for the evaluation	**Possibility that the pest could become associate with the commodity** *Scirtothrips dorsalis* is a polyphagous thrips species reported to be widespread in Israel. *S. dorsalis* is reported on *J. sambac*, but there are no records on *J. polyanthum*. However, given the polyphagous nature of this pest, it is likely that it can use *J. polyanthum* as host plant It is possible that local populations of *S. dorsalis* are present in the neighbouring environment of the greenhouse with *Jasminum* plants destined for export *J. polyanthum* plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of thrips into a greenhouse is possible by flying or passive wind transfer through an open door or as a hitchhiker on clothing of nursery staff. Either of these events is only likely to occur in case of a relatively high (local) density of *S. dorsalis* in the neighbouring environment of the greenhouse **Measures taken against the pest and their efficacy** The relevant applied measures are: (i) plants are grown in a protected environment (greenhouse); (ii) regular application of insecticides; (iii) official inspections at 3-week intervals and weekly self-inspections; (iv) only cuttings are exported **Interception records** There are no records of interceptions from Israel **Shortcomings of current measures/procedures** There are no main shortcomings. The combination of applied measures will greatly reduce the probability that *S. dorsalis* is present in consignments of *J. polyanthum* cuttings for export **Main uncertainties** Pest pressure and the proximity of population sources in the surrounding environment is unknown

5.3.2. Overview of the evaluation of *Aonidiella orientalis*

Rating of the likelihood of pest freedom	**Almost always pest free** (based on the Median)				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free bags	**9,996** out of 10,000 bags	**9,998** out of 10,000 bags	**9,998** out of 10,000 bags	**9,999** out of 10,000 bags	**10,000** out of 10,000 bags
Proportion of infested bags[5]	**0** out of 10,000 bags	**1** out of 10,000 bags	**2** out of 10,000 bags	**2** out of 10,000 bags	**4** out of 10,000 bags
Summary of the information used for the evaluation	**Possibility that the pest could become associate with the commodity** *Aonidiella orientalis* is a polyphagous species reported to be widespread in Israel. *A. orientalis* is reported on *Jasminum* sp. and there are no records on *J. polyanthum*. However, given the polyphagous nature of this pest, it is likely that it can use *J. polyanthum* as host plant It is possible that local populations of *A. orientalis* are present in the neighbouring environment of the greenhouses with *Jasminum* plants destined for export *J. polyanthum* plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of scale insect into a greenhouse is mainly possible as a hitchhiker (as crawlers) on clothing of nursery staff. This event is only likely to occur in case of a relatively high (local) density of *A. orientalis* in the neighbouring environment of the greenhouse **Measures taken against the pest and their efficacy** The relevant applied measures are: (i) plants are grown in a protected environment (greenhouse); (ii) regular application of insecticides; (iii) official inspections at 3-week intervals and weekly self-inspections; (iv) only cuttings are exported **Interception records** There are no records of interceptions from Israel				

	Shortcomings of current measures/procedures There are no main shortcomings. The combination of applied measures will greatly reduce the probability that *A. orientalis* is present in consignments of *J. polyanthum* cuttings for export **Major considerations in case of an EKE of a group of species** The rating for *A. orientalis* was used as a reference for the rating of the other scale insects (*M. mangiferae* and *P. marginatus*) **Main uncertainties** Pest pressure and the proximity of population sources in the surrounding environment is unknown

5.3.3. Overview of the evaluation of *Milviscutulus mangiferae*

Rating of the likelihood of pest freedom	**Almost always pest free** (based on the Median)				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free bags	**9,994** out of 10,000 bags	**9,997** out of 10,000 bags	**9,998** out of 10,000 bags	**9,999** out of 10,000 bags	**10,000** out of 10,000 bags
Proportion of infested bags[5]	**0** out of 10,000 bags	**1** out of 10,000 bags	**2** out of 10,000 bags	**3** out of 10,000 bags	**6** out of 10,000 bags
Summary of the information used for the evaluation	**Possibility that the pest could become associate with the commodity** *M. mangiferae* is a polyphagous species reported to be widespread in Israel. *M. mangiferae* is reported on *Jasminum* sp. and there are no records on *J. polyanthum*. However, given the polyphagous nature of this pest, it is likely that it can use *J. polyanthum* as host plantIt is possible that local populations of *M. mangiferae* are present in the neighbouring environment of the greenhouses with *Jasminum* plants destined for export *J. polyanthum* plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of scale insect into a greenhouse is mainly possible as a hitchhiker (as crawlers) on clothing of nursery staff. The event is only likely to occur in case of a relatively high (local) density of *M. mangiferae* in the neighbouring environment of the greenhouse **Measures taken against the pest and their efficacy** The relevant applied measures are: (i) plants are grown in a protected environment (greenhouse); (ii) regular application of insecticides; (iii) official inspections at 3-week intervals and weekly self-inspections; (iv) only cuttings are exported **Interception records** There are no records of interceptions from Israel **Shortcomings of current measures/procedures** There are no main shortcomings. The combination of applied measures will greatly reduce the probability that *M. mangiferae* is present in consignments of *J. polyanthum* cuttings for export **Major considerations in case of an EKE of a group of species** The rating for *A. orientalis* was used as a basis for the rating of *M. mangiferae.* The main differences between *A. orientalis* and *M. mangiferae* taken into consideration for the rating of *M. mangiferae* are: • *M. mangiferae* produces honeydew and because of this it is relatively easier to detect • *M. mangiferae* has asexual reproduction favouring establishment **Main uncertainties** Pest pressure and the proximity of population sources in the surrounding environment is unknown				

5.3.4. Overview of the evaluation of *Paracoccus marginatus*

Rating of the likelihood of pest freedom	**Almost always pest free** (based on the Median)				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free bags	**9,995** out of 10,000 bags	**9,997** out of 10,000 bags	**9,998** out of 10,000 bags	**9,999** out of 10,000 bags	**10,000** out of 10,000 bags
Proportion of infested bags[5]	**0** out of 10,000 bags	**1** out of 10,000 bags	**2** out of 10,000 bags	**3** out of 10,000 bags	**5** out of 10,000 bags
Summary of the information used for the evaluation	**Possibility that the pest could become associate with the commodity** *Paracoccus marginatus* is a polyphagous species detected for the first time in 2016 in the North of Israel. *P. marginatus* is reported on *Jasminum* sp. and there are no records on *J. polyanthum*. However, given the polyphagous nature of this pest, it is likely that it can use *J. polyanthum* as host plant It is possible that local populations of *P. marginatus* are present in the neighbouring environment of the greenhouses with *Jasminum* plants destined for export *J. polyanthum* plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of a scale insect into a greenhouse is mainly possible as a hitchhiker (as crawlers) on clothing of nursery staff. The event is only likely to occur in case of a high (local) density of *P. marginatus* in the neighbouring environment of the greenhouse **Measures taken against the pest and their efficacy** The relevant applied measures are: (i) plants are grown in a protected environment (greenhouse); (ii) regular application of insecticides; (iii) official inspections at 3-week intervals and weekly self-inspections; (iv) only cuttings are exported **Interception records** There are no records of interceptions from Israel **Shortcomings of current measures/procedures** There are no main shortcomings. The combination of applied measures will greatly reduce the probability that *P. marginatus* is present in consignments of *J. polyanthum* cuttings for export **Major considerations in case of an EKE of a group of species** The rating for *A. orientalis* was used as a basis for the rating of *P. marginatus.* The main differences between *A. orientalis* and *P. marginatus* taken into consideration for the rating of *P. marginatus* are: • *P. marginatus* produces honeydew and white wax and because of this it is relatively easier to detect • *P. marginatus* can also disperse at the adult stage **Main uncertainties** Pest pressure and the proximity of population sources in the surrounding environment is unknown				

5.3.5. Overview of the evaluation of *Pulvinaria psidii*

Rating of the likelihood of pest freedom	**Almost always pest free** (based on the Median)				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest-free bags	**9,997** out of 10,000 bags	**9,998** out of 10,000 bags	**9,999** out of 10,000 bags	**9,999** out of 10,000 bags	**10,000** out of 10,000 bags

Proportion of infested bags[5]	**0** out of 10,000 bags	**1** out of 10,000 bags	**1** out of 10,000 bags	**2** out of 10,000 bags	**3** out of 10,000 bags
Summary of the information used for the evaluation	**Possibility that the pest could become associate with the commodity** *Pulvinaria psidii* is a polyphagous species reported to be present in Israel. *P. psidii* is reported on *Jasminum* sp. and there are no records on *J. polyanthum*. However, given the polyphagous nature of this pest, it is likely that it can use *J. polyanthum* as host plant It is possible that local populations of *P. psidii* are present in the neighbouring environment of the greenhouses with *Jasminum* plants destined for export *J. polyanthum* plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of scale insects into a greenhouse is mainly possible as a hitchhiker (as crawlers) on clothing of nursery staff. The event is only likely to occur in case of a relatively high (local) density of *P. psidii* in the neighbouring environment of the greenhouse **Measures taken against the pest and their efficacy** The relevant applied measures are: (i) plants are grown in a protected environment (greenhouse); (ii) regular application of insecticides; (iii) official inspections at 3-week intervals and weekly self-inspections; (iv) only cuttings are exported **Interception records** There are no records of interceptions from Israel **Shortcomings of current measures/procedures** There are no main shortcomings. The combination of applied measures will greatly reduce the probability that *P. psidii* is present in consignments of *J. polyanthum* cuttings for export **Major considerations in case of an EKE of a group of species** The rating for *A. orientalis* was used as a basis for the rating of *P. psidii.* The main differences between *A. orientalis* and *P. psidii* taken into consideration for the rating of *P. psidii* are: • *P. psidii* produces honeydew and an ovisac and because of this it is relatively easier to detect • *P. psidii* is not considered widespread in Israel • *P. psidii* has an RNQP status in Israel • *P. psidii* has asexual reproduction **Main uncertainties** Pest pressure and the proximity of population sources in the surrounding environment are unknown				

5.3.6. Overview of the evaluation of *Colletotrichum siamense*

Rating of the likelihood of pest freedom	**Almost always pest free** (based on the Median)				
Percentile of the distribution	5%	25%	Median	75%	95%
Proportion of pest free bags	**9,992** out of 10,000 bags	**9,996** out of 10,000 bags	**9,998** out of 10,000 bags	**9,999** out of 10,000 bags	**10,000** out of 10,000 bags
Proportion of infested bags[5]	**0** out of 10,000 bags	**1** out of 10,000 bags	**2** out of 10,000 bags	**4** out of 10,000 bags	**8** out of 10,000 bags

Summary of the information used for the evaluation	**Possibility that the pest could become associate with the commodity** *Colletotrichum siamense* has a wide host range detected for the first time in 2017 in the North and Eastern of Israel. *C. siamense* is reported on *J. sambac* and *J. mesnyi* and there are no records on *J. polyanthum*. However, given the polyphagous nature of this pest, it is likely that it can use *J. polyanthum* as host plant It is possible that local populations of *C. siamense* are present in the neighbouring environment of the greenhouses with *Jasminum* plants destined for export *J. polyanthum* plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of fungal inoculum into a greenhouse is possible through holes in the netting or roof of the greenhouse structure. The success rate of one of these events is only likely to occur in case of a high (local) density of *C. siamense* in the neighbouring environment of the greenhouse and occurrence of suitable environmental conditions for spore dispersal, i.e. windy-rainy conditions or sprinkler irrigation **Measures taken against the pest and their efficacy** The relevant applied measures are: (i) plants are grown in a protected environment (greenhouse), (ii) official inspections at 3-week intervals and weekly self-inspections **Interception records** There are no records of interceptions from Israel **Shortcomings of current measures/procedures** There are no main shortcomings **Main uncertainties** Pest pressure and the proximity of population sources in the surrounding environment is unknown

5.3.7. Outcome of Expert Knowledge Elicitation

Table 9 and Figure 4 show the outcome of the EKE regarding pest freedom after the evaluation of the currently proposed risk mitigation measures for the selected pests.

Figure 5 provides an explanation of the descending distribution function describing the likelihood of pest freedom after the evaluation of the currently proposed risk mitigation measures for *J. polyanthum* unrooted cuttings designated for export to the EU based on the example of *Scirtothrips dorsalis.*

Table 9: Assessment of the likelihood of pest freedom following evaluation of current risk mitigation measures against *Scirtothrips dorsalis, Aonidiella orientalis, Milviscutulus mangiferae*, *Paracoccus marginatus, Pulvinaria psidii and Colletotrichum siamense* on *Jasminum polyanthum* unrooted cuttings 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 that not pest free	Frequently pest free	Very frequently pest free	Extremely frequently pest free	Pest free with some expectational cases	Pest free with few expectational cases	Almost always pest free
1	Insects	*Scirtothrips dorsalis*						L	M	U
2a	Insects	*Aonidiella orientalis*								LMU
2b	Insects	*Milviscutulus mangiferae*							L	MU
2c	Insects	*Paracoccus marginatus*								LMU
2d	Insects	*Pulvinaria psidii*								LMU
3	Fungi	*Colletotrichum siamense*							L	MU

PANEL A

	Pest freedom category	Pest-free bags out of 10,000
(red)	Sometimes pest free	≤ 5,000
(orange)	More often than not pest free	5,000–≤ 9,000
(light orange)	Frequently pest free	9,000–≤ 9,500
(light yellow)	Very frequently pest free	9,500–≤ 9,900
(yellow)	Extremely frequently pest free	9,900–≤ 9,950
(light green)	Pest free with some exceptional cases	9,950–≤ 9,990
(green)	Pest free with few exceptional cases	9,990–≤ 9,995
(dark green)	Almost always pest free	9,995–≤ 10,000

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

PANEL B

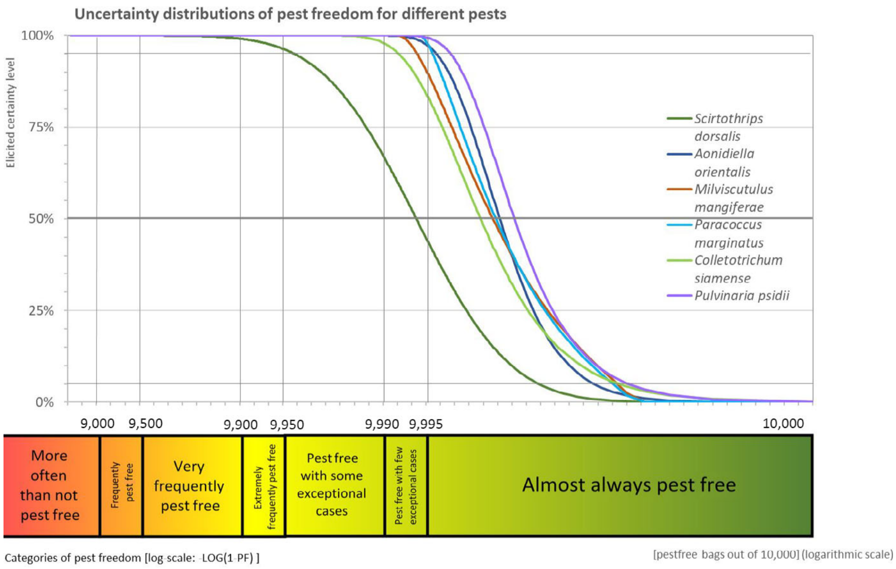

Figure 4: Elicited certainty (y-axis) of the number of pest-free *Jasminum polyanthum* bags (x-axis; log-scaled) out of 10,000 bags designated for export to the EU introduced from Israel for all evaluated pests visualised as descending distribution function. Horizontal lines indicate the percentiles (starting from the bottom 5%, 25%, 50%, 75%, 95%). The Panel is 95% sure that 9,958, 9,996, 9,994, 9,995, 9,996 and 9,992 or more bags per 10,000 will be free from *Scirtothrips dorsalis, Aonidiella orientalis, Milviscutulus mangiferae*, *Paracoccus marginatus*, *Pulvinaria psidii* and *Colletotrichum siamense*, respectively

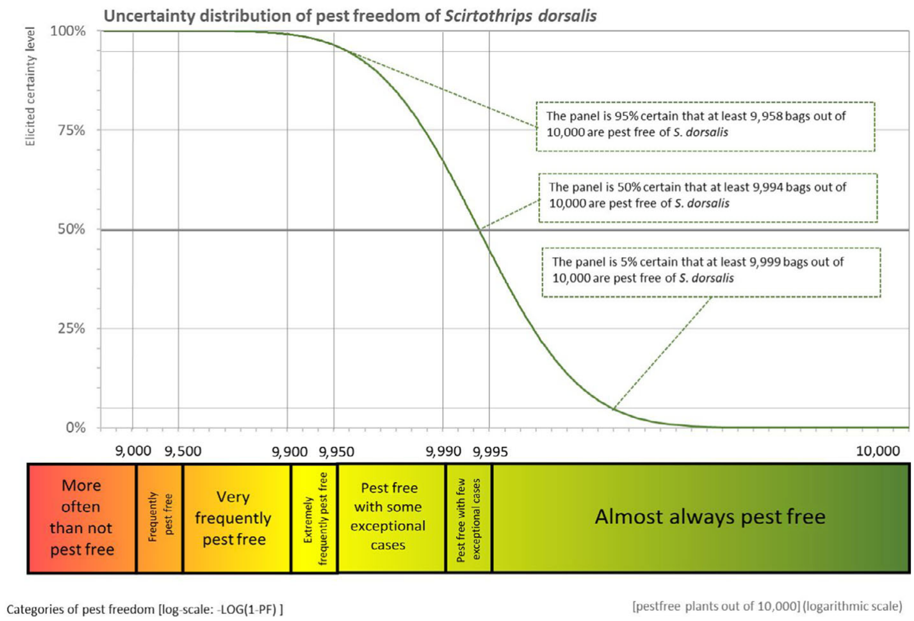

Figure 5: Explanation of the descending distribution function describing the likelihood of pest freedom after the evaluation of the currently proposed risk mitigation measures for plants designated for export to the EU based on the example of *Scirtothrips dorsalis*

6. Conclusions

There are six pests identified to be present in Israel and considered to be potentially associated with cuttings of *J. polyanthum* (up to 1 year old) imported from Israel and relevant for the EU.

For these pests (*Scirtothrips dorsalis*, *Aonidiella orientalis*, *Milviscutulus mangiferae*, *Paracoccus marginatus, Pulvinaria psidii and Colletotrichum siamense*), the likelihood of the pest freedom after the evaluation of the currently proposed risk mitigation measures for *J. polyanthum* designated for export to the EU was estimated.

For *Scirtothrips dorsalis*, the likelihood of pest freedom following evaluation of current risk mitigation measures was estimated as 'pest free with few exceptional cases' with the 90% uncertainty range reaching from 'pest free with some exceptional cases' to 'almost always pest free'. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9,958 and 10,000 bags per 10,000 will be free from *S. dorsalis.*

For *Aonidiella orientalis*, the likelihood of pest freedom following evaluation of current risk mitigation measures was estimated as 'almost always pest free' which is also valid for the whole 90% uncertainty range. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9,996 and 10,000 bags per 10,000 will be free from *A. orientalis.*

For *Milviscutulus mangiferae*, the likelihood of pest freedom following evaluation of current risk mitigation measures was estimated as 'almost always pest free' with the 90% uncertainty range reaching from pest free with few exceptional cases to 'almost always pest free'. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9,994 and 10,000 bags per 10,000 will be free from *M. mangiferae.*

For *Paracoccus marginatus*, the likelihood of pest freedom following evaluation of current risk mitigation measures was estimated as 'almost always pest free' which is also valid for the whole 90% uncertainty range. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9,995 and 10,000 bags per 10,000 will be free from *P. marginatus.*

For *Pulvinaria psidii*, the likelihood of pest freedom following evaluation of current risk mitigation measures was estimated as 'almost always pest free' which is also valid for the whole 90% uncertainty range. The Expert Knowledge Elicitation indicated with 95% certainty, that between 9,996 and 10,000 bags per 10,000 will be free from *P. psidii.*

For *Colletotrichum siamense*, the likelihood of pest freedom following evaluation of current risk mitigation measures was estimated as 'almost always pest free' with the 90% uncertainty range reaching from 'pest free with few exceptional cases to 'almost always pest free'. The Expert Knowledge Elicitation indicated, with 95% certainty, that between 9,992 and 10,000 bags per 10,000 will be free from *C. siamense.*

References

Akram A, Rasool G, Rehman A, Mansoor S, Briddon RW and Saeed M, 2017. Identification of cotton leaf curl Kokhran virus and multiple satellite molecules infecting *Jasminum sambac* in Pakistan. Journal of Plant Pathology, 99, 799–818. https://doi.org/10.13140/RG.2.2.28179.17443

CABI (Centre for Agriculture and Bioscience International), online. CABI Crop Protection Compendium. Available online: https://www.cabi.org/cpc [Accessed: 15 November 2020]

EFSA PLH Panel (EFSA Panel on Plant Health), 2019b. Commodity risk assessment of black pine (*Pinus thunbergii* Parl.) bonsai from Japan. EFSA Journal 2019;17(5):5667, 184 pp. https://doi.org/10.2903/j.efsa.2019.5668

EFSA PLH Panel (EFSA Panel on Plant Health), 2018a. Guidance on quantitative pest risk assessment. EFSA Journal 2018;16(8):5350, 86 pp. https://doi.org/10.2903/j.efsa.2018.5350

EFSA PLH Panel (EFSA Panel on Plant Health), 2018b. Scientific Opinion on the pest categorisation of *Xiphinema americanum* sensu lato. EFSA Journal 2018;16(7):5298, 43 pp. https://doi.org/10.2903/j.efsa.2018.5298

EFSA PLH Panel (EFSA Panel on Plant Health), 2019a. Guidance on commodity risk assessment for the evaluation of high risk plants dossiers. EFSA Journal 2019;17(4):5668, 20 pp. https://doi.org/10.2903/j.efsa.2019.5668

EFSA Scientific Committee, 2018. Scientific Opinion on the principles and methods behind EFSA's Guidance on Uncertainty Analysis in Scientific Assessment. EFSA Journal 2018;16(1):5122,235 pp. https://doi.org/10.2903/j.efsa.2018.5122issn:1831-4732

EPPO (European and Mediterranean Plant Protection Organization), online. EPPO Global Database. Available online: https://www.eppo.int [Accessed: 8 November 2020]

EUROPHYT, online. European Union Notification System for Plant Health Interceptions - EUROPHYT. Available online: http://ec.europa.eu/food/plant/plant_health_biosecurity/europhyt/index_en.htm [Accessed: 12 February 2020].

