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SCIENTIFIC OPINION

Pest categorisation of *Coccus viridis*

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

Abstract

The EFSA Panel on Plant Health performed a pest categorisation of *Coccus viridis* (Hemiptera: Coccidae), the green coffee scale, for the territory of the European Union (EU), following the commodity risk assessment of *Jasminum polyanthum* from Uganda, in which *C. viridis* was identified as a pest of possible concern to the EU. *Coccus viridis* is distributed in tropical and subtropical areas of the Americas, Africa, Asia and Oceania. In the EU, *C. viridis* occurs on the Azores and Madeira Islands (Portugal). It is a polyphagous pest, feeding on plant species belonging to more than 200 genera from 72 plant families, primarily on coffee (*Coffea arabica*), guava (*Psidium guajava*) and cacao (*Theobroma cacao*) plants. Hosts that are grown in the EU include *Apium graveolens*, *Citrus* spp., *Eriobotrya japonica*, *Eucalyptus camaldulensis*, *Mangifera indica*, *Pyrus communis* and some ornamental plants. Plants for planting, fruits, vegetables and cut flowers provide potential pathways for entry into the EU. Climatic conditions and availability of host plants in southern and central EU countries would allow this species to establish and spread. However, since little is known about the pest-specific temperature requirements, and considering its tropical and subtropical origin, there is uncertainty about its ability to establish outdoors in central EU. Nevertheless, establishment could occur in greenhouses and on indoor plantings in such areas. Introduction and spread of *C. viridis* would likely have an economic impact in the EU, but there is uncertainty on the magnitude. This insect is not listed in Annex II of Commission Implementing Regulation (EU) 2019/2072. Phytosanitary measures are available to reduce the likelihood of entry and further spread. While the magnitude of impact in the EU is associated with uncertainty, all criteria assessed by EFSA for consideration as a potential quarantine pest are met.

KEYWORDS

Coccidae, green coffee scale, hemiptera, pest risk, plant health, plant pest, quarantine

CONTENTS

1 | INTRODUCTION

1.1 | Background and Terms of Reference as provided by the requestor

1.1.1 | Background

The new Plant Health Regulation (EU) 2016/2031, on the protective measures against pests of plants, is applying from 14 December 2019. Conditions are laid down in this legislation in order for pests to qualify for listing as Union quarantine pests, protected zone quarantine pests or Union regulated non-quarantine pests. The lists of the EU regulated pests together with the associated import or internal movement requirements of commodities are included in Commission Implementing Regulation (EU) 2019/2072. Additionally, as stipulated in the Commission Implementing Regulation 2018/2019, certain commodities are provisionally prohibited to enter in the EU (high-risk plants, HRP). EFSA is performing the risk assessment of the dossiers submitted by exporting to the EU countries of the HRP commodities, as stipulated in Commission Implementing Regulation 2018/2018. Furthermore, EFSA has evaluated a number of requests from exporting to the EU countries for derogations from specific EU import requirements.

In line with the principles of the new plant health law, the European Commission with the Member States is discussing monthly the reports of the interceptions and the outbreaks of pests notified by the Member States. Notifications of an imminent danger from pests that may fulfil the conditions for inclusion in the list of the Union quarantine pest are included. Furthermore, EFSA has been performing horizon scanning of media and literature.

As a follow-up of the above-mentioned activities (reporting of interceptions and outbreaks, HRP, derogation requests and horizon scanning), a number of pests of concern have been identified. EFSA is requested to provide scientific opinions for these pests, in view of their potential inclusion by the risk manager in the lists of Commission Implementing Regulation (EU) 2019/2072 and the inclusion of specific import requirements for relevant host commodities, when deemed necessary by the risk manager.

1.1.2 | Terms of Reference

EFSA is requested, pursuant to Article 29(1) of Regulation (EC) No 178/2002, to provide scientific opinions in the field of plant health.

EFSA is requested to deliver 53 pest categorisations for the pests listed in Annex 1A, 1B, 1D and 1E (for more details see mandate M-2021-00027 on the Open.EFSA portal). Additionally, EFSA is requested to perform pest categorisations for the pests so far not regulated in the EU, identified as pests potentially associated with a commodity in the commodity risk assessments of the HRP dossiers (Annex 1C; for more details, see mandate M-2021-00027 on the Open.EFSA portal). Such pest categorisations are needed in the case where there are not available risk assessments for the EU.

When the pests of Annex 1A are qualifying as potential Union quarantine pests, EFSA should proceed to phase 2 risk assessment. The opinions should address entry pathways, spread, establishment, impact and include a risk reduction option analysis.

Additionally, EFSA is requested to develop further the quantitative methodology currently followed for risk assessment, in order to have the possibility to deliver an express risk assessment methodology. Such methodological development should take into account the EFSA Plant Health Panel Guidance on quantitative pest risk assessment and the experience obtained during its implementation for the Union candidate priority pests and for the likelihood of pest freedom at entry for the commodity risk assessment of high-risk plants.