FAO (Food and Agriculture Organization of the United Nations), 1995. ISPM (International standards for phytosanitary measures) No 4. Requirements for the establishment of pest free areas. Available online: http://www.ippc.int/en/publications/614/

FAO (Food and Agriculture Organization of the United Nations), 2016. ISPM (International standards for phytosanitary measures) No. 36. Integrated measures for plants for planting. FAO, Rome, 22 pp. Available online: https://www.ippc.int/en/publications/636/

FAO (Food and Agriculture Organization of the United Nations), 2017. ISPM (International standards for phytosanitary measures) No. 5. Glossary of phytosanitary terms. FAO, Rome. Available online: https://www.ippc.int/en/publications/622/

Gera A and Zeidan M, 2006. New and emerging virus in ornamental crops. Acta Horticolturae, 722, 175–180. https://doi.org/10.17660/actahortic.2006.722.21

Kottek M, Grieser J, Beck C, Rudolf B and Rubel F, 2006. World map of Köppen- Geiger climate classification updated. Meteorologische Zeitschrift, 15, 259–263. https://doi.org/10.1127/0941-2948/2006/0130

MacLeod A and Korycinska A, 2019. Detailing Köppen-Geiger climate zones at a country and regional level: a resource for pest risk analysis. EPPO Bulletin, 49, 73–82. https://doi.org/10.1111/epp.12549

Marwal A, Sahu A, Prajapat R and Gaur RK, 2013. First report of begomovirus infecting two ornamental plants: Jasminum sambac and Millingtonia hortensis. Indian Phytopathology, 66, 115–116.

Moriones E, Praveen S and Chakraborty S, 2017. Tomato leaf curl new delhi virus: an emerging virus complex threatening vegetable and fiber crops. Viruses, 9, 264. https://doi.org/10.3390/v9100264

Scott-Brown AS, Hodgetts J, Hall J, Simmonds MJS and Collins DW, 2018. Potential role of botanic garden collections in predicting hosts at risk globally from invasive pests: a case study using Scirtothrips dorsalis. Journal of Pest Science, 91, 601–611. https://doi.org/10.1007/s10340-017-0916-2

Siddiqui IA, Sher SA and French AM, 1973. Distribution of Plant Parasitic Nematodes in California. State of California Department of Food and Agriculture, Division of Plant Industry. 324 pp.

Waterworth HE, 1971. Physical properties and host ranges of viruses latent in and mechanically transmitted from jasmine. Phytopathology, 61, 228–230.

Glossary

Control (of a pest)	Suppression, containment or eradication of a pest population (FAO, 1995, 2017)
Entry (of a pest)	Movement of a pest into an area where it is not yet present, or present but not widely distributed and being officially controlled (FAO, 2017)
Establishment (of a pest)	Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO, 2017)
Greenhouse	A walk-in, static, closed place of crop production with a usually translucent outer shell, which allows controlled exchange of material and energy with the surroundings and prevents release of plant protection products (PPPs) into the environment
Impact (of a pest)	The impact of the pest on the crop output and quality and on the environment in the occupied spatial units
Introduction (of a pest)	The entry of a pest resulting in its establishment (FAO, 2017)
Measures	Control (of a pest) is defined in ISPM 5 (FAO, 2017) as 'Suppression, containment or eradication of a pest population' (FAO, 1995). Control measures are measures that have a direct effect on pest abundance. Supporting measures are organisational measures or procedures supporting the choice of appropriate risk mitigation measures that do not directly affect pest abundance
Pathway	Any means that allows the entry or spread of a pest (FAO, 2017)
Phytosanitary measures	Any legislation, regulation or official procedure having the purpose to prevent the introduction or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests (FAO, 2017)
Protected zone	A Protected zone is an area recognised at EU level to be free from a harmful organism, which is established in one or more other parts of the Union
Quarantine pest	A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled (FAO, 2017)
Regulated non-quarantine pest	A non-quarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact and which is therefore regulated within the territory of the importing contracting party (FAO, 2017)
Risk mitigation measure	A measure acting on pest introduction and/or pest spread and/or the magnitude of the biological impact of the pest should the pest

	be present. A risk mitigation measure may become a phytosanitary measure, action or procedure according to the decision of the risk manager
Spread (of a pest)	Expansion of the geographical distribution of a pest within an area (FAO, 2017)

Abbreviations

CABI	Centre for Agriculture and Bioscience International
EKE	Expert knowledge elicitation
EPPO	European and Mediterranean Plant Protection Organization
FAO	Food and Agriculture Organization
ISPM	International Standards for Phytosanitary Measures
PPIS	Plant Protection & Inspection Services
PLH	Plant Health
PRA	Pest Risk Assessment
RNQPs	Regulated Non-Quarantine Pests

Appendix A – Data sheets of pests selected for further evaluation via Expert Knowledge Elicitation

A.1. *Scirtothrips dorsalis*

A.1.1. Organism information

Taxonomic information	Current valid scientific name: *Scirtothrips dorsalis* Synonyms: *Anaphothrips andreae*, *Anaphothrips dorsalis*, *Anaphothrips fragariae*, *Heliothrips minutissimus*, *Neophysopus fragariae*, *Scirtothrips andreae*, *Scirtothrips dorsalis padmae*, *Scirtothrips fragariae*, *Scirtothrips minutissimus*, *Scirtothrips padmae* Name used in the EU legislation: *Scirtothrips dorsalis* Hood [SCITDO] Order: Thysanoptera Family: Thripidae Common name: Assam thrips, chilli thrips, flower thrips, strawberry thrips, yellow tea thrips, castor thrips Name used in the Dossier: *Scirtothrips dorsalis*
Group	Insects
EPPO code	SCITDO
Regulated status	The pest is listed in Annex II/A of Regulation (EU) 2019/2072 as *Scirtothrips dorsalis* Hood [SCITDO] *Scirtothrips dorsalis* is included in the EPPO A2 list (EPPO, online_a) The pest is quarantine in Israel, Mexico and Morocco (EPPO, online_b)
Pest status in Israel	Present, widespread in Israel (EPPO, online_b)
Pest status in the EU	Not relevant for EU Quarantine pest
Host status on *Jasminum polyanthum*	There are no host plant records for *Jasminum polyanthum* There is one host plant record for *Jasminum sambac* (Scott-Brown et al., 2018) *S. dorsalis* is a polyphagous insect (see below), and therefore, the Panel assumes that *J. polyanthum* is a host
PRA information	Available Pest Risk Assessments: – CSL Pest Risk Analysis for *Scirtothrips dorsalis* (MacLeod and Collins, 2006), – Pest Risk Assessment *Scirtothrips dorsalis* (Vierbergen and van der Gaag, 2009), – Scientific Opinion on the pest categorisation of *Scirtothrips dorsalis* (EFSA PLH Panel, 2014)
Other relevant information for the assessment	
Biology	*S. dorsalis* is native to the Indian subcontinent. The pest can have annually up to 8 generations in temperate regions and up to 18 generations in warm subtropical and tropical areas (Kumar et al., 2013) The stages of the life cycle include egg, first and second instar larva, prepupa, pupa and adult (Kumar et al., 2013). They can be found on all the aboveground plant parts (Kumar et al., 2014). Temperature threshold for development is 9.7°C and 32°C, with 265 degree-days required for development from egg to adult (Tatara, 1994). The adult can live up to 13–15 days (Kumar et al., 2013) Females can lay between 60 and 200 eggs in lifetime (Seal and Klassen, 2012). Females develop from fertilised and males from unfertilised eggs (Kumar et al., 2013). The eggs are inserted into soft plant tissues and hatch between 2 and 7 days (Kumar et al., 2014) Larvae and adults tend to gather near the mid-vein or near the damaged part of leaf tissue. Pupae are found in the leaf litter, on the axils of the leaves, in curled leaves or under the calyx of flowers and fruits (Kumar et al., 2013; MacLeod and Collins, 2006)

	The pest cannot overwinter, if the temperature remains below −4°C for 5 or more days (Nietschke et al., 2008) Adults fly actively for short distances and passively on wind currents, which enables long-distance spread (EFSA PLH Panel, 2014) *S. dorsalis* is a vector of plant viruses including peanut necrosis virus (PBNV), groundnut bud necrosis virus (GBNV), watermelon silver mottle virus (WsMoV), capsicum chlorosis virus (CaCV) and melon yellow spot virus (MYSV) (Kumar et al., 2013)	
Symptoms	**Main type of symptoms**	The pest damages young leaves, buds, tender stems and fruits by puncturing tender tissues with their stylets and extracting the contents of individual epidermal cells leading to necrosis of tissue (Kumar et al., 2013) Main symptoms are: – 'sandy paper lines' on the epidermis of the leaves, – leaf crinkling and upwards leaf curling, – leaf size reduction, – discoloration of buds, flowers and young fruits, – silvering of the leaf surface, – linear thickenings of the leaf lamina, – brown frass markings on the leaves and fruits, – fruits develop corky tissues, – grey to black markings on fruits, – fruit distortion and early senescence of leaves, – defoliation (Kumar et al., 2013, 2014)
	Presence of asymptomatic plants	– eggs and early stages of infestation may be difficult to detect – there are no baits/pheromones reported
	Confusion with other pathogens/pests	Due to small size and morphological similarities within the genus, the identification of *S. dorsalis,* using traditional taxonomic keys, is difficult. The most precise identification of the pest is combination of molecular and morphological methods (Kumar et al., 2013). Sometimes, infested plants appear similar to plant damaged by broad mites (Kumar et al., 2013)
Host plant range	*S. dorsalis* is a polyphagous pest with over 225 host plant species (see section 3.4.1 of EFSA (2014)	
Pathways	Plants for planting and fruits. The pest is mainly found on leaves, but also branches, trunks, shoots and fruit of the host plants (CABI, online)	
Surveillance information	No surveillance information for this pest is currently available from Israel. There is no information available to assess whether the pest has ever been found in the nurseries or surrounding environment of the nurseries	

A.1.2. Possibility of pest presence in the nurseries

A.1.2.1. Possibility of entry from the surrounding environment

In Israel, *S. dorsalis* is reported to be widespread. Given the wide host range of this pest, it is possible that local populations of *S. dorsalis* are present in the neighbouring environment of the greenhouses with *Jasminum* plants destined for export. There is no evidence that the nurseries are located in a pest-free area for *S. dorsalis,* so the Panel assumes that *S. dorsalis* can be present in the production areas of *J. polyanthum* destined for export to the EU.

J. polyanthum plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of thrips into a greenhouse is possible through holes in the netting or roof of the greenhouse structure or by flying or passive wind transfer through an open door or as a hitchhiker on clothing of nursery staff. The success rate of one of these events is only likely to occur in case of a high (local) density of *S. dorsalis* in the neighbouring environment of the greenhouse.

S. dorsalis is not reported on *Jasminum* in Israel.

Uncertainties:

- There is no surveillance information on the presence and population pressure of *S. dorsalis* in the area where the greenhouse is located.
- The proximity of the greenhouses to possible sources of populations of *S. dorsalis* is unknown.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible that *S. dorsalis* can enter greenhouses from the surrounding area.

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

The source of the planting material to produce *J. polyanthum* cuttings originates from officially approved nurseries. During a growing cycle, no new *J. polyanthum* plants are introduced in the greenhouse, therefore entry off the pest with new plants is highly unlikely, but it cannot be excluded that S. dorsalis is present on plants of *Thunbergia* and *Pentas* (*Pentas* and *Thunbergia* are reported as host plants for *S. dorsalis* (Scott-Brown et al., 2018)) which could be present in the export greenhouse (Dossier Section 6.0).

Taking into consideration the above evidence, the Panel considers it is possible that *S. dorsalis* enters the nursery with new plants/seeds.

A.1.2.3. Possibility of spread within the nursery

Introduction by the use of infected soil or water is not relevant for this risk assessment.

The insect within the greenhouse can spread or hitchhike on clothing of nursery staff. Local populations may first establish on mother plants or to other plant species (*Pentas* and *Thunbergia* are reported as host plants for *S. dorsalis* (Scott-Brown et al., 2018)) that may be grown close to the plants destined for export and subsequently spread to new plants.

Taking into consideration the above evidence and uncertainties, the Panel considers that the transfer of the pest within the greenhouse is possible.

A.1.3. Information from interceptions

Approximately 300,000 *J. polyanthum* cuttings are imported annually from Israel into the EU (corresponding to 6,000 bags per year).

In the Europhyt database (1995-12/02/2020), there are no records of interception of *S. dorsalis* on produce from Israel.

A.1.4. Evaluation of the risk mitigation options

In the table below, all the risk mitigation measures currently applied in Israel are summarised and an indication of their effectiveness on *S. dorsalis* is provided. The description of the risk mitigation measures currently applied in Israel is provided in Table 7.

Number	Risk mitigation measures	Effect on the pest (Yes/No)	Evaluation and uncertainties
1	Growing plants in isolation	Yes	Plants are protected from migrating thrips that can enter the surrounding environment Uncertainties: – Presence of defects in the greenhouse structure – Entry through the door by wind or human assistance – The plants to be exported can grow close to other plant species that are hosts of *S. dorsalis* (*Pentas* and *Thunbergia*)
2	Soil treatment	No	Not applicable

Number	Risk mitigation measures	Effect on the pest (Yes/No)	Evaluation and uncertainties
3	Insecticide treatment	Yes	Plants are treated during the growing season with Flonicamid (pyridine, systemic) and against spider mites with Floramite (bifenazate) Uncertainties: – Flonicamid is effective against thrips but is not effective against their eggs – The efficacy of acaricide Floramite against thrips – The frequency and timing of the insecticide treatments
4	Official supervision by PPIS	Yes	The inspection of mother plants would reveal the presence of infested plants
5	Inspections of nurseries that export plants	Yes	Presence of thrips on the cuttings are expected to be detected during the official and self-inspection performed in the greenhouse

A.1.5. Overall likelihood of the pest freedom

A.1.5.1. Reasoning for a scenario which would lead to a reasonably low number of infested consignments

- *S. dorsalis* has been reported on *J. sambac*, but not on *J. polyanthum*.
- *Jasminum* is not a preferred host.
- *S. dorsalis* has not been reported on *Jasminum* in Israel.
- *S. dorsalis* has never been intercepted on produce from Israel.
- Low population pressure of *S. dorsalis* in the surrounding environment.
- *S. dorsalis* is not a good flyer and dispersal is mainly dependent on wind- or human-assisted movement.
- Greenhouse structure is insect proof and the entrance is unlikely.
- The inspection regime is effective (for detection of thrips).
- At harvest cuttings with symptoms will be detected.
- Application of systemic insecticides is effective against thrips.

A.1.5.2. Reasoning for a scenario which would lead to a reasonably high number of infested consignments

- *S. dorsalis* is widespread in Israel and has a wide host range, therefore it is likely that host plants are present in the surrounding environment.
- Greenhouses are located in areas where *S. dorsalis* is present and abundant (e.g. citrus plantation).
- Even if there is no evidence that *J. polyanthum* is a host plant for *S. dorsalis*, given the polyphagous nature of this thrips species it is likely that *J. polyanthum* is a suitable host.
- Presence of thrips species in the environment is not monitored.
- It cannot be ruled out that there are defects in the greenhouse structure or thrips hitchhikes on greenhouse staff.
- The pest may be introduced into the export greenhouse with other host plants, e.g. *Thunbergia* and *Pentas* which can be grown in the greenhouse.
- Insecticide treatments are not targeted at thrips.

A.1.5.3. Reasoning for a central scenario equally likely to over- or underestimate the number of infested consignments (Median)

The value of the median is estimated based on:

- The protective effect of the greenhouse structure.
- *Jasminum* is not a preferred host and *S. dorsalis* has not been reported on *Jasminum* in Israel

- The insecticides treatments are not targeting thrips but they are moderately effective.
- There are no records of interceptions from Israel.

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

The main uncertainty is the population pressure in the surrounding environment.

A.1.5.5. Elicitation outcomes of the assessment of the pest freedom for *Scirtothrips dorsalis*

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

Table A.1: Elicited and fitted values of the uncertainty distribution of pest infestation by *Scirtothrips dorsalis* per 10,000 bags

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0					3		5		15					50
EKE	0.4	0.6	0.8	1.3	1.8	2.6	3.5	5.9	9.8	13.1	18.5	27	41.7	60.7	94

The EKE results is the Lognormal distribution (11.933, 21.192) fitted with @Risk version 7.5.

Based on the numbers of estimated infested bags, the pest freedom was calculated (i.e. = 10,000 – the number of infested bags 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 *Scirtothrips dorsalis* per 10,000 bags calculated by Table A.1

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9,950					9,985		9,995		9,997					10,000
EKE results	9,906	9,939	9,958	9,973	9,981	9,987	9,990	9,994	9,996	9,997	9,998	9,998	9,999	9,999	10,000

The EKE results are the fitted values.

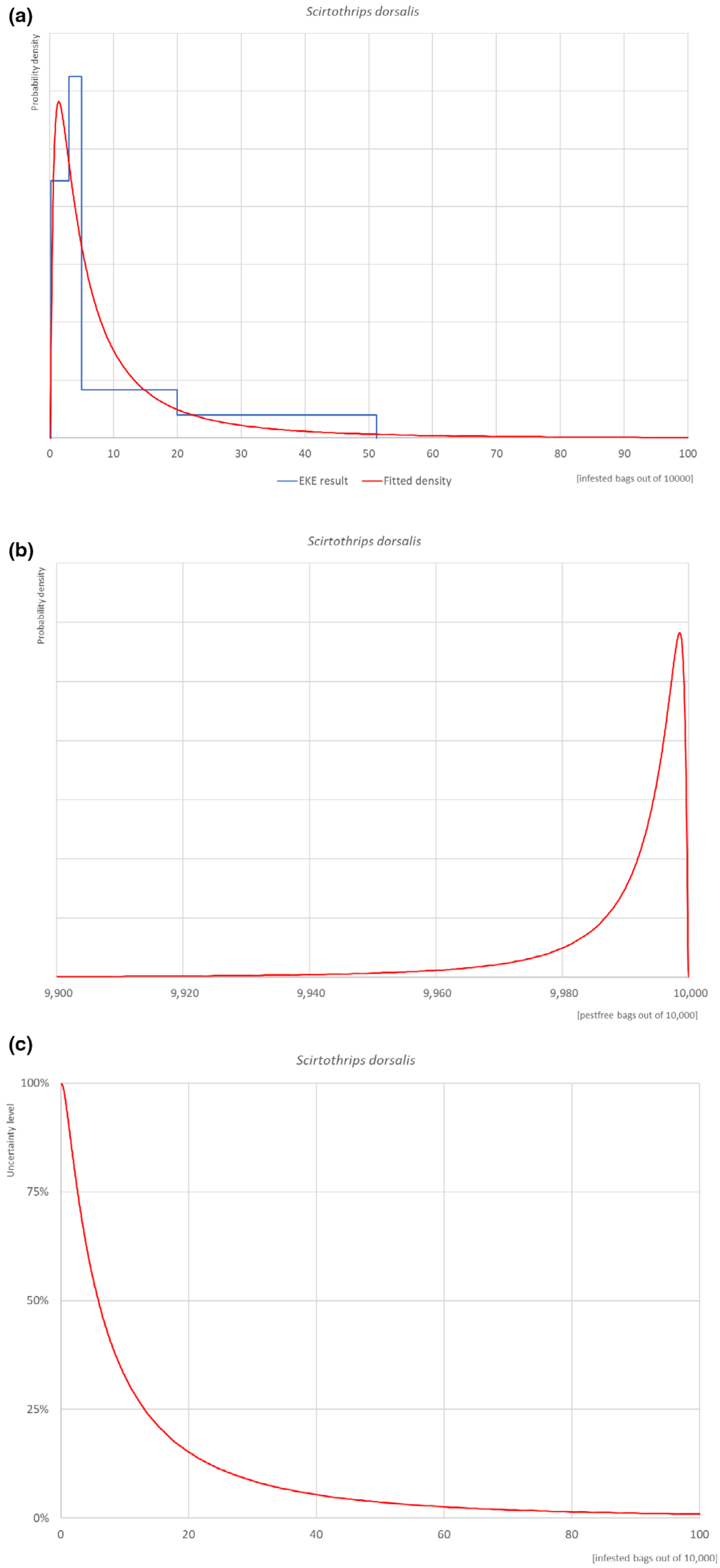

Figure A.1: (a) Elicited uncertainty of pest infestation per 10,000 bags (histogram in blue – vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (b) uncertainty of the proportion of pest-free bags per 10,000 (i.e. =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

A.1.6. Reference list

CABI (Centre for Agriculture and Bioscience International), online. *Scirtothrips dorsalis*. Available online: https://www.cabi.org/cpc/datasheet/49065 [Accessed: 9 April 2020].

EFSA PLH Panel (EFSA Panel on Plant Health), 2014. Scientific Opinion on the pest categorisation of *Scirtothrips dorsalis*. EFSA Journal 2014;12(12):3915, 29 pp. https://doi.org/10.2903/j.efsa.2014.3915

EPPO (European and Mediterranean Plant Protection Organization), online_a. EPPO A2 List of pests recommended for regulation as quarantine pests, version 2019-09. Available online: https://www.eppo.int/ACTIVITIES/plant_quarantine/A2_list [Accessed: 09 March 2020].

EPPO (European and Mediterranean Plant Protection Organization), online_b. EPPO Global Database: *Scirtothrips dorsalis*. Available online: https://gd.eppo.int/taxon/SCITDO [Accessed: 10 April 2020].

European Commission, online. EUROPHYT (European Union Notification System for Plant Health Interceptions). Available online: http://ec.europa.eu/food/plant/plant_health_biosecurity/europhyt/index_en.htm [Accessed: 15 March 2020].

Kumar V, Kakkar G, McKenzie CL, Seal DR and Osborne LS, 2013. An overview of chilli thrips, *Scirtothrips dorsalis* (Thysanoptera: Thripidae) biology, distribution and management. Weed and pest control-Conventional and new challenges, 53–77. https://doi.org/10.5772/55045

Kumar V, Seal DR and Kakkar G, 2014. Chilli thrips *Scirtothrips dorsalis* Hood (Insecta: Thysanoptera: Thripidae). University of Florida IFAS Extension publication EENY463. Gainesville, Florida: University of Florida. https://doi.org/10.5772/55045

MacLeod A and Collins D, 2006. CSL pest risk analysis for *Scirtothrips dorsalis*. CSL (Central Science Laboratory), 8 pp.

Nietschke BS, Borchert DM, Magarey RD and Ciomperlik MA, 2008. Climatological potential for *Scirtothrips dorsalis* (Thysanoptera: Thripidae) establishment in the United States. Florida Entomologist, 91(1), 79-86. https://doi.org/10.1653/0015-4040(2008)091[0079:cpfsdt]2.0.co;2

Scott-Brown AS, Hodgetts J, Hall J, Simmonds MJS and Collins DW, 2018. Potential role of botanic garden collections in predicting hosts at risk globally from invasive pests: a case study using Scirtothrips dorsalis. Journal of Pest Science 91, 601–611. https://doi.org/10.1007/s10340-017-0916-2

Seal DR and Klassen W, 2012. Chilli thrips (castor thrips, Assam thrips, yellow tea thrips, strawberry thrips), *Scirtothrips dorsalis* Hood, provisional management guidelines. University of Florida, Gainesville, FL, 3 pp.

Tatara A, 1994. Effect of temperature and host plant on the development, fertility and longevity of *Scirtothrips dorsalis* Hood (Thysanoptera: Thripidae). Applied Entomology and Zoology, 29(1), 31–37. https://doi.org/10.1303/aez.29.31

Vierbergen B and van der Gaag DJ, 2009. Pest Risk Assessment Scirtothrips dorsalis. Plant Protection Service, the Netherlands. pp. 9. Available online: https://pra.eppo.int/getfile/ddcf51cf-df6d-40f9-9d28-46f447652ed7

A.2. *Aonidiella orientalis*

A.2.1. Organism information

Taxonomic information	Current valid scientific name: *Aonidiella orientalis* Synonyms: *Aonidiella cocotiphagus, Aonidiella taprobana, Aspidiotus cocotiphagus, Aspidiotus orientalis, Aspidiotus osbeckiae, Aspidiotus pedronis, Aspidiotus taprobanus, Chrysomphalus orientalis, Chrysomphalus pedroniformis, Chrysomphalus pedronis, Evaspidiotus orientalis, Furcaspis orientalis* Order: Hemiptera Family: Diaspididae Common name: Oriental scale, Oriental yellow scale Name used in the Dossier: *Aonidiella orientalis*
Group	Insects
EPPO code	AONDOR
Regulated status	*Aonidiella orientalis* is not regulated in EU The pest is not included in any EPPO list It is a quarantine pest in Morocco (EPPO, online)

Pest status in Israel	Present, no further details (CABI, online) *A. orientalis* has been reported as a mango pest in Israel (Wysoki et al., 1993). The pest was first recorded at the Arava Valley (from the Gulf of Elat to the Dead sea), in the South of Israel (Ben-Dov, 1985). Over the years, the pest has spread to the North of the country where it was found around Lake Kinneret (Sea of Galilee) and, as reviewed by Wysoki et al. (1993) is now widely distributed in Israel	
Pest status in the EU	Absent (EPPO, online)	
Host status on *Jasminum polyanthum*	There are no records that *Jasminum polyanthum* is a host of *A. orientalis* *Jasminum* sp. has been reported as a host for *A. orientalis* (Rahman and Ansari, 1941) *A.orientalis* is a polyphagous insect (see below) and therefore the Panel assumes that *J. polyanthum* is a host	
PRA information	No pest risk assessment is currently available	
Other relevant information for the assessment		
Biology	*A. orientalis* is a tropical and subtropical species with a wide distribution (CABI CPC, online). This pest has been accidently distributed worldwide by transport of infested plant material and it is also present in greenhouses in temperate areas (Naturalis Biodiversity Center) *A. orientalis* reproduces sexually and the numbers of generations observed per year vary from three to five (Naturalis Biodiversity Center). As described by Elder and Smith (1995) from laboratory studies, at 25°C males need approximately 19.5 days to develop from the crawler stage to adult, while females need on average 44.2 days from crawler stage to the production of the first crawler of the subsequent generation at the same temperature. The female deposits about 200 eggs (Waterhouse and Sands, 2001). The females have two larval instars preceding the adult stage, while for males after the larval instars there is a pre-pupa, pupa and winged adult stage Since both male and female crawlers are mobile, this first instar represents the dispersal phase. Probably crawlers can walk up to 1 meter, but they can be transported for longer distances by wind, flying insects, birds and infested plant material moved by man (Naturalis Biodiversity Center). Only adult males are mobile and alatae, while females of all other stages and immature males are sessile (Elder and Smith, 1995)	
Symptoms	**Main type of symptoms**	Leaves are damaged due to the pest feeding, exhibiting characteristic chlorotic streaks and plant vigour is reduced due to the removal of plant sap. Feeding often causes depressions, discoloration and distortion of leaves (CABI, online). The pest can cause yellowing or death of the leaves and consequent defoliation, dieback of twigs and fruit discoloration and early drop (Rajagopal and Krishnamoorthy, 1996; CABI, online) In papaya trees, it has been noted that the scale first occurs on the trunk below the fruit. A large number of insects present on the trunk can cause the death of the tissue leading to rotting and death of trees. The young fruits infested by the crawler do not enlarge in area around the infection leading to rotting and death of trees (Elder and Smith, 1995)
	Presence of asymptomatic plants	Plant damage might not be obvious in early infestation, but the presence of scales on the plants could be observed
	Confusion with other pests	*A. orientalis* may be sometimes confused by growers with *Aonidiella aurantii* (Wysoki et al., 1993). In general, the pest belongs to a group of many similar species not easy to be distinguished. It includes: *A. aurantii* Maskell, *A. comperei* McKenzie, *A. eremocitri* McKenzie, *A. inornata* McKenzie, *A. citrina* Coquillett and *A. taxus* Leonardi (EPPO, 2005). A microscope observation of the slide-mounted adult females is needed for identification, since according to Costa et al. (2013), this species of scale insect can be distinguished from other within the genus by the presence of circumgenital scent glands in the pygidium

Host plant range	*A. orientalis* is a highly polyphagous pest with a wide host range, that can be an economic pest of crops from diverse families, except conifers. It can use as a host plant species belonging to approximately 74 families and 163 genera (Scalenet, online). It has been described as an economically important pest due to damage on *Citrus*, *Ficus*, mango (*Mangifera indica*), papaya (*Carica papaya*), bananas (*Musa acuminata*), coconut (*Cocos nucifera*) and tea (*Camellia sinensis*) (Wysoki et al., 1993; Elder and Smith, 1995). In Israel, it has been reported as a serious pest of mango (*Mangifera indica*) and it was also found on sapodilla (*Achras zapota)*, lentisc (*Pistacia lentiscus*), carob tree (*Ceratonia siliqua*), Bali lemon (*Citrus grandis*) (Wysoki et al., 1993) and pomegranate (*Punica granatum*) (National Database of Pests Present in Israel)
Pathways	Plants for planting and fruits (CABI CPC, online) *A. orientalis* can damage leaves, trunks, twigs and fruits (Elder and Smith, 1995; Costa et al., 2013). It can affect plants at the seedling, vegetative, flowering and fruiting stages (Naturalis Biodiversity Center)
Surveillance information	No surveillance information for this pest is currently available from Israel. There is no information available to assess whether the pest has ever been found in the nurseries or the surrounding environment of the nurseries

A.2.2. Possibility of pest presence in the nursery

A.2.2.1. Possibility of entry from the surrounding environment

In Israel, *A. orientalis* is reported to be widespread, especially in mango production area (Wysoki et al., 1993). Given the wide host range of this pest, it is possible that local populations of *A. orientalis* are present in the neighbouring environment of the greenhouses with *Jasminum* plants destined for export.

After hatching, the larvae (first instar crawlers) migrate to settle on the leaves, fruit and stems of the host plant where they remain until maturity. Crawlers may be carried to neighbouring plants by wind (Waterhouse and Sands, 2001) or by hitchhiking on clothing, equipment or animals (Leathers, 2016). According to Hennessey et al. (2013), the percentage of crawlers settling on a tree from an infested commodity (e.g. a fruit) is higher when the infested fruit is in contact with the tree, than when it is placed 2 m away. Most of the stages of *A. orientalis* remain attached to a host during most of their lives. The mobile stage, the crawler stage is not considered to be a good coloniser of new environments because it is small, fragile, not able to fly and slow in movements (Hennessey et al., 2013). Additionally, crawlers tend to remain and feed on plants close to the one they hatched on. Human activities can facilitate the long-distance dispersal of the crawlers (Hennessey et al., 2013).

There is no evidence that the nurseries are located in a pest-free area for *A. orientalis,* so the Panel considers that *A. orientalis* can be present in the production areas of *J. polyanthum* destined for export to the EU.

Jasminum plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of the scale insects into a greenhouse is possible through holes in the nets or in the roof of the greenhouse structure or as a hitchhiker on clothing of nursery staff. The success rate of one of these events is only likely to occur in case of a high (local) density of *A. orientalis* in the neighbouring environment of the greenhouse.

A. orientalis is not reported on *Jasminum* in Israel.

Uncertainties:

- There is no surveillance information on the presence and population pressure of *A. orientalis* in the neighbouring environment of the greenhouse.
- The presence of the suitable host plants (e.g. mango orchards) and source of population of *A. orientalis* in the area surrounding the greenhouse is unknown.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible that *A. orientalis* can enter greenhouses from the surrounding area.

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

The source of the planting material to produce *J. polyanthum* cuttings to be exported originates from officially approved nurseries. During a growing cycle, no new plants are introduced in the greenhouse, therefore entry with new plants of *J. polyanthum* is highly unlikely but it cannot be excluded that *A. orientalis* is present on plants of *Thunbergia* (*Thunbergia* is reported as host plant for *A. orientalis* (Scalenet, online)) which could be present in the export greenhouse (Dossier Section 6.0).

Taking into consideration the above evidence, the Panel considers it is possible that the insect enters the nursery with new plants/seeds.

A.2.2.3. Possibility of spread within the nursery

Introduction by the use of infected soil or water is not relevant for this risk assessment.

The insect within the greenhouse can spread by hitchhike on clothing of nursery staff. Local populations may first establish on mother plants or to other plant species (*Thunbergia* is reported as host plant for *A. orientalis* (Scalenet, online)) and subsequently spread to new plants.

Taking into consideration the above evidence and uncertainties, the Panel considers that the transfer of the pest within the greenhouse is possible.

A.2.3. Information from interceptions

Approximately 300,000 *J. polyanthum* cuttings are imported annually from Israel into the EU (corresponding to 6,000 bags per year).

In the Europhyt database (1995-12/02/2020), there are no records of interception of *A. orientalis* on produce from Israel.

A.2.4. Evaluation of the risk mitigation options

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

Number	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Growing plants in isolation	Yes	Plants are protected from scale insects that can enter from the surrounding environment Uncertainties: – Presence of defects in the greenhouse structure – Entry through the door by wind or human assistance – The plants to be exported can grow close to other plant species that are host of A. orientalis
2	Soil treatment	No	Not applicable
3	Insecticide treatment	Yes	Plants are treated during the growing season with insecticides; against aphids with Flonicamid (pyridine, systemic) and against spider mites with Floramite (bifenazate) Uncertainties: – Effectiveness of Flonicamid against scales – The frequency and timing of insecticide treatments
4	Official supervision by PPIS	Yes	The inspection of mother plants would reveal the presence of infested plants
5	Inspections of nurseries that export plants	Yes	Presence of scales on the cuttings are expected to be detected during the official and self-inspections performed in the greenhouse Uncertainties: – Early infestation is not easy to detect as only the presence of scales could be observed after thorough inspection of the plants

A.2.5. Overall likelihood of pest freedom

A.2.5.1. Reasoning for a scenario which would lead to a reasonably low number of infested consignments

- *A. orientalis* has been reported on *Jasminum* sp., but not specifically on *J. polyanthum*.
- *Jasminum* is not a preferred host.
- *A. orientalis* has not been reported on *Jasminum* in Israel.
- *A. orientalis* has never been intercepted on produce from Israel.
- Dispersal capacity of *A. orientalis* is limited to the first instar stage (crawler).
- Low population pressure of *A. orientalis* in the surrounding environment.
- Transfer of *A. orientalis* from sources in the surrounding environment to the greenhouse plants is very difficult because dispersal is mainly dependent on human-assisted movement of the first instar stage (crawler).
- Greenhouse structure is insect proof and entrance is unlikely.
- The inspection regime is effective (detection of scale insects).
- Application of systemic insecticide treatment (Flonicamid) is effective against scales.
- At harvest cuttings with symptoms will be detected.

A.2.5.2. Reasoning for a scenario which would lead to a reasonably high number of infested consignments

- *A. orientalis* is widespread in Israel and the scale species has a wide host range (e.g. mango plantation); therefore, it is likely that host plants are present in the surrounding environment.
- The presence of scale species in the environment is not monitored.
- High population pressure of *A. orientalis* in highly preferred host (e.g. abandoned infected field of highly preferable host next to the greenhouse).
- It cannot be ruled out that there are defects in the greenhouse structure or scale insects hitchhike on greenhouse staff.
- Insecticide treatments are not targeting scale insects.
- Even if there is no evidence that *J. polyanthum* is a host plant for *A. orientalis*, given the polyphagous nature of this scale insect, it is likely that *J. polyanthum* is a suitable host plant.
- Pest may enter greenhouses by other plants for planting, e.g. *Thunbergia*, which could be present/introduced in the export greenhouses.
- Individual crawlers may remain undetected.

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

The value of the median is estimated based on:

- The protective effect of the greenhouse structure.
- *Jasminum* is not a preferred host and *A. orientalis* has not been reported on *Jasminum* in Israel.
- The insecticides treatments are not targeting scale insects but are moderately effective against them.
- There are no records of interceptions from Israel.

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

The main uncertainty is the population pressure of *A. orientalis* in the surrounding environment.

A.2.5.5. Elicitation outcomes of the assessment of the pest freedom for *Aonidiella orientalis*

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

Table A.3: Elicited and fitted values of the uncertainty distribution of pest infestation by *Aonidiella orientalis* per 10,000 bags

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0.2					0.9		1.5		2.5					5
EKE	0.15	0.24	0.34	0.50	0.68	0.89	1.1	1.5	2.1	2.4	2.9	3.5	4.2	5.0	5.9

The EKE results is the Gamma distribution (2.0905, 0.86737) fitted with @Risk version 7.5.

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

Table A.4: The uncertainty distribution of bags free of *Aonidiella orientalis* per 10,000 bags calculated by Table A.3.

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9,995					9,998		9,999		9,999					10,000
EKE results	9,994.1	9,995.0	9,995.8	9,996.5	9,997.1	9,997.6	9,997.9	9,998.5	9,998.9	9,999.1	9,999.3	9,999.5	9,999.7	9,999.8	9,999.9

The EKE results are the fitted values.

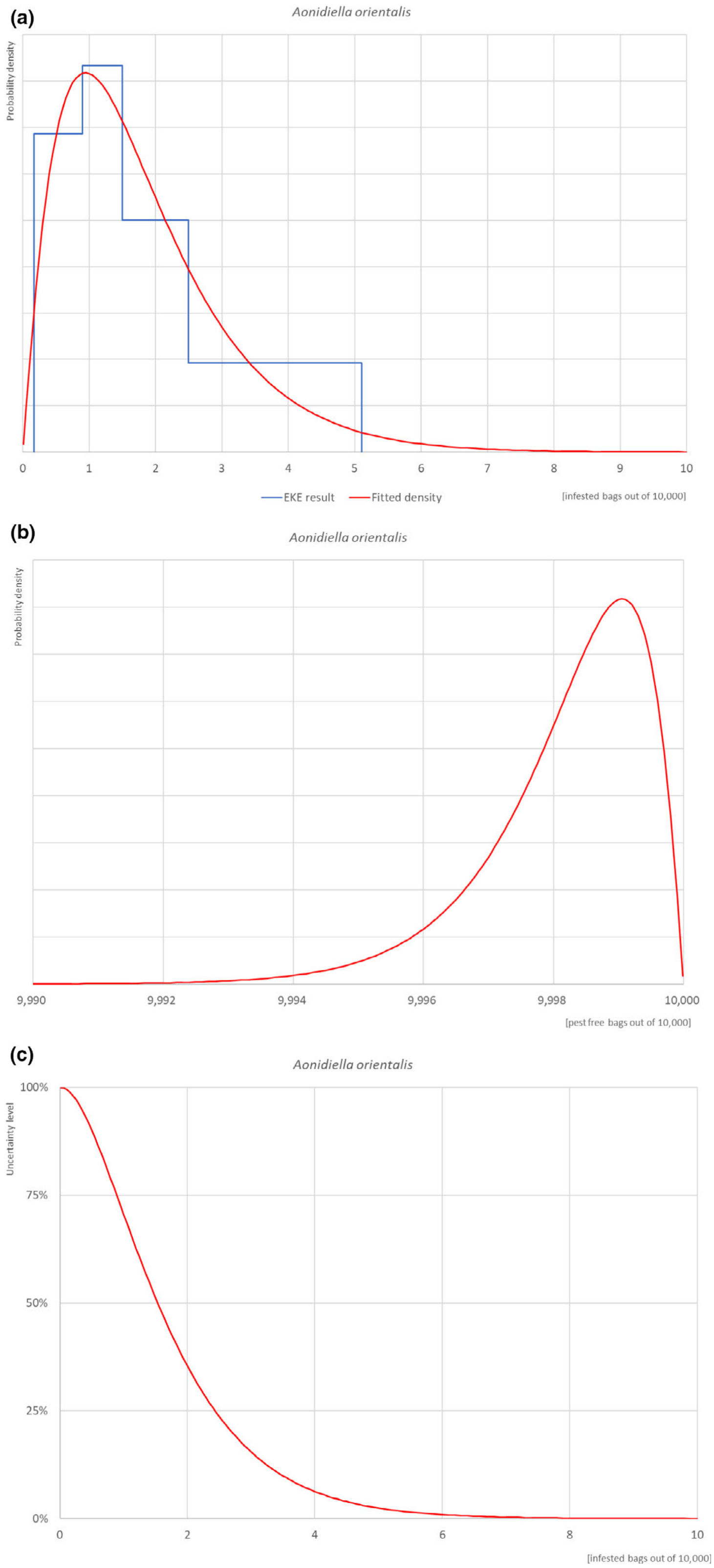

Figure A.2: (a) Elicited uncertainty of pest infestation per 10,000 bags (histogram in blue – vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (b) uncertainty of the proportion of pest-free bags per 10,000 (i.e. =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

A.2.6. Reference list

Costa EM, Godoy MS, Araujo EL, Silva RIR and Wolff VRS, 2013. First report of the new infestation of *Azadirachta indica* A. juss by Aonidiella orientalis (Newstead) (Hemiptera: Diaspididae) in Brazil. Bioscience Journal, 29, 1441–1445.