1.2 | Interpretation of the Terms of Reference

Coccus viridis is one of a number of pests relevant to Annex 1C to the terms of reference (ToR) to be subject to pest categorisation to determine whether it fulfils the criteria of a potential Union quarantine pest for the area of the EU excluding Ceuta, Melilla and the outermost regions of Member States referred to in Article 355(1) of the Treaty on the Functioning of the European Union (TFEU), other than Madeira and the Azores, and so inform EU decision-making as to its appropriateness for potential inclusion in the lists of pests of Commission Implementing Regulation (EU) 2019/ 2072. If a pest fulfils the criteria to be potentially listed as a Union quarantine pest, risk reduction options will be identified.

1.3 | Additional information

This pest categorisation was initiated following the commodity risk assessment of *Jasminum polyanthum* unrooted cuttings from Uganda (EFSA PLH Panel, 2022), in which *C. viridis* was identified as a relevant non-regulated EU pest of possible concern, which could potentially enter the EU on cuttings of *J. polyanthum*.

2 | DATA AND METHODOLOGIES

2.1 | Data

2.1.1 | Information on pest status from NPPOs

In the context of the current mandate, EFSA is preparing pest categorisations for new/emerging pests that are not yet regulated in the EU. When an official pest status is not available in the European and Mediterranean Plant Protection Organization (EPPO) Global Database (EPPO, online), EFSA consults the NPPOs of the relevant Member States. To obtain information on the official pest status for *Coccus viridis*, EFSA has consulted the NPPOs of Italy and Portugal. The results of this consultation are presented in Section 3.2.2.

2.1.2 | Literature search

A systematic literature search on *C. viridis* was conducted at the beginning of the categorisation (04-06-2024) in the ISI Web of Science and Scopus bibliographic database, using the scientific name of the pest, its synonyms and the international common names as search terms (for more details, see Appendix E). Papers relevant to the pest categorisation were reviewed, and further references and information were obtained from experts, as well as from citations within the references and grey literature.

2.1.3 | Database search

Pest information, on host(s) and distribution, was extracted from the references collected in the systematic literature search mentioned above (Section 2.1.2). The CABI Database and the EPPO Global Database were consulted to double-check the information retrieved through the data extraction.

Data about the import of commodity types that could potentially provide a pathway for the pest to enter the EU and about the area of hosts grown in the EU were obtained from EUROSTAT (Statistical Office of the European Union).

The EUROPHYT (EUROPHYT, online) and TRACES databases (TRACES-NT, online) were consulted for pest-specific notifications on interceptions and outbreaks. EUROPHYT is a web-based network run by the Directorate General for Health and Food Safety (DG SANTÉ) of the European Commission as a subproject of PHYSAN (Phyto-Sanitary Controls) specifically concerned with plant health information. TRACES is the European Commission's multilingual online platform for sanitary and phytosanitary certification required for the importation of animals, animal products, food and feed of non-animal origin and plants into the European Union, and the intra-EU trade and EU exports of animals and certain animal products. Up until May 2020, the EUROPHYT database managed notifications of interceptions of plants or plant products that do not comply with EU legislation, as well as notifications of plant pests detected in the territory of the Member States and the phytosanitary measures taken to eradicate or avoid their spread. The recording of interceptions switched from EUROPHYT to TRACES in May 2020.

GenBank was searched to determine whether it contained any nucleotide sequences for *C. viridis* which could be used as reference material for molecular diagnosis (www.ncbi.nlm.nih.gov/genbank/; Sayers et al., 2024).

2.2 | Methodologies

The Panel performed the pest categorisation for *C. viridis*, following guiding principles and steps presented in the EFSA guidance on quantitative pest risk assessment (EFSA PLH Panel, 2018), the EFSA guidance on the use of the weight of evidence approach in scientific assessments (EFSA Scientific Committee, 2017), the protocol for pest categorisations as presented in the EFSA standard protocols for scientific assessments (Kertesz et al., 2024, EFSA PLH Panel, 2024) and the International Standards for Phytosanitary Measures No. 11 (FAO, 2013).

The criteria to be considered when categorising a pest as a potential Union quarantine pest (QP) are given in Regulation (EU) 2016/2031 Article 3 and Annex I, Section 1 of the Regulation. Table 1 presents the Regulation (EU) 2016/2031 pest categorisation criteria on which the Panel bases its conclusions. In judging whether a criterion is met, the Panel uses its best professional judgement (EFSA Scientific Committee, 2017) by integrating a range of evidence from a variety of sources (as presented above in Section 2.1) to reach an informed conclusion as to whether a criterion is satisfied.

The Panel's conclusions are formulated respecting its remit and particularly with regard to the principle of separation between risk assessment and risk management (EFSA founding regulation (EU) No 178/2002). Therefore, instead of determining whether the pest is likely to have an unacceptable impact, deemed to be a risk management decision, the Panel will present a summary of the observed impacts in the areas where the pest occurs, and make an expert knowledge elicitation about potential impacts in the EU. While the Panel may quote impacts reported from areas where the pest occurs in monetary terms, the Panel will seek to express potential EU impacts in terms of yield and quality losses and not in monetary terms, in agreement with the EFSA guidance on quantitative pest risk assessment (EFSA PLH Panel, 2018). Article 3 (d) of

Regulation (EU) 2016/2031 refers to unacceptable social impact as a criterion for quarantine pest status. Assessing social impact is outside the remit of the Panel.