Ben-Dov Y, 1985. Further observations on scale insects (Homoptera: Coccoidea) of the Middle East. Phytoparasitica, 13, 185–192. https://doi.org/10.1007/bf02980667

CABI (Centre for Agriculture and Bioscience International), online. *Aonidiella orientalis* (oriental yellow scale). Available online: https://www.cabi.org/cpc/datasheet/5852#06586C86-607E-42D9-B9D2-719C4BC55DEE [Accessed: 9 April 2020].

Naturalis Biodiversity Center, online. Aonidiella orientalis. Diaspididae of the World 2.0. Available online: https://diaspididae.linnaeus.naturalis.nl/linnaeus_ng/app/views/species/taxon.php?id=113045&epi=155 [Accessed: 7 April 2020].

Elder RJ and Smith D, 1995. Mass rearing of *Aonidiella orientalis* (Newstead) (Hemiptera: Diaspididae) on butternut gramma. Journal of the Australian Entomological Society, 34, 253–254. https://doi.org/10.1111/j.1440-6055.1995.tb01333.x

EPPO (European and Mediterranean Plant Protection Organization), online. EPPO Global Database: *Aonidiella orientalis*. Available online: https://gd.eppo.int/taxon/AONDOR [Accessed: 10 April 2020]

EPPO (European and Mediterranean Plant Protection Organization), 2005. PM 7/51. *Aonidiella citrina*. OEPP/EPPO Bulletin, 35, 327–330.

Hennessey MK, Peña JE, Zlotina M and Santos K, 2013. Likelihood of dispersal of the armored scale, Aonidiella orientalis (Hemiptera: Diaspididae) to avocado trees from infested fruit discarded on the ground, and observations on spread by handlers. In: Peña JE (ed.). Potential Invasive Pests of Agricultural Crops. CAB International, USA. pp. 401–411.

Leathers J, 2016. Aonidiella orientalis (newstead): oriental scale. Pest Rating Proposal and Final Ratings. Available online: https://blogs.cdfa.ca.gov/Section3162/?p=2035 [Accessed: 10 April 2020]

Ministry of Agriculture & Rural Development. Database of plant pest in Israel, online. Available online: https://www.moag.gov.il/en/Pages/SearchNegaim.aspx

Rahman KA and Ansari AR, 1941. Scale insects of the Punjab and north-west frontier province usually mistaken for San José scale (with descriptions of two new species). Indian Journal of Agricultural Sciences, 11, 816–830.

Rajagopal D and Krishnamoorthy A, 1996. Bionomics and management of oriental yellow scale, Aonidiella orientalis (Newstead) (Homoptera:Diaspididae): an overview. Agricultural Reviews (Karnal), 17, 139–146.

Scalenet, online: *Aonidiella orientalis*. Available online: http://scalenet.info/catalogue/Aonidiella%20orientalis/

Waterhouse DF and Sands DPA, 2001. Classical Biological Control of Arthropods in Australia. CSIRo Entomology, Canberra, Australia. 560 pp.

Wysoki M, Ben-Dov Y, Swirski E and Izhar Y, 1993. The arthropod pests of mango in Israel. Acta Horticulturae, 341, 452–466. https://doi.org/10.17660/actahortic.1993.341.50

A.3. *Milviscutulus mangiferae*

A.3.1. Organism information

Taxonomic information	Current valid scientific name: *Milviscutulus mangiferae* Synonyms: *Coccus desolatum*, *Coccus kuraruensis*, *Coccus ixorae* (Green), *Coccus mangiferae* (Green), *Coccus wardi*, *Lecanium desolatum* (Green), *Lecanium mangiferae* (Green), *Kilifia mangiferae*, *Lecanium wardi*, *Lecanium mangiferae* (Green), *Lecanium ixorae* (Green), *Lecanium psidii* (Green), *Protopulvinaria kuraruensis* (Takahashi), *Protopulvinaria mangiferae* (Green), *Protopulvinaria wardi*, *Saissetia psidii*, *Udinia psidii* Order: Hemiptera Suborder: Sternorrhyncha Family: Coccidae Common name: Mango shield scale, mango soft scale Name used in the Dossier: *Milviscutulus mangiferae*

Group	Insects	
EPPO code	MILVMA	
Regulated status	*Milviscutulus mangiferae* is not regulated in EU *Milviscutulus mangiferae* is not included in any EPPO list and it is not regulated anywhere in the world	
Pest status in Israel	Present (Scalenet, online) *M. mangiferae* was first recorded in Israel, in 1948 and has been established in a lot of mango-growing area of the country, excluded the Arava Valley (Wysoki et al., 1993)	
Pest status in the EU	Absent (CABI CPC, online)	
Host status on *Jasminum polyanthum*	There are no host plant records for *Jasminum polyanthum* There is one host plant record for *Jasminum* sp. (Ballou, C.H. 1926) *M. mangiferae* is a polyphagous insect (see below), and therefore, the Panel assumes that *J. polyanthum* is a host	
PRA information	CSL Pest Risk Analysis for *Milviscutulus mangiferae* (Anderson and MacLeod, 2008)	
Other relevant information for the assessment		
Biology	*M. mangiferae* is a polyphagous pest distributed in tropical and subtropical regions According to Avidov and Zaitziv (1960), in Israel, this pest develops three annual generations in the Coastal Plain; nymphs of the first generation appear in March–May, of second generation in early June, and those of third generation in September. Reproduction is parthenogenetic as well as sexual, however, Otanes (1936) and Avidov & Zaitzov (1960) reported on the occurrence of males at a very low incidence (males are present the year around, albeit in low numbers) Body of female is flat, 4–5 mm in length, covered by a pale-green, shiny, almost transparent shield that tends to become brown, opaque and somewhat convex when and after producing eggs. Short spines extend all over the body, antennae with 6–8 segments; anal plates twice as long as wide, broadening posteriorly	
Symptoms	**Main type of symptoms**	*M. mangiferae* is a phloem-sucking insect. After settling at a feeding site, the insects pierce the host plant tissue with the stylets until reaching the phloem vessels, from where they suck plant sap (Malumphy 1997). The excess carbohydrate-rich solution, known as honeydew, is excreted through a complex anal apparatus and a mechanism unique to soft scales (Williams and Williams 1980). Honeydew is an ideal substrate for saprophytic sooty mold. A sooty mold colony on the leaf surface reduces photosynthetic rate and (along with honeydew) reduces the aesthetic and market values of fruits and ornamental plants. Heavy infestations may result in reduced tree vigour and leaf size, causing yellowing of the leaves, leaf drop and death of branches (Abd-Rabou & Evans, 2018)
	Presence of asymptomatic plants	Plant damage might not be obvious in early infestation, but the presence of scales on the plants could be observed.
	Confusion with other pathogens/pests	According to Pellizzari and Porcelli (2014), live specimens of *M. mangiferae* are very similar to *Protopulvinaria pyriformis* and the differences between the two genera and species are visible by studying mounted specimens under high-power magnification
Host plant range	*M. mangiferae* is a highly polyphagous pest, known to feed on 42 different families and 82 different genera of plants including mango (*Mangiferae indica*), papaya (*Carica papaya*), avocado (*Persea americana*), bread-fruit (*Artocarpus altilis*), *Syzygium* spp., *Vanilla* sp., guava (*Psidium guajava*), coconut (*Cocos nucifera*), orange and lemon (*Citrus sinensis*, *C. limon*) (Abd-rabou and Evans, 2018), as well ornamental plants such as cordyline (*Cordyline*), jasmine (*Jasminum*) and hibiscus (*Hibiscus* spp.) (ScaleNet, online)	

Pathways	Leaves and stems (Abd-rabou and Evans, 2018). *M. mangiferae* has been intercepted once on mango fruits (from Brazil), but there are evidences that the scale does not attack the fruit itself. The rest of interceptions have been made on leaves or on the whole plants, suggesting that the most likely route of *M. mangiferae* into the EU is on imported plants rather than fruits (Anderson and MacLeod, 2008)
Surveillance information	No surveillance information for this pest is currently available from Israel. There is no information available to assess whether the pest has ever been found in the nurseries or the surrounding environment of the nurseries

A.3.2. Possibility of pest presence in the nurseries

A.3.2.1. Possibility of entry from the surrounding environment

In Israel, *M. mangiferae* is reported to be widespread, especially in mango production area (Wysoki et al., 1993). Given the wide host range of this pest, it is possible that local populations of *M. mangiferae* are present in the neighbouring environment of the greenhouses with *Jasminum* plants destined for export.

After hatching, the crawlers settle on the lower sides of the leaves (Plant Pests of the Middle East, online). Crawlers may be carried to neighbouring plants by wind, or by hitchhiking on clothing, equipment or animals.

There is no evidence that the nurseries are located in a pest-free area for *M. mangiferae,* so the Panel considers that *M. mangiferae* can be present in the production areas of *J. polyanthum* destined for export to the EU.

J. polyanthum plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of the scale insects into a greenhouse is possible through holes in the netting or roof of the greenhouse structure or as a hitchhiker on clothing of nursery staff. The success rate of one of these events is only likely to occur in case of a high (local) density of *M. mangiferae* in the neighbouring environment of the greenhouse.

Uncertainties:

- There is no surveillance information on the presence and population pressure of *Mi. mangiferae* in the neighbouring environment of the greenhouse.
- The presence of the suitable host plants (e.g. mango orchards) and source of population of *M. mangiferae* in the area surrounding the greenhouse.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible *M. mangiferae* can enter a greenhouse from the surrounding area.

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

The source of the planting material to produce *J. polyanthum* cuttings originates from officially approved nurseries. During a growing cycle, no new plants are introduced in the greenhouse; therefore, entry with new plants is not possible.

Taking into consideration the above evidence, the Panel considers it is not possible that the insect enters the nursery with new plants/seeds.

A.3.2.3. Possibility of spread within the nursery

Introduction by the use of infected soil or water is not relevant for this risk assessment.

The insect within the greenhouse can spread by hitchhike on clothing of nursery staff. Local populations may first establish on mother plants and subsequently spread to new *J. polyanthum* plants.

Taking into consideration the above evidence and uncertainties, the Panel considers that the transfer of the pest within the greenhouse is possible.

A.3.3. Information from interceptions

Approximately 300,000 *J. polyanthum* cuttings are imported annually from Israel into the EU (corresponding to 6,000 bags per year).

In the Europhyt database (1995-12/02/2020), there are no records of interceptions of *M. mangiferae* on produce from Israel.

A.3.4. Evaluation of the risk mitigation options

In the table below, all the risk mitigation measures currently applied in Israel are summarised and an indication of their effectiveness on *M. mangiferae* is provided. The description of the risk mitigation measures currently applied in Israel is provided in the Table 8.

Number	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Growing plants in isolation	Yes	Plants are protected from scale insects that can enter from the surrounding environment <u>Uncertainties:</u> – Presence of defects in the greenhouse structure – Entry through the door by wind or human assistance
2	Soil treatment	No	Not applicable
3	Insecticide treatment	Yes	Plants are treated during the growing season with insecticides; against aphids with Flonicamid (pyridine, systemic) and against spider mites with Floramite (bifenazate) <u>Uncertainties:</u> – Effectiveness of Flonicamid against scales – The frequency and timing of insecticide treatments
4	Official supervision by PPIS	Yes	The inspection of mother plants would reveal the presence of infested plants
5	Inspections of nurseries that export plants	Yes	The presence of scales on the cuttings are expected to be detected during the official and self-inspections performed in the greenhouse The presence of honeydew can make the infestation more obvious <u>Uncertainties:</u> – Early infestation is not easy to detect as only the presence of scales could be observed after thorough inspection of the plants

A.3.5. Overall likelihood of pest freedom

A.3.5.1. Reasoning for a scenario which would lead to a reasonably low number of infested consignments

- *M. mangiferae* has been reported on *Jasminum* sp., but not on *J. polyanthum*.
- *Jasminum* is not a preferred host.
- *M. mangiferae* has not been reported on *Jasminum* in Israel.
- *M. mangiferae* has never been intercepted on produce from Israel.
- Dispersal capacity of *M. mangiferae* is limited to the first instar stage (crawler).
- Low population pressure of *M. mangiferae* in the surrounding environment.
- Transfer of *M. mangiferae* from sources in the surrounding environment to the greenhouse plants is very difficult because dispersal is mainly dependent on human-assisted movement of the first instar stage (crawler).
- Greenhouse structure is insect proof and entrance is unlikely.
- The inspection regime is effective (detection of scale insects).
- Insects are expected to be easily detected by the production of honeydew.
- Application of systemic insecticides (Flonicamid) is effective against scales.
- At harvest cuttings with symptoms will be detected.

A.3.5.2. Reasoning for a scenario which would lead to a reasonably high number of infested consignments

- *M. mangiferae* is widespread in Israel and the insect species have a wide host range; therefore, it is likely that host plants are present in the surrounding environment.
- Greenhouses are located in areas where *M. mangiferae* is present and abundant (e.g. mango plantation).
- The presence of scales species in the environment is not monitored.
- It cannot be ruled out that there are defects in the greenhouse structure or scales insects hitchhike on greenhouse staff.
- Asexual reproduction of the pest increases the probability of its establishment in the nursery.
- Insecticide treatments are not targeting scales insects.
- Even if there is no evidence that *J. polyanthum* is a host plant for *M. mangiferae*, given the polyphagous nature of these scale insects, it is likely that *J. polyanthum* is a suitable host plant.

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

The value of the median is estimated based on:

- The protective effect of the greenhouse structure.
- *Jasminum* is not a preferred host and *M. mangiferae* has not been reported on *Jasminum* in Israel.
- The insecticide treatments are not targeting scales insects but are moderately effective.
- There are no records of interceptions from Israel.

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

The main uncertainty is the population pressure in the surrounding environment.

A.3.5.5. Elicitation outcomes of the assessment of the pest freedom for *Milviscutulus mangiferae*

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

Table A.5: Elicited and fitted values of the uncertainty distribution of pest infestation by *Milviscutulus mangiferae* per 10,000 bags

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0.2					0.8		1.5		3.5					7
EKE	0.19	0.20	0.23	0.32	0.47	0.71	1.0	1.7	2.7	3.3	4.1	4.9	5.8	6.4	7.0

The EKE results is the Beta General distribution (0.70524, 2.0244, 0.18, 8) fitted with @Risk version 7.5.

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

Table A.6: The uncertainty distribution of bags free of *Milviscutulus mangiferae* per 10,000 bags calculated by Table A.5

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9,993					9,997		9,999		9,999					10,000
EKE results	9,993.0	9,993.6	9,994.2	9,995.1	9,995.9	9,996.7	9,997.3	9,998.3	9,999.0	9,999.3	9,999.5	9,999.7	9,999.8	9,999.8	9,999.8

The EKE results are the fitted values.

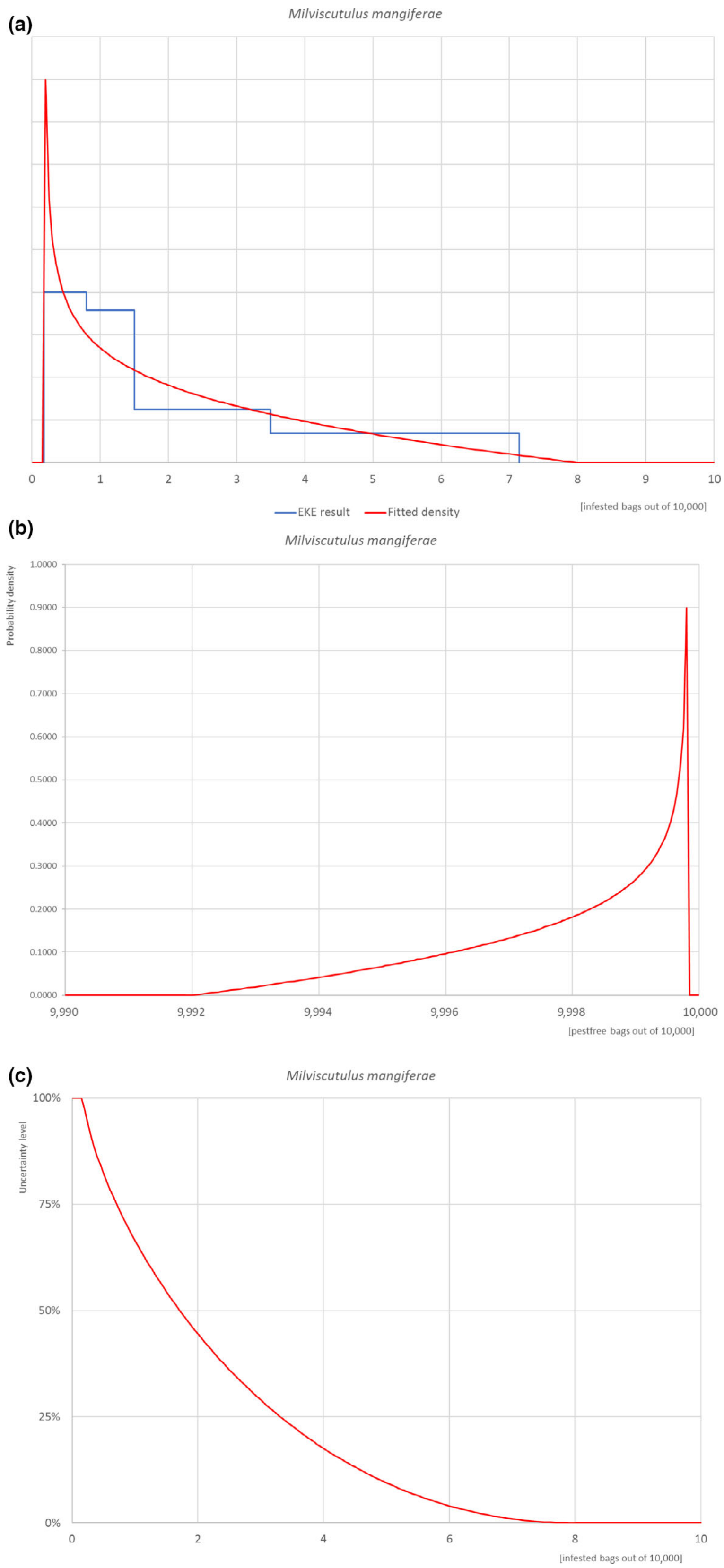

Figure A.3: (a) Elicited uncertainty of pest infestation per 10,000 bags (histogram in blue – vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (b) uncertainty of the proportion of pest-free bags per 10,000 (i.e. =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

A.3.6. Reference list

Abd-Rabou S and Evans GA, 2018. The mango shield scale, Milviscutulus mangiferae (Green) (Hemiptera: Coccidae)–A new invasive soft scale in Egypt. Acta Phytopathologica et Entomologica Hungarica, 53, 91–96. https://doi.org/10.1556/038.52.2017.036

Anderson H and MacLeod A, 2008. CSL Pest Risk Analysis for *Milviscutulus mangiferae*.

Avidov Z and Zaitzov A, 1960. On the biology of the mango shield scale Coccus mangiferae (Green) in Israel. Ktavim, 10.

Ballou CH, 1926 Los cóccidos de Cuba y sus plantas hospederas. Boletin Estacion Experimental Agronomica. Santiago de Las Vegas, Cuba, 51, 1–47.

CABI (Centre for Agriculture and Bioscience International), online. *Milviscutulus mangiferae*. Available online: https://www.cabi.org/cpc/datasheet/34170 [Accessed: 9 April 2020].

European Commission, online. EUROPHYT (European Union Notification System for Plant Health Interceptions). Available online: http://ec.europa.eu/food/plant/plant_health_biosecurity/europhyt/index_en.htm [Accessed: 15 March 2020].

Malumphy CP, 1997. Morphology and anatomy of honeydew eliminating organs. In Ben-Dov Y and Hodgson CJ, eds, Soft scale insects: their biology, natural enemies and control, vol. 7A. Elsevier Science B.V., Amsterdam, The Netherlands. pp. 269–274.

Otanes FQ, 1936 Some observations on two scale insects injurious to mango flowers and fruits. The Philippine Journal of Agriculture, 7, 129–141.

Pellizzari G and Porcelli F, 2014 Alien scale insects (Hemiptera Coccoidea) in European and Mediterranean countries: the fate of new and old introductions. Phytoparasitica, 42, 713–721. https://doi.org/10.1007/s12600-014-0414-5

Plant Pests of the Middle East, online. The Robert H. Smith Faculty of Agriculture, Food and Environment, the Hebrew University of Jerusalem. *Milviscutulus mangiferae.* Available online: http://www.agri.huji.ac.il/mepests/pest/Milviscutulus_mangiferae/

Scalenet, online: *Milviscutulus mangiferae*. Available online: http://scalenet.info/catalogue/Milviscutulus%20mangiferae/

Williams JR and Williams DJ, 1980. Excretory behavior in soft scales (Hemiptera: Coccidae). Bulletin of Entomological Research, 70, 253–257. https://doi.org/10.1017/s0007485300007513

Wysoki M, Ben-Dov Y, Swirski E and Izhar Y, 1993. The arthropod pests of mango in Israel. Acta Horticulturae, 341, 452–466. https://doi.org/10.17660/actahortic.1993.341.50

A.4. *Paracoccus marginatus*

A.4.1. Organism information

Taxonomic information	Current valid scientific name: *Paracoccus marginatus* Synonyms: No synonyms have been found for this pest Order: Hemiptera Suborder: Sternorrhyncha Family: Pseudococcidae Common name: papaya mealybug, marginal mealybug Name used in the Dossier: *Paracoccus marginatus*
Group	Insects
EPPO code	PACOMA
Regulated status	*Paracoccus marginatus* is not regulated in EU It is a quarantine pest in Morocco (EPPO, online)
Pest status in Israel	Present, no further details (CABI, online) *P. marginatus* has been found in 2016 in Israel for the first time. This was also the first record of this invasive species in the Western Palaearctic region. The mealybug was detected at two locations in Northern Israel and was not accompanied by its principal natural enemies. *P. marginatus* is highly polyphagous and may develop large populations in Israel on annona, hibiscus, mulberry, papaya and the invasive weed *Parthenium hysterophorus* (Mendel et al., 2016) *P. marginatus* has not been recorded on *Jasminum* in Israel (Dossier Section 6.0)

<table>
<tr><td>Pest status in the EU</td><td colspan="2">Absent (EPPO, online)</td></tr>
<tr><td>Host status on Jasminum polyanthum</td><td colspan="2">There are no records that Jasminum polyanthum is a host of P. marginatus but Jasminum sp. has been reported as a host for P. marginatus (Galanihe et al., 2010)

P. marginatus is a polyphagous scale insect (see below), and therefore, the Panel assumes that J. polyanthum is a host</td></tr>
<tr><td>PRA information</td><td colspan="2">No pest risk assessment is currently available</td></tr>
<tr><td colspan="3">Other relevant information for the assessment</td></tr>
<tr><td>Biology</td><td colspan="2">P. marginatus is native to Central America. It has been spread accidentally outside its native range by trade in live plant material, such as papaya fruits. The pest is widely distributed in most of the tropical areas and it is expected to continue spreading. Climate warming is likely to increase the areas where it can establish (CABI CPC, online)

Papaya mealybug infestations are typically observed as clusters of cotton-like masses on the above-ground part of the plants. Females are yellow and covered with a white waxy coating. They are approximately 2.2 mm long and 1.4 mm wide with a series of short waxy caudal filaments around the margin of the body. Females have no wings and move by crawling short distances or by being blown in air currents. Each female lays 100–600 eggs in a white, fluffy ovisac of fine wax filaments. There are several generations per year (Mendel et al., 2016). Egg laying usually occurs over the period of 1–2 weeks. Egg hatch occurs in about 10 days, and nymphs, or crawlers, begin to actively search for feeding sites (Walker et al., 2006). Female crawlers have four instars, with a generation taking approximately 1 month to complete, depending on the temperature. Males have five instars, the fourth of which is produced in a cocoon and referred to as the pupa. Adult males tend to be coloured pink, especially during the prepupal and pupal stages, but appear yellow in the first and second instar. Adult males are approximately 1.0 mm long, with an elongate oval body that is widest at the thorax (0.3 mm) (Walker et al., 2006)

P. marginatus feed by inserting their mouthparts into plant tissue and sucking out sap. The insects are most active in warm, dry weather. According to Amarasekare et al. (2008), P. marginatus cannot complete its life cycle at temperatures below 13.5°C and above 34°C; the estimated optimum and maximum temperature thresholds are 28.4°C and 32.1°C, respectively

In tropical conditions, the generations are not synchronised and there are several each year, up to 15 generations in favourable conditions</td></tr>
<tr><td rowspan="3">Symptoms</td><td>Main type of symptoms</td><td>This insect feeds on the sap of plants by inserting its stylets into the epidermis of the leaf, as well as into the fruit. In doing so, it injects a toxic substance into the leaves. The result is chlorosis, plant stunting, leaf deformation, early leaf and fruit drop, a heavy build-up of honeydew and death. Heavy infestations are capable of rendering fruit inedible due to the build-up of thick white wax (Walker et al., 2006)</td></tr>
<tr><td>Presence of asymptomatic plants</td><td>Plant damage might not be obvious in early infestation, but the presence of scales on the plants could be observed</td></tr>
<tr><td>Confusion with other pests</td><td>P. marginatus can be identified based on microscopic observations</td></tr>
<tr><td>Host plant range</td><td colspan="2">P. marginatus is a highly polyphagous pest. It has been reported on 55 host plants in more than 25 genera including Citrus, Carica papaya, Hibiscus, Persea americana, Gossypium, Solanum lycopersicon, Solanum melongena, Capsicum, Phaseolus, Pisum, Mangifera indica, Prunus (CABI CPC, online)

According to Mendel et al. (2016), in Israel, it can develop large populations on cherimoya (Annona cherimola), hibiscus (Hibiscus spp.), mulberry (Morus sp.), papaya (Carica papaya) and the invasive weed Parthenium hysterophorus</td></tr>
<tr><td>Pathways</td><td colspan="2">Plants for planting and fruits (Walker et al., 2006)

P. marginatus causes damage to all the above ground part of the host plants: leaves, stems and fruits (Mani et al., 2012)</td></tr>
<tr><td>Surveillance information</td><td colspan="2">No surveillance information for this pest is currently available from Israel. There is no information available to assess whether the pest has ever been found in the nurseries or surrounding environment of the nurseries</td></tr>
</table>

A.4.2. Possibility of pest presence in the nursery

A.4.2.1. Possibility of entry from the surrounding environment

In Israel, *P. marginatus* was recently found (2016) in Northern Israel at the Bahà' ì Gardens at Bahjì in 'Akko (north of Haifa) on *Malvaviscus arboreus* (Malvaceae) and custard apple, *Annona squamosa* (Annonaceae) (Mendel et al., 2016). On both host plants, the mealybug was found together with the pink hibiscus mealybug *Maconellicoccus hirsutus*, another scale insect recently found in Israel. High populations of *P. marginatus* were also found in papaya orchards along the Carmel coast of Israel, in the North of the country (Mendel et al., 2016).

Given the wide host range of this pest, it is possible that local populations of *P. marginatus* are present in the neighbouring environment of the greenhouses with *J. polyanthum* plants destined for export. The pest is also reported in plants in the natural environment like the invasive weed *Parthenium hysterophorus* (Mendel et al., 2016).

The dispersal stage is the first-instar crawler which can survive approximately one day without feeding while it locates a suitable feeding site (CABI CPC, online). The larval stages and adult female (but not the male prepupa or pupa) are capable of crawling, but seldom do so unless conditions become unfavourable.

There is no evidence if the nurseries are located in a pest-free area for *P. marginatus,* so the Panel considers that *P. marginatus* can be present in the production areas of *J. polyanthum* destined for export to the EU.

Jasminum plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of the scale insects into a greenhouse is possible through holes in the nets or in the roof of the greenhouse structure or as a hitchhiker on clothing of nursery staff. The success rate of one of these events is only likely to occur in case of a high (local) density of *P. marginatus* in the neighbouring environment of the greenhouse.

P. marginatus is not reported on *Jasminum* in Israel.

Uncertainties:

- There is no surveillance information on the presence and population pressure of *P. marginatus* in the neighbouring environment of the greenhouse.
- The presence of the suitable host plants (e.g. mango orchards) and the abundance of *P. marginatus* in the area surrounding the greenhouse are unknown.
- The distribution of the pest in Israel is unknown after its first detection in 2016 in Northern Israel.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible that *P. marginatus* can enter greenhouses from the surrounding area.

A.4.2.2. Possibility of entry with new plants/seeds

The source of the planting material to produce *J. polyanthum* cuttings originate from officially approved nurseries. During a growing cycle, no new plants are introduced in the greenhouse; therefore, entry with new plants is not possible.

Taking into consideration the above evidence, the Panel considers it is not possible that the insect enters the nursery with new plants/seeds.

A.4.2.3. Possibility of spread within the nursery

Introduction by the use of infected soil or water is not relevant for this risk assessment.

The insect within the greenhouse can spread by hitchhike on clothing of nursery staff or by local dispersal of crawlers. Local populations may first establish on mother plants and subsequently new generations may spread to new plants. Adults have fully developed legs and they can spread locally.

Taking into consideration the above evidence and uncertainties, the Panel considers that the transfer of the pest within the greenhouse is possible.

A.4.3. Information from interceptions

Approximately 300,000 *J. polyanthum* cuttings are imported annually from Israel into the EU (corresponding to 6,000 bags per year).

In the Europhyt database (1995-12/02/2020), there are no records of interception of *P. marginatus* on produce from Israel.

A.4.4. Evaluation of the risk mitigation options

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

Number	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Growing plants in isolation	Yes	Plants are protected from the scale insects that can enter from the surrounding environment Uncertainties: – Presence of defects in the greenhouse structure – Entry through the door by wind or human assistance
2	Soil treatment	No	Not relevant
3	Insecticide treatment	Yes	Plants are treated during the growing season with insecticides; against aphids with Flonicamid (pyridine, systemic) and against spider mites with Floramite (Bifenazate) Uncertainties: – Effectiveness of Flonicamid against scales – The frequency and timing of insecticide treatments
4	Official supervision by PPIS	Yes	The inspection of mother plants would reveal the presence of infested plants
5	Inspections of nurseries that export plants	Yes	The presence of scales on the cuttings is expected to be detected during the official and self-inspection performed in the greenhouse Uncertainties: – Early infestations are not easy to detect as only the presence of scales could be observed after thorough inspection of the plants

A.4.5. Overall likelihood of pest freedom

A.4.5.1. Reasoning for a scenario which would lead to a reasonably low number of infested consignments

- *P. marginatus* has been reported on *Jasminum* sp., but not specifically on *J. polyanthum*.
- *Jasminum* is not a preferred host.
- *P. marginatus* has not been reported on *Jasminum* in Israel.
- *P. marginatus* has never been intercepted on produce from Israel.
- Dispersal capacity of *P. marginatus* is limited to the first instar stage (crawler).
- Low population pressure of *P. marginatus* in the surrounding environment.
- The pest has been reported in the north of Israel (in 2016) and there are uncertainties how widespread is.
- Transfer of *P. marginatus* from sources in the surrounding environment to the greenhouse plants is very difficult because dispersal mainly depends on human-assisted movement of the first instar stage (crawler).
- Greenhouse structure is insect proof and entrance is unlikely.
- The inspection regime is effective (detection of scale insects).
- The application of systemic insecticides (Flonicamid) is effective against scales.
- The white waxy cover of the insect is easy to detect.
- At harvest cuttings with symptoms will be detected.

A.4.5.2. Reasoning for a scenario which would lead to a reasonably high number of infested consignments

- Since its first detection in 2016, *P. marginatus* has spread in the country and it is likely that host plants, such as the invasive weed *Parthenium hysterophorus*, are present in the surrounding natural environment.
- Greenhouses are located in areas where *P. marginatus* is present and abundant (e.g. papaya plantation).
- The presence of scales species in the environment is not monitored.
- It cannot be ruled out that there are defects in the greenhouse structure or scale insects hitchhike on greenhouse staff.
- Insecticide treatments are not targeting at scale insects.
- Even if there is no evidence that *Jasminum polyanthum* is a host plant for *P. marginatus*, given the polyphagous nature of this scale insect it is likely that *J. polyanthum* is a suitable host plant.

A.4.5.3. Reasoning for a central scenario equally likely to over- or underestimate the number of infested consignments (Median)

The value of the median is estimated based on:

- The protective effect of the greenhouse structure.
- *Jasminum* is not a preferred host and *P. marginatus* has not been reported on *Jasminum* in Israel.
- The insecticide treatments are not targeting scales insects but are moderately effective.
- There are no records of *P. marginatus* interceptions from Israel.

A.4.5.4. Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/interquartile range)

The main uncertainty is the population pressure in the surrounding environment.

A.4.5.5. Elicitation outcomes of the assessment of the pest freedom for *Paracoccus marginatus*

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

Table A.7: Elicited and fitted values of the uncertainty distribution of pest infestation by *Paracoccus marginatus* per 10,000 bags

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0.2					0.8		1.5		3					5
EKE	0.19	0.21	0.25	0.35	0.51	0.74	1.0	1.6	2.4	2.9	3.4	4.0	4.5	4.8	5.1

The EKE results is the Beta General distribution (0.77973, 1.6109, 0.18, 5.5) fitted with @Risk version 7.5.

Based on the numbers of estimated infested bags, the pest freedom was calculated (i.e. = 10,000 – the number of infested bags 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 bags free of *Paracoccus marginatus* per 10,000 bags calculated by Table A.1

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9,995					9,997		9,999		9,999					10,000
EKE results	9,994.9	9,995.2	9,995.5	9,996.0	9,996.6	9,997.1	9,997.6	9,998.4	9,999.0	9,999.3	9,999.5	9,999.7	9,999.8	9,999.8	9,999.8

The EKE results are the fitted values.

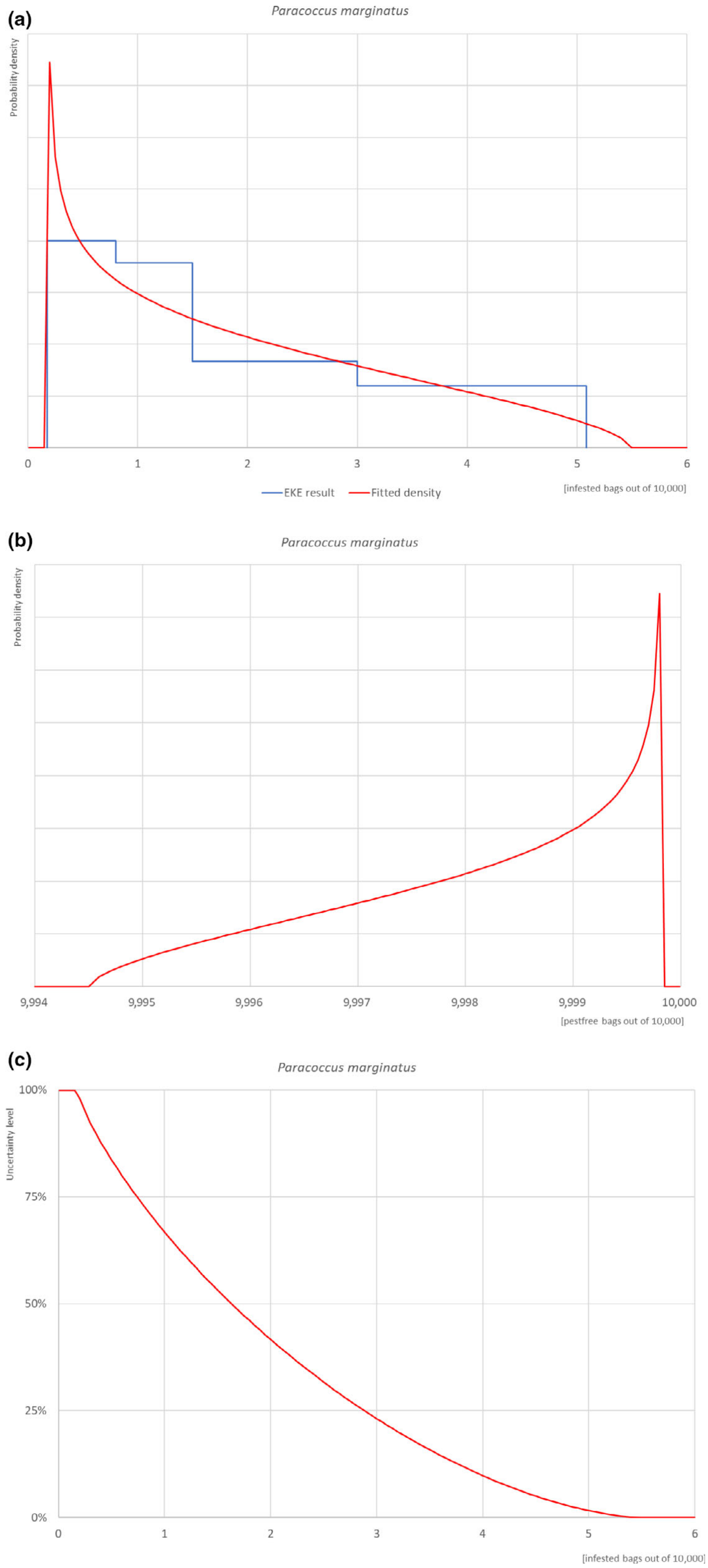

Figure A.4: (a) Elicited uncertainty of pest infestation per 10,000 bags (histogram in blue – vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (b) uncertainty of the proportion of pest-free bags per 10,000 (i.e. =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

A.4.6. Reference list

Amarasekare KG, Chong JH, Epsky ND and Mannion CM, 2008. Effect of temperature on the life history of the mealybug Paracoccus marginatus (Hemiptera: Pseudococcidae). Journal of Economic Entomology, 101, 1798–1804. http://www.bioone.org/doi/full/10.1603/0022-0493-101.6.1798

CABI CPC (Centre for Agriculture and Bioscience International), online. *Paracoccus marginatus*. Available online: https://www.cabi.org/cpc/datasheet/39201 [Accessed: 9 April 2020].

EPPO (European and Mediterranean Plant Protection Organization), online. EPPO Global Database: *Paracoccus marginatus*. Available online: https://gd.eppo.int/taxon/PACOMA [Accessed: 10 April 2020].

European Commission, online. EUROPHYT (European Union Notification System for Plant Health Interceptions). Available online: http://ec.europa.eu/food/plant/plant_health_biosecurity/europhyt/index_en.htm [Accessed: 12 February 2020].

Galanihe LD, Jayasundera MUP, Vithana A, Asselaarachchi N and Watson GW, 2010. Occurrence, distribution and control of papaya mealybug, Paracoccus marginatus (Hemiptera: Pseudococcidae), an invasive alien pest in Sri Lanka. Tropical Agricultural Research and Extension, 13, 81–86. https://doi.org/10.4038/tare.v13i3.3143

Mani N, Shylesha AN and Shivaraju C, 2012. First report of the invasive papaya mealybug, *Paracoccus marginatus* Williams & Granara de Willink (Homoptera: Pseudococcidae) in Rajasthan. Pest Management in Horticultural Ecosystems, 18, 234.

Mendel Z, Watson W, Protasov A and Spodek M, 2016. First record of the papaya mealybug, Paracoccus marginatus Williams & Granara de Willink (Hemiptera: Coccomorpha: Pseudococcidae), in the Western Palaearctic. EPPO Bulletin, 46, 580–582. https://doi.org/10.1111/epp.12321

Walker A, Hoy M and Meyerdirk D, 2006. Papaya mealybug (Paracoccus marginatus Williams and Granara de Willink (Insecta: Hemiptera: Pseudococcidae)). Featured Creatures. Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences (IFAS), University of Florida, Gainesville, FL.

A.5. Pulvinaria psidii

A.5.1. Organism information

Taxonomic information	Current valid scientific name: *Pulvinaria psidii* Maskell, 1893 Synonyms: *Chloropulvinaria psidii;* Borchsenius, 1957; *Lecanium vacuolatum* Green Dash, 1916; *Pulvinaria cupaniae* Cockerell, 1893; *Pulvinaria cussoniae* Hall, 1932; *Pulvinaria darwiniensis* Froggatt, 1915; *Pulvinaria gymnosporiae* Hall, 1932; *Pulvinaria psidii philippina* Cockerell, 1905 Name used in the EU legislation: N/A Order: Hemiptera Family: Coccidae Common name: green shield scale; guava mealy scale; guava pulvinaria; mango scale Name used in the Dossier: *Pulvinaria psidii*
Group	Insects
EPPO code	PULVPS
Regulated status	*Pulvinaria psidii* is not regulated in EU *P. psidii* is a Regulated non-quarantine pest (RNQP) for fruit trees in Israel (EPPO, online)
Pest status in Israel	Present, at low prevalence (EPPO, online) *P. psidii* was found for the first time in Israel in 1999 on litchi and mango and ornamental plants (EPPO, online). The pest has never been reported on *Jasminum* in Israel (Dossier Section 4.3)
Pest status in the EU	Absent, intercepted only According to Fauna Europea is present in the Netherlands, however after consulting the NPPO of the Netherlands, the record was based on an interception

<table>
<tr><td>Host status on Jasminum polyanthum</td><td colspan="2">There are no records that Jasminum polyanthum is a host of P. psidii

Jasminum sp. and Jasminum humile have been reported as hosts for P. psidii (Nakahara, 1981; Stocks, 2013)

P. psidii is a polyphagous insect (see below), and therefore, the Panel assumes that J. polyanthum is a host</td></tr>
<tr><td>PRA information</td><td colspan="2">No pest risk assessment is currently available</td></tr>
<tr><td colspan="3">Other relevant information for the assessment</td></tr>
<tr><td>Biology</td><td colspan="2">Adult females are between 2.0 and 4.5 mm long and between 1.5 and 3.0 mm wide. Female are oval, smooth and moderately convex before egg deposition and deep green becoming gradually lighter in colour. After egg deposition, the female gradually shrivels and the surface forms into ridges and valley. The ovisac at first projects only to the posterior, but eventually more or less can surround the adult female on all sides causing the elevation of the abdomen. The full life cycle takes 2–3 months, but the formation of ovisac and egg deposition takes place in only 5 days (Hamon, 1984).

The pest can spread only as a first instar nymph (crawler)

The insect secrets honeydew that cover the upper surface of the leaves reducing the photosynthesis and the respiration. The result is a crop of poor quality and quantity</td></tr>
<tr><td rowspan="3">Symptoms</td><td>Main type of symptoms</td><td>P. psidii feeds on the phloem of leaves and tender young stems of the host plant. Under severe infestation, feeding causes yellowing, defoliation, reduction in fruit set and loss in plant vigour. The pest excretes honeydew, which serves as a medium for sooty mold. Sooty mold blackens the leaf and decrease the photosynthesis (Abd-Rabou, 2011)</td></tr>
<tr><td>Presence of asymptomatic plants</td><td>The damage due to the feeding of an individual scale is small (Abd-Rabou, 2011)</td></tr>
<tr><td>Confusion with other pests</td><td>In the field, adult P. psidii can easily be confused with other Pulvinaria species, as P. floccifera and P. urbicola. For a corrected identification slide-mounted adult female must be examined under a compound light microscope and the use of taxonomic keys (CABI CPC, online)</td></tr>
<tr><td>Host plant range</td><td colspan="2">P. psidii has a very wide range of distribution and host plants: it has been recorded from 52 different families of host plants (Bhuiya et al., 1998). In Egypt, P. psidii is described as one of the most important pests of mango and guava (Bakr, 2012). It is also a serious pest of Citrus spp., Ficus spp., coffee plants and Capsicum spp. in tropical South Pacific region (Bhuiya, 1998)</td></tr>
<tr><td>Pathways</td><td colspan="2">P. psidii occurs on leaves and stems, especially on young ones and occasionally on fruits. It needs tropical or subtropical conditions to thrive (CABI CPC, online)</td></tr>
<tr><td>Surveillance information</td><td colspan="2">No surveillance information for this pest is currently available from Israel. There is no information available to assess whether the pest has ever been found in the nurseries or surrounding environment of the nurseries

The pest has an RNQP status for fruit trees in Israel, so it is expected to be absent in fruit tree nurseries</td></tr>
</table>

A.5.2. Possibility of pest presence in the nursery

A.5.2.1. Possibility of entry from the surrounding environment

In Israel, *P. psidii* is reported to be present mainly in litchi and mango and on ornamental plants scattered throughout the country. Given the wide host range of this pest, it is possible that local populations of *P. psidii* are present in the neighbouring environment of the greenhouses with *Jasminum* plants destined for export.

After hatching, crawlers may be carried to neighbouring plants by wind, or by hitchhiking on clothing, equipment, or animals.

There is no evidence that the nurseries are located in a pest-free area for *P. psidii,* so the Panel considers that *P. psidii* can be present in the production areas of *J. polyanthum* destined for export to the EU. There are several reports of natural enemies affecting population abundance of *P. psidii* in the field in Egypt (Abd-Rabou, 2011).

J. polyanthum plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of the scale insects into a greenhouse is possible through holes in the netting or roof of the greenhouse structure or as a hitchhiker on clothing of nursery staff. The success rate of one of these events is only likely to occur in case of a high (local) density of *P. psidii* in the neighbouring environment of the greenhouse.

Uncertainties:

- There is no surveillance information on the presence and population pressure of *P. psidii* in the neighbouring environment of the greenhouse.
- There is no information on the presence of suitable host plants (e.g. mango orchards) and other sources of population of *P. psidii* in the area surrounding the greenhouse.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible *P. psidii* can enter a greenhouse from the surrounding area.

A.5.2.2. Possibility of entry with new plants/seeds

The source of the planting material to produce *J. polyanthum* cuttings originates from officially approved nurseries. During a growing cycle, no new plants are introduced in the greenhouse; therefore, entry with new plants is not possible.

The pest is reported on several ornamental plants species, but there are not records for *Anisodontea, Pentas, Thunbergia* and *Tibouchina* which can be present in export greenhouse.

Taking into consideration the above evidence, the Panel considers it is not possible that the insect enters the nursery with new plants/seeds.

A.5.2.3. Possibility of spread within the nursery

Introduction by the use of infected soil or water is not relevant for this risk assessment.

The insect within the greenhouse can spread by hitchhike on clothing of nursery staff. Local populations may first establish on mother plants and subsequently spread to new *J. polyanthum* plants.

Taking into consideration the above evidence and uncertainties, the Panel considers that the transfer of the pest within the greenhouse is possible.

A.5.3. Information from interceptions

Approximately 300,000 *J. polyanthum* cuttings are imported annually from Israel into the EU (corresponding to 6,000 bags per year).

In the Europhyt database (1995-15/06/2020), there are no records of interception of *P. psidii* on produce from Israel.

A.5.4. Evaluation of the risk mitigation options

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

Number	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Growing plants in isolation	Yes	Plants are protected from scale insects that can enter from the surrounding environment Uncertainties: – Presence of defects in the greenhouse structure – Entry through the door by wind or human assistance
2	Soil treatment	No	Not applicable

Number	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
3	Insecticide treatment	Yes	Plants are treated during the growing season with insecticides; against aphids with Flonicamid (pyridine, systemic) and against spider mites with Floramite (bifenazate) Uncertainties: – Effectiveness of Flonicamid against scales – The frequency and timing of insecticide treatments
4	Official supervision by PPIS	Yes	The inspection of mother plants would reveal the presence of infested plants
5	Inspections of nurseries that export plants	Yes	The presence of scales on the cuttings is expected to be detected during the official and self-inspections performed in the greenhouse The presence of honeydew can make the infestation more obvious Uncertainties: – Early infestation is not easy to detect as only the presence of scales could be observed after thorough inspection of the plants

A.5.5. Overall likelihood of pest freedom

A.5.5.1. Reasoning for a scenario which would lead to a reasonably low number of infested consignments

- *P. psidii* has been reported on *Jasminum* sp., but not on *J. polyanthum*.
- *Jasminum* is not a preferred host.
- *P. psidii* has not been reported on *Jasminum* in Israel.
- *P. psidii* has never been intercepted on produce from Israel.
- Dispersal capacity of *P. psidii* is limited to the first instar stage (crawler).
- Low population pressure of *P. psidii* in the surrounding environment, because of active natural enemies.
- Transfer of *P. psidii* from sources in the surrounding environment to the greenhouse plants is very difficult because dispersal is mainly dependent on human-assisted movement of the first instar stage (crawler).
- Greenhouse structure is insect proof and entrance is unlikely.
- The inspection regime is effective (detection of scale insects).
- Insects are expected to be easily detected by the production of honeydew.
- Application of systemic insecticides (Flonicamid) is effective against scales.
- At harvest cuttings with symptoms will be detected.
- *P. psidii* has RNQP status in Israel for fruit tree nurseries.

A.5.5.2. Reasoning for a scenario which would lead to a reasonably high number of infested consignments

- *P. psidii* is present throughout Israel and the insect species has a wide host range; therefore, it is likely that host plants are present in the surrounding environment.
- Greenhouses are located in areas where *P. psidii* is present and abundant (e.g. mango plantation) and natural enemies activity is low.
- The presence of scales species in the environment is not monitored.
- It cannot be excluded that there are defects in the greenhouse structure or scales insects hitchhike on greenhouse staff.
- Asexual reproduction of the pest increases the probability of its establishment in the nursery
- Insecticide treatments are not targeting scales insects.
- Even if there is no evidence that *J. polyanthum* is a host plant for *P. psidii*, given the polyphagous nature of this scale insects, it is likely that *J. polyanthum* is a suitable host plant.

A.5.5.3. Reasoning for a central scenario equally likely to over- or underestimate the number of infested consignments (Median)

The value of the median is estimated based on:

- The protective effect of the greenhouse structure.
- *Jasminum* is not a preferred host and *P. psidii* has not been reported on *Jasminum* in Israel.
- The insecticides treatments are not targeting scales insects but are moderately effective.
- There are no records of interceptions from Israel.

A.5.5.4. Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/interquartile range)

The main uncertainty is the population pressure in the surrounding environment.

A.5.5.5. Elicitation outcomes of the assessment of the pest freedom for *Pulvinaria psidii*

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

Table A.9: Elicited and fitted values of the uncertainty distribution of pest infestation by *Pulvinaria psidii* per 10,000 plants

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	0.1					0.65		1.2		2					4
EKE	0.06	0.12	0.20	0.32	0.48	0.65	0.83	1.2	1.7	2.0	2.3	2.8	3.4	3.9	4.6

The EKE results is the Weibull distribution (1.4279, 1.5652) fitted with @Risk version 7.5.

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

Table A.10: The uncertainty distribution of plants free of *Pulvinaria psidii* per 10,000 plants calculated by Table A.9

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9,996.0					9,998.0		9,998.8		9,999.4					9,999.9
EKE results	9,995.4	9,996.1	9,996.6	9,997.2	9,997.6	9,998.0	9,998.3	9,998.8	9,999.2	9,999.3	9,999.5	9,999.7	9,999.8	9,999.9	9,999.9

The EKE results are the fitted values.

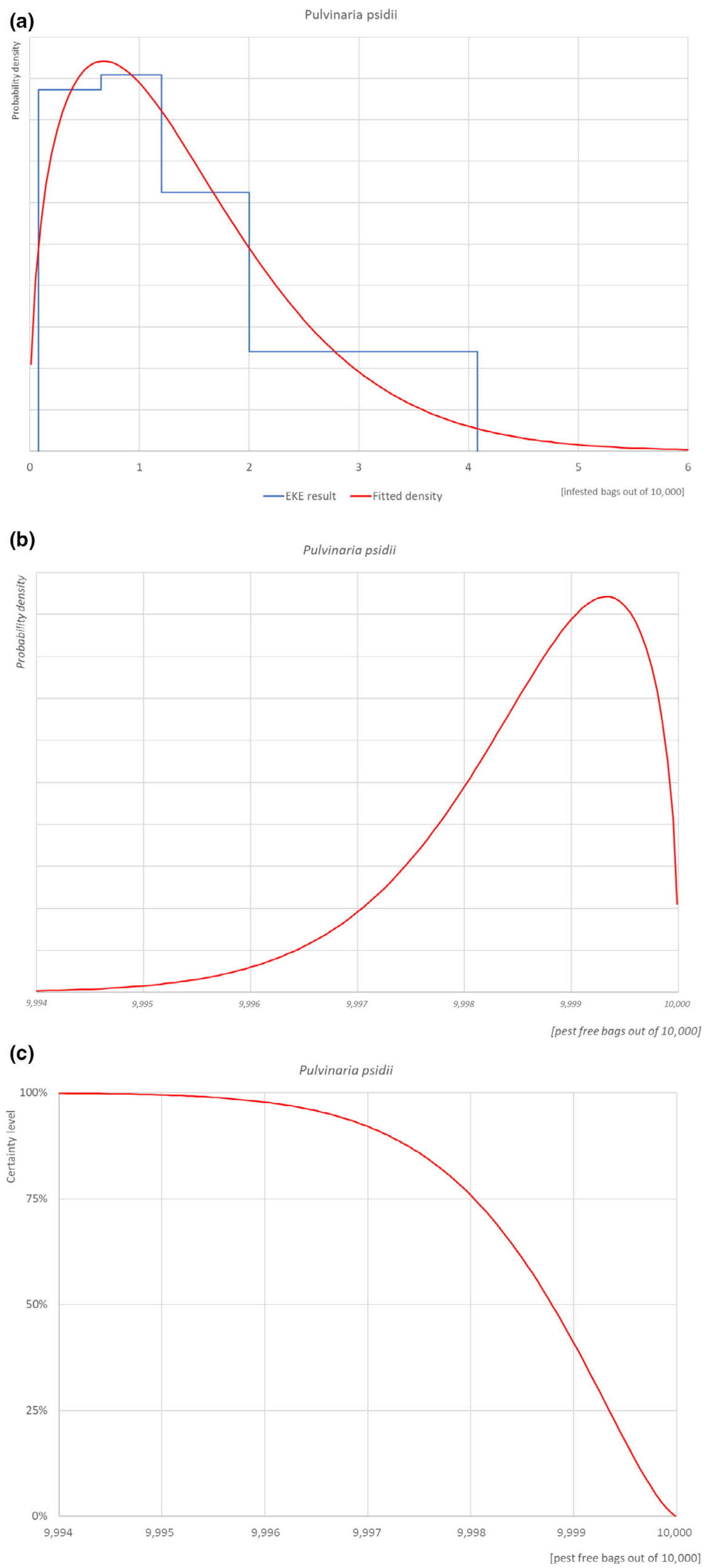

Figure A.5: (a) Elicited uncertainty of pest infestation per 10,000 plants (histogram in blue – vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (b) uncertainty of the proportion of pest-free plants per 10,000 (i.e.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

A.5.6. Reference list

Abd-rabou S, 2011. Field efficacy of parasitoid, *Coccophagus scutellaris* (Hymenoptera: Aphelinidae) and the predator, *Exochomus flavipes* (Coleoptera: Coccinellidae) against *Pulvinaria psidii* (Hymenopgtera: Coccidae) in Egypt. Journal of Biological Control 25, 85–91. https://doi.org/10.18311/jbc/2011/3729

Bhuiya BA, 1998. Two new species of Encyrtidae (Hymenoptera: Chalcidoidea) from Bangladesh attacking *Pulvinaria psidii* Maskell (Homoptera: Coccidae) on guava, Oriental Insects, 32, 267–277. https://doi.org/10.1080/00305316.1998.10433779

CABI CPC (Centre for Agriculture and Bioscience International), online. *Pulvinaria psidii*. Available online: https://www.cabi.org/cpc/datasheet/39201 [Accessed: 12 June 2020].

EPPO (European and Mediterranean Plant Protection Organization), online. EPPO Global Database: *Pulvinaria psidii*. Available online: https://gd.eppo.int/taxon/PULVPS [Accessed: 12 June 2020].

European Commission, online. EUROPHYT (European Union Notification System for Plant Health Interceptions). Available online: http://ec.europa.eu/food/plant/plant_health_biosecurity/europhyt/index_en.htm [Accessed: 15 June 2020].

Fauna Europaea, online. Museum für Naturkunde Leibniz-Institut für Evolutions- und Biodiversitätsforschung, Berlin, Germany: *Pulvinaria psidii*. Available online: https://fauna-eu.org/cdm_dataportal/taxon/9dc7d6ca-c088-4209-a7dd-0fd413620145 [Accessed: 15 June 2020].

Hamon AB and William ML, 1984. The soft scale insects of Florida (Homoptera: Coccoidea: Coccidae). Arthropods of Florida and Neighboring Land Areas. Florida Department of Agriculture and Consumer services. Division of Plant Industry, Gainesville. 194 pp.

Nakahara S, 1981. List of the Hawaiian Coccoidea (Homoptera: Sternorhyncha). Proceedings of the Hawaiian Entomological Society, 23, 387–424.

Stocks IC, 2013. Recent Adventive Scale Insects (Hemiptera: Coccoidea) and Whiteflies (Hemiptera: Aleyrodidae) in Florida and the Caribbean Region. In: Peña JE (ed.). Potential Invasive Pests of Agricultural Crops. CAB International, USA. pp. 342–362.

A.6. *Colletotrichum siamense*

A.6.1. Organism information

Taxonomic information	Current valid scientific name: *Colletotrichum siamense* Prihastuti, L. Cai & K.D. Hyde 2009 *Colletotrichum siamense* was first described as a pathogen associated with anthracnose of coffee berries (Prihastuti et al. 2009) in northern Thailand. Seven species with close phylogenetic affinities to *C. siamense* have been described: *C. communis*, *C. dianesei*, *C. endomangiferae*, *C. hymenocallidis*, *C. jasmini-sambac*, *C. melanocaulon*, *C. murrayae* that were regarded as *C. siamense* s. lat. (Liu et al., 2016). Recently, Liu et al. (2016) using a global strain collection performed molecular analyses based on the Genealogical Concordance Phylogenetic Species Recognition (GCPSR) and coalescent methods that do not support the recognition of any independent evolutionary lineages within *C. siamense* s. lat. as distinct species. Thus, in this Opinion, we have followed this approach as available records for *C. siamense* from *Jasminum* spp. (Wikee et al. 2011; Zhang et al., 2019) as well as that from avocado from Israel are identified as *C. siamense* Prihastuti, L. Cai & K.D. Hyde (Prihastuti et al., 2009) Order: Phyllachorales Family: Glomerellaceae Common name: N/A Name used in the Dossier: N/A
Group	Fungi
EPPO code	COLLSM
Regulated status	*Colletotrichum siamense* is not regulated in the EU and in any other part of the world
Pest status in Israel	*C. siamense* has been reported associated with avocado (*Persea americana*) anthracnose in Israel (Sharma et al., 2017). In the Database of Plant Pests in Israel (Ministry of Agricultural & Rural Development), it is not listed (access on 08 June 2020)
Pest status in the EU	Absent (no reports in CABI CPC, online)

Host status on *Jasminum polyanthum*	*C. siamense* has been reported as a host pest for *Jasminum mesnyi* (Zang et al., 2019) and *Jasminum sambac* (Wikee et al., 2011) There are no records that *Jasminum polyanthum* is a host of *C. siamense*. *C. siamense* has a wide host range (see below) and the Panel assumes that *J. polyanthum* can be infected	
PRA information	No pest risk assessment for this pest species is currently available	
Other relevant information for the assessment		
Biology	*C. siamense* was first described as a pathogen associated with anthracnose of coffee berries in northern Thailand (Prihastuti et al. 2009) The epidemiological processes of the anthracnose are inherent to each pathosystem, but in general the disease is favoured by high humidity and moderate temperatures. The pathogen can survive as saprophyte on dead branches, old injuries, fruits and remaining parts in the soil, which sporulates when there are conditions of high temperature and humidity. Pathogen spread resulting in secondary inoculum occurs through splash dispersal of conidia from sporulating lesions due to rain or overhead irrigation dependent on weather factors such as rain intensity, wind and raindrop size (Da Silva and Michereff, 2013) In Israel, *C. siamense* was mainly recovered from avocado fruit and fresh leaves collected from the Northern and Southern Israel Colonies of *C. siamense* on Potato Dextrose Agar are at first white and becoming pale brownish to pinkish, reverse pale yellowish to pinkish, max. of 82 mm diam. in 7 days at 28°C, with a growth rate 6.58–11.5 mm/day ($x = 9.30 \pm 1.93$). Aerial mycelium is greyish white, dense, cottony, with visible conidial masses at the inoculum point. *Sclerotia are* present in some culture. *Setae are* absent. *Conidiomata are* brown to dark brown, conspicuous for their brown setae. *Conidia are* 7–18.3 × 3–4.3 μm ($x = 10.18 \pm 1.74 \times 3.46 \pm 0.36$), common in mycelium, one-celled, smooth-walled, guttulate, hyaline, fusiform with obtuse to slightly rounded ends, sometimes oblong. *Appressoria are* 4.7- 8.3 × 3.5-5 μm ($x = 6.67 \pm 1.05 \times 4.13 \pm 0.44$) in slide cultures, mostly formed from mycelia, brown, ovoid, sometimes clavate and often becoming complex with age (Prihastuti et al., 2009)	
Symptoms	**Main type of symptoms**	*Colletotrichum* species cause leaf and flower anthracnose in jasmine, resulting in a reduction in flower yield. Symptoms begin as chlorotic spots that coalesced into larger irregular or circular lesions. The centre of a typical lesion is grey with a brown border surrounded by a yellow halo and can cover the whole leaf leading to defoliation and dieback. Whole flowers can also be blighted (Wikee et al., 2011; Zhang et al., 2019)
	Presence of asymptomatic plants	*Colletotrichum* is an economically important plant pathogenic genus that occurs worldwide, but species included can also have endophytic or saprobic lifestyles (Jayawardena et al., 2016) *C. siamense* can be present asymptomatically on leaves (James et al., 2014) and has been described as endophyte in different hosts including coffee berry tissues (Wilkee et al., 2009), and on leaves of *Piper nigrum* leaves (Munasinghe et al., 2017), *Centella asiatica* (Radiastuti et al.,, 2019), *Artocharpus sericicarpus*, *A. heterophyllus*, *Coffee canephora*, *Eriobotrya japonica*, *Ficus carica*, *Mentha* sp., *Rosmarinus officinalis*, *Theobroma cacao* (James et al., 2014) or *Cymbopogon citratus* (Manangoda et al., 2013)

	Confusion with other pests	In addition to *C. siamense*, several other *Colletotrichum* species are associated with leaf and flower anthracnose of jasmine causing similar symptoms including *C. jasminigenum*, *C. jasmini-sambac* and *C. truncatum* (Wikee et al., 2011) Morphological features such as colony growth rate, colour of cultures, conidial size and shape and shape of appressoria can be used for identification of *Colletotrichum* species. However, many of the morphological features are not always available, can change with repeated subculturing or vary under different growing conditions (Weir, et al., 2012). Thus, molecular methods should be used for proper identification. However, the identification of *Colletotrichum* spp. is complicated by the occurrence of species complexes that are not easily resolved by morphological and single loci sequence approaches (James et al., 2014; Weir et al. 2012). Partial actin (ACT), β-tubulin (TUB2), calmodulin (CAL), glutamine synthetase (GS), glyceraldehyde-3-phosphate dehydrogenase (GPDH) genes and the complete rDNA-ITS (ITS) region was used by Prihastuti et al. (2009) and Wikee et al. (2010) to identify *Colletotrichum* spp. from coffee berries and *J. sambac*, respectively
Host plant range	*C. siamense* has a wide host range (James et al., 2014) including *Allium cepa* (onion), *Camellia sinensis* (tea), *Capsicum annuum* (bell pepper), *Capsicum spp*. (chili), *Cercis chinensis*, *Coffea arabica* (coffee), *Diospyros kaki* (persimmon), *Euonymus japonicus*, *Fragaria ananassa* (strawberry), *Gossypium hirsutum* (cotton), *Hylocereus undatus* (dragon fruit), *Litchi chinensis* (litchi), *Machilus ichangensis, Malus domestica* and *Malus pumila* (apple), *Mangifera indica* (mango), *Nopalea cochenilifera* (cochineal cactus), *Parthenocissus tricuspidata, Plukenetia volubilis* (Sacha inchi), *Prunus salicinica* (Japanese plum), *Synsepalum dulcificum* (miracle fruit) among others (CABI CP, online, Cheng et al., 2019; Chowdappa et al., 2015; Conforto et al., 2017; De Silva et al., 2017; Hassan et al., 2018; Liu et al., 2017; Park et al., 2018; Prihastuti et al., 2009; Salunkhe et al., 2020; Truong et al., 2018; Wang et al., 2016; Wang et al., 2020; Wu, 2019; Zhao et al., 2020	
Pathways	Plants for planting and plant parts as fruits. *C. siamense* can be present on leaves and flower of *Jasminum* (Wikee et al., 2011; Zhang et al., 2019)	
Surveillance information	No surveillance information for this pest is currently available from Israel There is no information available to assess whether the pest has ever been found in the nurseries or the surrounding environment of the nurseries	

A.6.2. Possibility of pest presence in the nursery

A.6.2.1. Possibility of entry from the surrounding environment

In Israel, *C. siamense* has been identified infecting fruit and fresh leaves of avocado (*Persea americana*) mainly in Northern and Southern regions of the country (Sharma et al., 2017).

C. siamense has a wide host range, including fruits, vegetables and ornamentals (Weir, 2012; Meng et al., 2019). The major source of inoculum is from infected plant material, which can be leaves, twigs and fruit of the affected plant species. Splash dispersal from rain or sprinkler irrigation water is required to dislodge the conidia from the acervuli of the fungus, subsequent drying of the water droplets can lead to air-borne inoculum, which can be further dispersed by wind. Therefore, the presence of host species or weeds in the environment of the greenhouse can be a factor for the possible migration of inoculum.

The Panel considers that *C. siamense* can be present in the production areas of *J. polyanthum* destined for export to the EU.

Jasminum plants destined for export to the EU are grown in a protected environment (i.e. greenhouse). Introduction of the inoculum (airborne conidia) of *C. siamense* that could passively dispersed by wind into a greenhouse is possible through open doors and holes in the nets or in the roof of the greenhouse structure only under windy rainy conditions. The success rate of one of these events is only likely to occur in case of severe anthracnose epidemics in the neighbouring environment of the greenhouse.

C. siamense is not reported on *Jasminum* in Israel.

Uncertainties:

- The distribution of the pest in Israel is unknown although was mainly recovered from avocado fruit and fresh leaves samples collected from the Northern and Southern Israel. The presence of the suitable host plants (e.g. mango, avocado, *Citrus*, strawberry, etc.) and the abundance of *C. siamense* inoculum in the area surrounding the greenhouse is unknown.

Taking into consideration the above evidence and uncertainties, the Panel considers that it is possible that inoculum of *C. siamense* can enter greenhouses from the surrounding area.

A.6.2.2. Possibility of entry with new plants/seeds

The source of the planting material to produce *J. polyanthum* cuttings originate from officially approved nurseries.

C. siamense can be introduced into the greenhouse during its asymptomatic or epiphytic phase on mother plants or other plants. During a growing cycle, no new plants are introduced in the greenhouse.

Taking into consideration the above evidence, the Panel considers it is possible that the fungus enters the nursery with new plants/seeds.

Uncertainties:

The length of asymptomatic or epiphytic phase affects the detection of infected plants in the officially approved nurseries.

A.6.2.3. Possibility of spread within the nursery

The major source of inoculum is from sporulating lesions on infected plant material, which can be leaves, twigs and fruit of the affected plant species. The fungus can only spread within the greenhouse by splash dispersal of airborne conidia produced in sporulating lesions developed in diseased *J. polyanthum* plants; however, the presence of anthracnose lesions on the cuttings are expected to be detected during the official and self-inspection performed in the greenhouse.

In the dossier, it is mentioned that *J. polyanthum* plants are physically separated from other crops. The greenhouse designated for export may include the following plants: *Anisodontea, Pentas, Thunbergia* and *Tibouchina*; however, these are always maintained on separate tables (with a distance of 50 cm between tables). None of these species are described as host of *Colletotrichum* spp. except for *Tibouchina granulosa* which was found to be colonised endophytically by a non-identified strain of *Colletotrichum* sp. in Brazil (Golias et al., 2020). Tools are never transferred between plant species and are always sterilised prior to every treatment as a precaution, preventing the transfer of the endophytically grown pest.

Uncertainties:

There is uncertainty about the length of a possible asymptomatic or epiphytic phase of the *Colletotrichum* species and whether this will lead to undetected presence of *C. siamense* in the exported cuttings despite the regular inspections. An additional uncertainty is the role of the endophytic presence of Colletotrichum sp. on *Tibouchina granulosa* for the presence/spread of inoculum in the greenhouse.

In the dossier, there is no specific information on the irrigation method used for the evaluation of its effect on the spread of the pathogen. Taking into consideration the above evidence and uncertainties, the Panel considers that the transfer of the pest within the greenhouse is possible.

A.6.3. Information from interceptions

Approximately 300,000 *J. polyanthum* cuttings are imported annually from Israel into the EU (corresponding to 6,000 bags per year).

In the Europhyt database (1995-08/06/2020), there are no records of interception of *C. siamense* on produce from Israel.

A.6.4. Evaluation of the risk mitigation options

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

Number	Risk mitigation measure	Effect on the pest	Evaluation and uncertainties
1	Growing plants in isolation (greenhouse)	Yes	Plants are protected from the fungal airborne inoculum that can enter from the surrounding environment <u>Uncertainties:</u> – Presence of defects in the greenhouse structure – Movement through the door by windConidia can enter through the net
2	Soil treatment	No	Not relevant
3	Fungicide treatment	Yes	No fungicide treatments are applied
4	Official supervision by PPIS	Yes	The inspection of mother plants would reveal the presence of symptomatic infected plants <u>Uncertainties:</u> – Presence of the pathogen as endophyte or epiphyte on asymptomatic leaves – Unknown length of a possible asymptomatic phase of the fungus that could lead to undetected presence of *C. siamense* in the exported cuttings
5	Inspections of nurseries that export plants	Yes	The presence of anthracnose lesions on the cuttings is expected to be detected during the official and self-inspection performed in the greenhouse <u>Uncertainties:</u> – Presence of the pathogen as endophyte or epiphyte on asymptomatic leaves – Unknown length of a possible dormant phase of the fungus that could lead to undetected presence of *C. siamense* in the exported cuttings

A.6.5. Overall likelihood of pest freedom

A.6.5.1. Reasoning for a scenario which would lead to a reasonably low number of infested consignments

- The pathogen has been recently reported in Israel and there is no/low pest pressure in the area where the greenhouses are located.
- The pest has not been reported on *Jasminum* in Israel.
- The pest has never been intercepted on *Jasminum* (from all origins).
- Symptomatic plants are easy to be detected.
- If asymptomatic mother plants are introduced in the greenhouse, they are expected to show symptoms at the moment of harvest of cuttings.
- Irrigation system does not facilitate the splash dispersal of the spores.
- The greenhouse prevents the introduction of the pathogen.
- The pathogen has limited (passive) dispersal capacity.

A.6.5.2. Reasoning for a scenario which would lead to a reasonably high number of infested consignments

- Since its first detection in 2017 *C. siamense* has spread in the country and it is likely that host plants are present in the surrounding environment.
- The pathogen is widespread in Israel and there is high pest pressure in the area (e.g. abandoned avocado fields) where the greenhouse is located.
- The environmental conditions in the greenhouse are favourable for the population built-up
- Some latent infection may escape detection at the moment of harvest.
- The irrigation system facilitates the splash dispersal of the spores in the greenhouse.
- The greenhouse is not fully effective in preventing the introduction of the pathogen.
- There are no fungicide treatments applied in the greenhouse.

A.6.5.3. Reasoning for a central scenario equally likely to over- or underestimate the number of infested consignments (Median)

The value of the median is estimated based on:

- The protective effect of the greenhouse structure.
- The low natural spread rate based on splash dispersal.

A.6.5.4. Reasoning for the precision of the judgement describing the remaining uncertainties (1st and 3rd quartile/interquartile range)

The main uncertainty is the population pressure in the surrounding environment.

A.6.5.5. Elicitation outcomes of the assessment of the pest freedom for *Colletotrichum siamense*

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

Table A.11: Elicited and fitted values of the uncertainty distribution of pest infestation by *Colletotrichum siamense* per 10,000 plants

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Elicited values	10					4		2		1					0.1
EKE	11.6	9.5	7.8	6.1	4.9	3.9	3.1	2.1	1.3	0.97	0.66	0.42	0.23	0.13	0.06

The EKE results are the Gamma distribution (1.2287, 2.276) fitted with @Risk version 7.5.

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

Table A.12: The uncertainty distribution of plants free of *Colletotrichum siamense* per 10,000 plants calculated by Table A.11

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Values	9,999.9					9,999.0		9,998.0		9,996.0					9,990.0
EKE results	9,999.9	9,999.9	9,999.8	9,999.6	9,999.3	9,999.0	9,998.7	9,997.9	9,996.9	9,996.1	9,995.1	9,993.9	9,992.2	9,990.5	9,988.4

The EKE results are the fitted values.

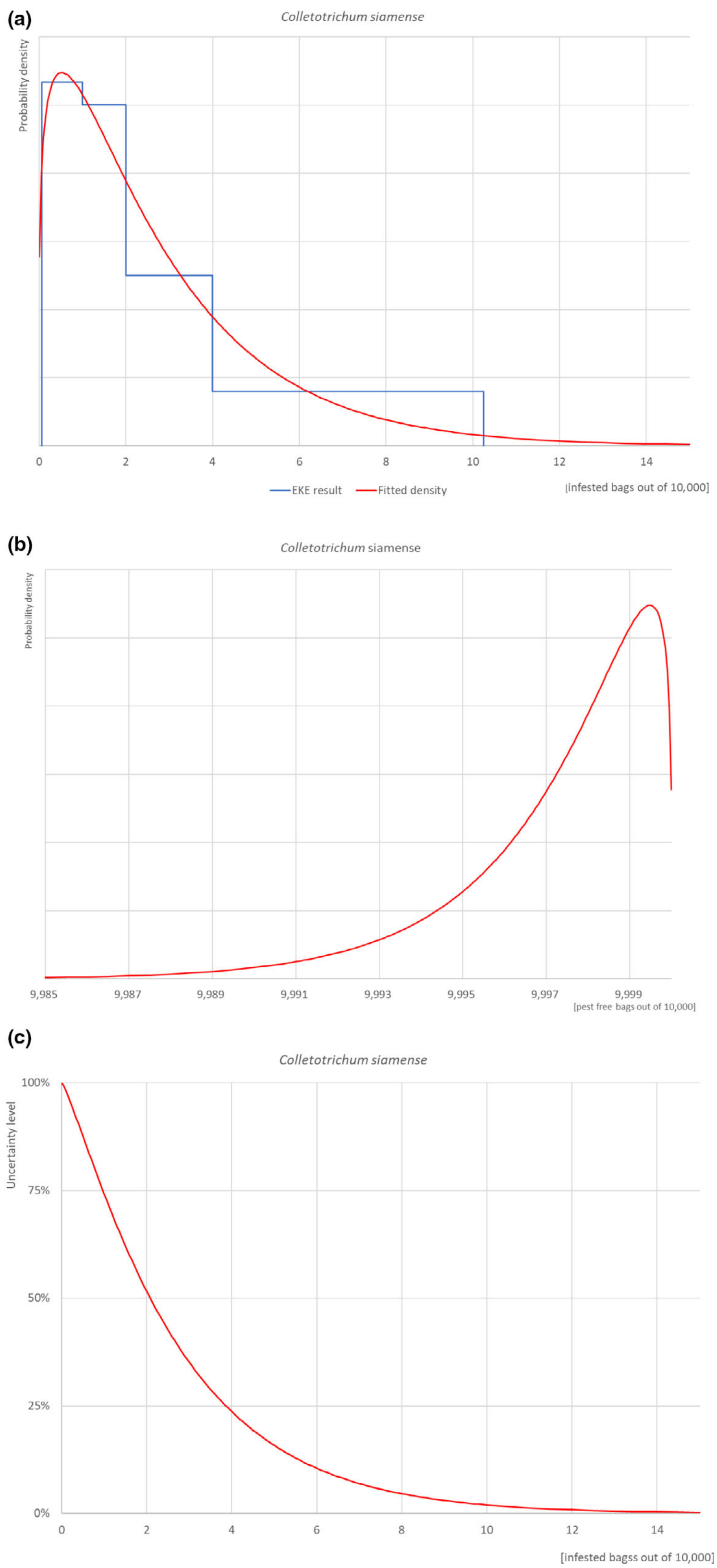

Figure A.6: (a) Elicited uncertainty of pest infestation per 10,000 plants (histogram in blue – vertical blue line indicates the elicited percentile in the following order: 1%, 25%, 50%, 75%, 99%) and distributional fit (red line); (b) uncertainty of the proportion of pest-free plants per 10,000 (i.e. =1 – pest infestation proportion expressed as percentage); (c) descending uncertainty distribution function of pest infestation per 10,000 plants

A.6.6. Reference list

CABI CPC (Centre for Agriculture and Bioscience International), online. *Colletotrichum siamense*. Available online: https://www.cabi.org/cpc/restricted/?target=%2fcpc%2fdatasheet%2f120362 [Accessed: 8 June 2020].

Cheng S, Jiang JW, Hsiang T, Sun ZX and Zhou Y, 2019. First report of anthracnose on *Machilus ichangensis* caused by *Colletotrichum siamense* in China. Plant Disease, 103, 2958. https://doi.org/10.1094/pdis-05-19-1115-pdn

Chowdappa P, Chethana CS and Pavani KV, 2015. *Colletotrichum siamense* and *C. truncatum* are responsible for severe outbreaks of anthracnose on onion in southwest India. Journal of Plant Pathology 97, 77–86. https://doi.org/10.4454/jpp.v97i1.015

Conforto C, Lima NB, Garcete-Gómez JM, Câmara MPS and Michereff SJ, 2017. First report of *Colletotrichum siamense* and *C. fructicola* causing cladode brown spot in *Nopalea cochenillifera* in Brazil. Journal of Plant Pathology, 99, 812. https://doi.org/10.4454/jpp.v99i3.3974

Da Silva DCFB and Michereff SJ, 2013. Biology of *Colletotrichum* spp. and epidemiology of the anthracnose in tropical fruit trees. Rev. Caatinga, 26, 130–138.

De Silva DD, Ades PK, Crous PW and Taylor PWJ, 2017. *Colletotrichum* species associated with chili anthracnose in Australia. Plant Pathology 66, 254–267. https://doi.org/10.1111/ppa.12572

Golias HC, Polonio JC, dos Santos Ribeiro MA, Polli AD, da Silva AA, Bulla AM, Volpato H, Vatraru C, Cesar Meurer E, Azevedo JV, Pamphile JA, 2020. *Tibouchina granulosa* (Vell.) Cogn (Melastomataceae) as source of endophytic fungi: isolation, identification, and antiprotozoal activity of metabolites from *Phyllosticta capitalensis*. Brazilian Journal of Microbiology, 51, 557–569. https://doi.org/10.1007/s42770-019-00221-z

Hassan O, Jeon JY, Chang T, Shin JS, Oh NK and Lee YS, 2019. Molecular and Morphological Characterization of *Colletotrichum* species in the *Colletotrichum gloeosporioides* complex Associated with Persimmon anthracnose in South Korea. Plant Disease, 102, 1015–1024. https://doi.org/10.1094/pdis-10-17-1564-re

James RS, Ray J, Tan YP and Shivas RG, 2014. *Colletotrichum siamense*, *C. theobromicola* and *C. queenslandicum* from several plant species and the identification of *C. asianum* in the Northern Territory, Australia. Australasian Plant Disease Notes, 9, 138. https://doi.org/10.1007/s13314-014-0138-x

Jayawardena RS, Hyde KD, Damm U, Cai L, Liu M, Li XH, Zhang W, Zhao WS and Yan JY, 2016. Notes on currently accepted species of *Colletotrichum*. Mycosphere, 7, 1192–1260. https://doi.org/10.1007/s00253-020-10363-y

Liu F, Wang M, Damm U, Crous PW and Cai L, 2016. Species boundaries in plant pathogenic fungi: A *Colletotrichum* case study. BMC Evolutionary Biology, 16, 81. https://doi.org/10.1186/s12862-016-0649-5

Liu LP, Shu J, Zhang L, Hu R, Chen CQ, Yang LN, Lu BH, Liu YN, Yu L, Wang X, Li Y, Gao J and Hsiang T, 2017. First report of post-harvest anthracnose on mango (*Mangifera indica*) caused by *Colletotrichum siamense* in China. Plant Disease, 101, 833. https://doi.org/10.1094/pdis-08-16-1130-pdn

Manamgoda DS, Udayanga D, Cai L, Chukeatirote E and Hyde KD, 2013. Endophytic *Colletotrichum* from tropical grasses with a new species *C. endophytica*. Fungal Diversity, 61, 107–115. https://doi.org/10.1007/s13225-013-0256-3

Meng Y, Gleason ML, Zhang R and Sun G, 2019. Genome sequence resource of the wide-host-range anthracnose pathogen *Colletotrichum siamense*. Molecular Plant-Microbe Interactions, 32, 931–934. https://doi.org/10.1094/mpmi-01-19-0010-a

Ministry of Agriculture & Rural Development. Database of plant pest in Israel, online. Available online: https://www.moag.gov.il/en/Pages/SearchNegaim.aspx

Munasinghe MVK, Kumar NS, Jayasinghe L and Fujimoto Y, 2017. Indole-3-acetic acid production by *Colletotrichum siamense*, an endophytic fungus from Piper nigrum leaves. Journal of Biologically Active Products from Nature, 7, 475–479. https://doi.org/10.1080/22311866.2017.1408429

Park MS, Kim BR, Park IH and Hahm SS, 2018. First Report of two *Colletotrichum* Species associated with bitter rot on apple fruit in Korea – *C. fructicola* and *C. siamense*. Mycobiology, 46, 154–158. https://doi.org/10.1080/12298093.2018.1478220

Prihastuti H, Cai L, Chen H, McKenzie E and Hyde KD, 2009. Characterization of *Colletotrichum* species associated with coffee berries in northern Thailand. Fungal Diversity, 39, 89–109.

Radiastuti N, Bahalwan HA and Susilowati DN, 2019. Phylogenetic study of endophytic fungi associated with *Centella asiatica* from Bengkulu and Malaysian accessions based on the ITS rDNA sequence. Biodiversitas, 20, 1248–1258. https://doi.org/10.13057/biodiv/d200503

Salunkhe VN, Gawande SP, Gokte-Narkhedkar N, Nagrale DT, Hiremani NS and Waghmare VN, 2020. First report of *Colletotrichum siamense* causing leaf anthracnose on cotton in India. Plant Disease (on-line early). https://doi.org/10.1094/pdis-09-19-1992-pdn

Sharma G, Maymon M and Freeman S, 2017. Epidemiology, pathology and identification of *Colletotrichum* including a novel species associated with avocado (*Persea americana*) anthracnose in Israel. Scientific Reports, 7, 15839. https://doi.org/10.1038/s41598-017-15946-w

Truong HH, Sato T, Ishikawa S, Minoshima A, Nishimura T and Hirooka Y, 2018. Three *Colletotrichum* species responsible for anthracnose on *Synsepalum dulcificum* (miracle fruit). International Journal of Phytopathology, 7, 89–101.

Wang W, Zhang J and Li J, 2020. First report of *Colletotrichum siamense* causing stem tip dieback of Sacha Inchi (*Plukenetia volubilis*) in China. Plant Disease (on-line early). https://doi.org/10.1094/pdis-03-20-0458-pdn

Wang YC, Hao XY, Wang L, Xiao B, Wang XC and Yang YJ, 2016. Diverse *Colletotrichum* species cause anthracnose of tea plants (*Camellia sinensis* (L.) O. Kuntze) in China. Scientific Reports, 6, 35287. https://doi.org/10.1038/srep35287

Weir BS, Johnston PR and Damm U, 2012. The *Colletotrichum gloeosporioides* species complex. Study Mycology, 73, 115–180. https://doi.org/10.1007/s13225-013-0249-2

Wikee S, Cai L, Pairin N, McKenzie EHC, Su YY, Chukeatirote E, Thi HN, Bahkali A, Moslem M, Abd-Elsalam KA and David Hyde K, 2011. *Colletotrichum* species from Jasmine (*Jasminum sambac*). Fungal Diversity, 46, 171–182. https://doi.org/10.1007/s13225-010-0049-x

Wu M, 2019. First Report of *Colletotrichum siamense* causing anthracnose on *Euonymus japonicus* in China. Plant Disease, 104, 587. https://doi.org/10.1094/pdis-04-19-0824-pdn

Zhang YL, Wang JY, Yin CP, Mao ZC and Shao Y, 2019. First Report of *Colletotrichum siamense* causing anthracnose on *Jasminum mesnyi* in China. Plant Disease, 103, 2675. https://doi.org/10.1094/pdis-04-19-0804-pdn

Zhao XY, Wu F, Chen M, Li SC, Zhang YN, Fu YQ, Yu GY and Xiang ML, 2020. First Report of *Colletotrichum siamense* causing leaf spot on *Parthenocissus tricuspidata* in China. Plant Disease (on-line early). https://doi.org/10.1094/pdis-12-19-2535-pdn

Appendix B – Web of Science All Databases Search String

In the table below, the search string used in Web of Science is reported. Totally, 460 papers were retrieved. Titles and abstracts were screened, and 41 pests were added to the list of pests (see Appendix D).

Web of Science All databases	**TOPIC:** "Jasminum" OR "Jasminum polyanthum" OR "J.polyanthum" OR "Jasminum sp." OR "Jasminum spp." **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**: "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 "toxicity" OR "weed control" OR "salt stress" OR "salinity" OR "cancer" OR "pharmacology" OR "glucoside" OR "metabolites" OR "cross compatibility" OR "volatile" OR "anti-inflammatory activity" OR "shelf life" OR "synthesis" OR "scent volatile" **NOT** **TOPIC:** "Achatina fulica" OR "Acherontia atropos" OR "Acherontia styx" OR "Adoxophyes perstricta" OR "Alecanochiton marquesi" OR "Aleurodicus dispersus" OR "Andaspis hawaiiensis" OR "Aonidiella aurantii" OR "Aonidiella aurantii " OR "Aonidiella citrina" OR "Aonidiella inornata" OR "Aonidiella orientalis" OR "Aphis (Toxopetra) aurantii" OR "Aphis craccivora "OR "Aphis fabae" OR "Aphis gossypii" OR "Aphis nerii" OR "Aphis spiraecola "OR "Aphis spiraecola (Syn.: Aphis citricola)" OR "Armillaria tabescens" OR "Aspidiotus destructor" OR "Aspidiotus hederae" OR "Aspidiotus hederae " OR "Aspidiotus nerii" OR "Athelia rolfsii (Syn.: Sclerotium rolfsii)" OR "Brachymyzus jasmini "OR "Cacoecimorpha pronubana" OR "Caloptilia syringella" OR "Cercospora jasminicola" OR "Ceroplastes japonicus" OR "Chionaspis salicis" OR "Chrysomphalus aonidum" OR "Chrysomphalus dictyospermi" OR "Chrysomphalus pinnulifer" OR "Clavaspidiotus tayabanus" OR "Coccus hesperidum" OR "Coccus hesperidum hesperidum" OR "Coccus viridis" OR "Contarinia maculipennis" OR "Corythauma ayyari" OR "Daphnis nerii " OR "Dialeurodes citri" OR "Dialeurodes kirkaldyi" OR "Diaspidiotus forbesi" OR "Diaspidiotus perniciosus" OR "Diaspidiotus perniciosus (Syn.: Comstockaspis perniciosa)" OR "Dynaspidiotus britanicus" OR "Dynaspidiotus britannicus" OR "Epiphyas postvittana" OR "Erythricium salmonicolor" OR "Eucalymnatus tessellatus" OR "Ferrisia virgata" OR "Fiorinia phantasma" OR "Glomerella cingulata" OR "Glomerella cingulata (Syn.: Colletotrichum gloeosporioides)" OR "Helicotylenchus dihystera" OR "Hemiberlesia cyanophylli" OR "Hemiberlesia lataniae" OR "Hemithea aestivaria" OR "Hoplolaimus seinhorsti" OR "Howardia biclavis" OR "Hypocrea rufa" OR "Hypocrea rufa (Syn.: Trichoderma viride)" OR "Icerya purchasi" OR "Icerya seychellarum" OR "Ischnaspis longirostris" OR "Jasmine chlorotic ringspot agent" OR "Jasmine infectious variegation agent" OR "Jasmine phyllody agent" OR "Jasmine yellow ring mosaic agent" OR "Kilifia acuminata" OR "Lankacoccus ornatus" OR "Lepidosaphes corni" OR "Lepidosaphes malicola" OR "Lepidosaphes tapleyi" OR "Lichtensia viburni" OR "Maconellicoccus hirsutus" OR "Macroglossum stellatarum" OR "Macrophomina phaseolina" OR "Macrosiphum euphorbiae" OR "Melanaspis inopinata" OR "Meloidogyne incognita"

	OR "Meloidogyne javanica" OR "Menophra abruptaria" OR "Milviscutulus mangiferae" OR "Morganella longispina" OR "Mycetaspis personata" OR "Myzus ornatus "OR "Myzus persicae" OR "Nausinoe geometralis" OR "Neopinnaspis harperi" OR "Octaspidiotus stauntoniae" OR "Orgyia leucostigma" OR "Palinaspis quohogiformis" OR "Palpita unionalis "OR "Palpita vitrealis" OR "Palpita vitrealis (Syn.: Glyphodes unionalis)" OR "Parabemisia myricae" OR "Paracoccus marginatus" OR "Paraputo jasmini" OR "Paratachardina pseudolobata" OR "Parlatoreopsis longispina" OR "Parlatoria blanchardi" OR "Parlatoria camelliae" OR "Parlatoria cinerea" OR "Parlatoria crypta" OR "Parlatoria oleae" OR "Parlatoria pergandii" OR "Parlatoria proteus" OR "Parthenolecanium corni" OR "Parthenolecanium corni corni" OR "Parthenolecanium corni" OR "Phenacoccus perillustris" OR "Phenacoccus solenopsis" OR "Phyllocnistis citrella" OR "Phyllophaga" OR "Phytonemus pallidus" OR "Phytonemus pallidus" OR "Phytoplasma oryzae" OR "Pinnaspis strachani" OR "Planchonia arabidis" OR "Planococcus citri" OR "Planococcus minor" OR "Pleospora herbarum (Syn.:Stemphylium botryosum)" OR "Polyphagotarsonemus latus" OR "Prays oleae" OR "Protopulvinaria pyriformis" OR "Pseudaonidia trilobitiformis" OR "Pseudaulacaspis cockerelli" OR "Pseudaulacaspis pentagona" OR "Pseudaulacaspis prunicola prunicola" OR "Pseudischnaspis bowreyi" OR "Pseudococcus concavocerarii" OR "Pseudococcus cryptus" OR "Pseudococcus jackbeardsleyi" OR "Pseudococcus longispinus" OR "Pseudococcus viburni" OR "Pseudomonas syringae pv. syringae" OR "Pseudoparlatoria ostreata" OR "Pseudoparlatoria parlatorioides" OR "Pulvinaria floccifera" OR "Pulvinaria psidii" OR "Rhizoecus falcifer" OR "Rhizoecus floridanus" OR "Rhizopulvinaria artemisiae" OR "Rhizopulvinaria turkestanica" OR "Rosellinia bunodes" OR "Rosellinia bunodes " OR "Rosellinia necatrix" OR "Russellaspis pustulans pustulans" OR "Saissetia coffeae" OR "Saissetia oleae oleae" OR "Scirtothrips dorsalis" OR "Selenaspidus articulatus" OR "Steneotarsonemus pallidus" OR "Tenthredo vespa Retzius" OR "Tetranychus urticae RF" OR "Thanatephorus cucumeris (Syn.: Rhizoctonia solani)" OR "Tinocallis platani "OR "Tobacco streak virus" OR "Trichoderma harzianum" OR "Unaspis euonymi" OR "Varicaspis fiorineides" OR "Zygogramma bicolorata" OR "Paratrichodorus minor" OR "Meloidogyne sp" OR "Xiphinema americanum" OR "Meloidogyne hapla" OR "Radopholus similis" OR "Pratylenchus crenatus" OR "Rotylenchulus reniformis" OR "Paratylenchus jasmineae" OR "Hyphantria cunea" OR "Spilosoma vestalis" OR "Ganisa postica" OR "Hoplojana rhodoptera" OR "Jana tantalus" OR "Stegasta variana" OR "Celerena vulgaris" OR "Odontopera similaria" OR "Problepsis sp. "OR "Problepsis delphiaria" OR "Problepsis digammata" OR "Scopula remotata" OR "Somatina omicraria" OR "Somatina virginalis" OR "Caloptilia cuculipennella" OR "Telamoptilia cathedraea" OR "Euglyphis nocens" OR "Phobetron hipparchia" OR "Artaxa guttata" OR "Leucoptera sp." OR "Paectes delineata" OR "Serrodes partita" OR "Spodoptera litura" OR "Methona themisto" OR "Anaphaeis aurota" OR "Cadra cautella" OR "Diaphania indica" OR "Elophila responsalis" OR "Glyphodes caesalis" OR "Hendecasis duplifascialis" OR "Monoctenocera brachiella" OR "Arabic mosaic nepovirus" OR "Palpita unionalis" OR "Parapoynx diminutalis" OR "Phycita eulepidella" OR "Phycita jasminophaga" OR "Polythlipta cerealis" OR "Attacus atlas" OR "Automeris aurantiaca" OR "Automeris complicata" OR "Holocerina smilax" OR "Acherontia lachesis" OR "Cephonodes picus" OR "Coelonia fulvinotata" OR "Daphnis nerii" OR "Manduca rustica" OR "Pseudosphinx tetrio" OR "Psilogramma menephron" OR "Palaeodes samealis" OR "Adoxophyes privatana" OR "Archips machlopis" OR "Lobesia fetialis" OR "Loboschiza koenigiana" OR "Platynota rostrana" OR "Bryobia praetiosa" OR "Eutetranychus orientalis" OR "Panonychus citri" OR "Schizotetranychus undulatus" OR "Tetranychus lombardinii" OR "Tetranychus ludeni" OR "Tetranychus merganser" OR "Tetranychus neocaledonicus " OR "Tetranychus puschelii" OR "Tetranychus turkestani" OR "Tetranychus urticae" OR "Abropelta fusarioides" OR "Acarocybella jasminicola" OR "Actinopelte sp." OR "Aecidium jasminicola" OR "Aecidium longaense" OR "Aecidium sp." OR "Aecidium tylophorae" OR "Aithaloderma setosum" OR "Ajrekarella polychaetriae" OR "Alina jasmini" OR "Gracillaria syringella" OR "Alternaria dianthi" OR "Alternaria ellisii" OR "Alternaria sp." OR "Aplosporella jasmini" OR "Armillariella mellea" OR "Armillariella tabescens "OR "Aschersonia philippinensis" OR "Ascochyta jasminicola" OR "Asterina erysiphoides (Phillipsiella atra)" OR "Asterina jasmini" OR "Asterina jasminicola" OR "Asterina lawsoniae" OR "Asterina sp." OR "Asterina spissa" OR "Asterinella jasmini" OR "Asteromella jasminicola" OR "Atractina jasmini" OR "Bagnisiella jasmini" OR "Bartalinia robillardoides" OR "Botryodiplodia theobromae (Lasiodiplodia theobromae)" OR "Botryosphaeria ribis (Neofusicoccum ribis)" OR "Botrytis cinerea" OR "Botrytis sp." OR "Calonectria jasmini" OR "Calonectria polythalama" OR "Calopeltis jasmini" OR "Camarosporium polymorphum" OR "Capnodium jasmini"

	OR "Capnodium sp." OR "Cercospora jasminae" OR "Cercospora jasmini (Pseudocercospora butleri)" OR "Cercospora jasminicola (Acarocybella jasminicola):" OR "Cercospora jasminicola var. khandalensis (Pseudocercospora butleri)" OR "Cercospora odoratissimi (Pseudocercospora butleri)" OR "Cercospora sp." OR "Ceuthospora jasminacea" OR "Chaconia butleri" OR "Chaetothyrium guaraniticum" OR "Chaetothyrium jasminicola" OR "Choanephora infundibulifera" OR "Cicinnobella abyssinica" OR "Cladosporium herbarum" OR "Cladosporium maculans" OR "Cladosporium staurophorum" OR "Clitocybe tabescens (Desarmillaria tabescens)" OR "Cochliobolus geniculatus (Curvularia geniculata)" OR "Cochliobolus lunatus (Curvularia lunata)" OR "Colletotrichum acutatum" OR "Colletotrichum capsici (Colletotrichum truncatum)" OR "Colletotrichum dematium" OR "Colletotrichum gloeosporioides" OR "Colletotrichum jasmini-sambac (Colletotrichum siamense)" OR "Colletotrichum jasminicola" OR "Colletotrichum jasminigenum" OR "Colletotrichum siamense" OR "Colletotrichum sp." OR "Colletotrichum truncatum" OR "Coniothyrium castagnei" OR "Coniothyrium fuckelii (Paraconiothyrium fuckelii)" OR "Coniothyrium jasmini" OR "Coniothyrium sp." OR "Corticium centrifugum (Fibulorhizoctonia centrifuga)" OR "Corticium galactinum (Scytinostroma galactinum)" OR "Corticium salmonicolor (Erythricium salmonicolor)" OR "Corticium solani - (Rhizoctonia solani):" OR "Corynespora cassiicola" OR "Corynespora jasminicola" OR "Corynespora pruni" OR "Corynespora sp." OR "Curvularia prasadii" OR "Curvularia senegalensis" OR "Cytospora jasmini" OR "Dendrophoma jasmini" OR "Diaporthe culta" OR "Diatrypella jasmini" OR "Dictyodothis jasmini" OR "Dictyodothis macrocarpa:" OR "Didymosphaeria jasmini" OR "Didymosphaeria muelleri" OR "Dimerium piceum" OR "Diplodia jasmini" OR "Diplodia seriata" OR "Diplodia sp." OR "Dothidastromella brevilobi" OR "Elsinoe jasminae (Elsinoe jasmini)" OR "Elsinoe jasmini" OR "Elsinoe jasminicola" OR "Eremotheca rufula (Schizothyrium rufulum)" OR "Erysiphe sp." OR "Eutypa lata (Eutypa lata var. lata)" OR "Eutypa spinosa" OR "Ferrarisia jasmini" OR "Fomes pectinatus var. jasmini" OR "Fusarium equiseti" OR "Fusarium oxysporum" OR "Fusarium semitectum (Fusarium incarnatum)" OR "Fusarium sp." OR "Fusicoccum jasminicola" OR "Gibberella pulicaris (Fusarium sambucinum)" OR "Glomerella cingulata (Colletotrichum gloeosporioides)" OR "Guignardia jasminicola" OR "Gymnosporangium sp." OR "Helminthosporium sp." OR "Hemileia hansfordii" OR "Hemileia jasmini" OR "Hemileia wakefieldii (Hemileia hansfordii)" OR "Hendersonia obtusa" OR "Hypocrea lactea (Trichoderma citrinum)" OR "Lambertella jasmini" OR "Lambertella tewarii" OR "Lentomita jasmini" OR "Leptosphaeria artemisiae" OR "Leptosphaeria castagnei" OR "Leptosphaeria emiliana" OR "Leptosphaeria sp." OR "Macrophoma jasminicola" OR "Marasmiellus scandens" OR "Marasmius ramealis (Marasmiellus ramealis)" OR "Massaria inquinans" OR "Massarina jasminicola" OR "Meliola busogensis" OR "Meliola daviesii" OR "Meliola gemellipoda" OR "Meliola jasmini" OR "Meliola jasmini var. floribundi" OR "Meliola jasmini var. major" OR "Meliola jasminicola" OR "Meliola jasminicola var. africana" OR "Meliola jasminicola var. indica" OR "Meliola jasminicola var. jasminicola" OR "Meliola ngongensis" OR "Meliola oleicola var. jasmini" OR "Meliola sp." OR "Meliola xumenensis" OR "Microdiplodia jasmini" OR "Moellerodiscus lentus" OR "Mycosphaerella jasminicola" OR "Mycostevensonia jasmini" OR "Nectriella pironii" OR "Neocapnodium tanakae (Capnodium tanakae)" OR "Nodulosphaeria dolioloides" OR "Oidium jasmini (Pseudoidium jasmini)" OR "Ophiobolus sp." OR "Paraphaeosphaeria castagnei" OR "Pellicularia rolfsii (Athelia rolfsii)" OR "Periconiella jasmini" OR "Pestalotiopsis sp." OR "Pestalotiopsis versicolor" OR "Phaeochaetia rosea" OR "Phaeodimeriella papillifera" OR "Phaeodothis cordifolii" OR "Phaeoseptoria sp." OR "Phaeosphaeria nigrans" OR "Phoma domestica" OR "Phoma jasmini-sambac" OR "Phoma jasminicola" OR "Phoma jasminomacrospora" OR "Phoma sorghina (Epicoccum sorghinum)" OR "Phoma sp." OR "Phomopsis brachyceras" OR "Phomopsis jasmini" OR "Phomopsis pavgii" OR "Phomopsis sp." OR "Phyllactinia corylea (Phyllactinia guttata)" OR "Phyllactinia suffulta (Phyllactinia guttata)" OR "Phylloporia ephedrae" OR "Phylloporia ribis f. euonymi" OR "Phyllosticta jasminensis" OR "Phyllosticta jasmini" OR "Phyllosticta jasminicola" OR "Phyllosticta jasminina" OR "Phyllosticta sp." OR "Physalospora jasmini" OR "Physalospora obtusa (Diplodia seriata)" OR "Phytophthora cactorum" OR "Phytophthora nicotianae var. parasitica (Phytophthora nicotianae)" OR "Phytophthora parasitica (Phytophthora nicotianae)" OR "Phytophthora plurivora" OR "Phytophthora sp." OR "Phytophthora syringae" OR "Pithomyces cupaniae" OR "Pleonectria aurigera (Thyronectria aurigera)" OR "Pleospora coronata (Cilioplea coronata)" OR "Pleospora herbarum (Stemphylium vesicarium)" OR "Pleospora herbarum var. occidentalis" OR "Pleospora njegusensis" OR "Pleospora subalpina" OR "Pseudocercospora butleri" OR "Pseudocercospora jasminicola - (Pseudocercospora butleri):" OR "Pseudocercospora jasminicola var. effusa - (Pseudocercospora butleri var. effusa):" OR "Pseudoidium jasmini" OR "Puccinia abyssinica" OR "Puccinia chrysopogi (Puccinia chrysopogoni)" OR "Puccinia chrysopogoni" OR "Puccinia exhauriens" OR "Puccinia jasmini" OR "Puccinia jasmini-humilis" OR "Puccinia jasminicola"

	OR "Puccinia ugandana" OR "Pucciniosira deightonii" OR "Pythium sp." OR "Pythium splendens (Globisporangium splendens)" OR "Rhabdospora jasmini" OR "Rhizoctonia solani" OR "Rhizoctonia sp." OR "Sclerotinia sp." OR "Sclerotium coffeicola" OR "Sclerotium rolfsii (Athelia rolfsii)" OR "Scolecobonaria filiformis" OR "Septoria aitchisoni (Septoria aitchisonii)" OR "Septoria orni" OR "Sirococcus butleri" OR "Sphaerotheca pannosa (Podosphaera pannosa)" OR "Sphaerulina saccardiana" OR "Sporidesmium jasminicola" OR "Stemphylium sp." OR "Strickeria coronata" OR "Sydowia agharkarii" OR "Thyrostroma mori" OR "Titaeopsis ugandae" OR "Trichothyrium asterophorum" OR "Trichothyrium dubiosum" OR "Trichothyrium oleaceae" OR "Tripospermum jasmini" OR "Tryblidaria azarae" OR "Uromyces comedens" OR "Uromyces hobsoni (Uromyces hobsonii)" OR "Uromyces hobsonii" OR "Valsa cypri (Cytospora pruinosa)" OR "Valsella jasminicola" OR "Verticillium dahliae" OR "Xylaria aristata" OR "Zasmidium jasminicola" OR "Zignoella rhois"

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

Table C.1: List of potential pests not further assessed

Pest name	EPPO code	Group	Pest present in Israel	Present in the EU	*Jasminum* confirmed as a host (reference)	Pest can be associated with the commodity	Impact	Justification for inclusion in this list
Corythauma ayyari	COTMAY	Insects	Yes	Yes	Yes (major host)	Yes	Yes	*Jasminum* major host. Present in four MSs: Spain, France, Greece, Italy (transient; under eradication)
Curvularia senegalensis		Fungi	Yes	No	Uncertainty	Yes	Yes	Uncertainty if *J.polyanthum* is a host
Maconellicoccus hirsutus	PHENHI	Insects	Yes	Limited (Cyprus, widespread; Greece, (Rhodes))	Yes	Yes	Yes	Polyphagous; Present in Cyprus and Greece (Rhodes). No official measures in place in these MSs
Phenacoccus solenopsis	PHENSO	Insects	Yes	Limited (Cyprus)	Yes	Yes	Yes	Polyphagous; Present in Cyprus. No official measures in place in Cyprus
Pseudococcus cryptus	DYSMCR	Insects	Yes	Limited (Spain)	Yes	Yes	Yes	Polyphagous; Present in Spain. No official measures in place in this MS
Russellaspis pustulans	ASTLPU	Insects	Yes	Limited (Italy)	Yes	Yes	Yes	Polyphagous; Present in Italy and Malta. No official measures in place in these MSs

Appendix D – Excel file with the pest list of Jasminum

Appendix D can be found in the online version of this output (in the 'Supporting information' section): https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2020.6225#support-information-section