TABLE 1 Pest categorisation criteria under evaluation, as derived from Regulation (EU) 2016/2031 on protective measures against pests of plants (the number of the relevant sections of the pest categorisation is shown in brackets in the first column).

Criterion of pest categorisation	Criterion in Regulation (EU) 2016/2031 regarding Union quarantine pest (article 3)
Identity of the pest (Section 3.1)	Is the identity of the pest clearly defined, or has it been shown to produce consistent symptoms and to be transmissible?
Absence/presence of the pest in the EU territory (Section 3.2)	Is the pest present in the EU territory? If present, is the pest in a limited part of the EU or is it scarce, irregular, isolated or present infrequently? If so, the pest is considered to be not widely distributed.
Pest potential for entry, establishment and spread in the EU territory (Section 3.4)	Is the pest able to enter into, become established in, and spread within, the EU territory? If yes, briefly list the pathways for entry and spread.
Potential for consequences in the EU territory (Section 3.5)	Would the pests' introduction have an economic or environmental impact on the EU territory?
Available measures (Section 3.6)	Are there measures available to prevent pest entry, establishment, spread or impacts?
Conclusion of pest categorisation (Section 4)	A statement as to whether (1) all criteria assessed by EFSA above for consideration as a potential quarantine pest were met and (2) if not, which one(s) were not met.

3 | PEST CATEGORISATION

3.1 | Identity and biology of the pest

3.1.1 | Identity and taxonomy

Is the identity of the pest clearly defined, or has it been shown to produce consistent symptoms and/or to be transmissible?

Yes, the identity of the pest is clearly defined and *Coccus viridis* (Green, 1889) is the accepted scientific name.

Coccus viridis (Green) (Figure 1) is an insect within the order Hemiptera, suborder Sternorrhyncha and the family Coccidae. It is commonly known as green coffee scale, green scale, green shield scale and soft green scale (EPPO, online). *Coccus viridis* was originally described as *Lecanium viride* by Green in 1889 from specimens collected in Pundaluoya, Sri Lanka, on *Coffea* sp. (coffee). The current valid scientific name is *Coccus viridis* (García Morales et al., 2016).

The EPPO code[1] (EPPO, 2019; Griessinger & Roy, 2015) for this species is COCCVI (EPPO, online).

[1]An EPPO code, formerly known as a Bayer code, is a unique identifier linked to the name of a plant or plant pest important in agriculture and plant protection. Codes are based on genus and species names. However, if a scientific name is changed, the EPPO code remains the same. This provides a harmonised system to facilitate the management of plant and pest names in computerised databases, as well as data exchange between IT systems (EPPO, 2019; Griessinger & Roy, 2015).

FIGURE 1 *Coccus viridis*: (A) Adults on an *Ixora* sp. plant (Source: United States National Collection of Scale Insects Photographs, USDA Agricultural Research Service, Bugwood.org); (B, C) Infestation on *Gardenia* sp. and *Psidium guajava* host plants, respectively (Source: Anne W. Gideon; Plutarco Echegoyen, Bugwood.org; licensed under a Creative Commons Attribution-Noncommercial 3.0 Licence).

3.1.2 | Biology of the pest

Coccus viridis is an oviparous species and reproduces parthenogenetically via thelytoky (Fredrick, 1943; Rosado et al., 2014; Souza et al., 2023). The presence of males is very rare (Swirski et al., 1997; Waller et al., 2007). Eggs are laid beneath the female body where they are protected (Fredrick, 1943; Reddy et al., 2022) and hatch into nymphs from a few minutes to several hours after being laid (Dekle & Fasulo, 2001; Fredrick, 1943). Each female can produce between 50 and 600 eggs (Barrera, 2008; Reddy et al., 2022). There are three nymphal instars before becoming an adult (Mani, 2022; Souza et al., 2023). In citrus, the duration of development of the first, second and third instars takes about 10–15 days, 8–12 days and 8–12 days, respectively (Carvalho & Aguiar, 1997; Martinez & Sanchez, 1981). The first-instar nymphs (crawlers) are active and responsible for searching and choosing the feeding location (Rosado et al., 2014). They settle along the lower surface of leaves close to the midrib and veins, as well as the petiole, stems, on young buds and fruits (Barrera, 2008; Figueroa-Figueroa et al., 2023; Mani, 2022; Reddy et al., 2022). On the contrary, the older instar nymphs move very little, whereas the adults are motionless (Rosado et al., 2014). Laboratory rearing of *C. viridis* in Brazil at a temperature of 25°C showed that the life cycle from egg hatching to the first oviposition by the adult female lasts between 47 and 51 days (Silva & Parra, 1982).

Coccus viridis is reported to develop multiple generations per year (Souza et al., 2023). For instance, in Queensland, Australia, it completes three to four generations (García Morales et al., 2016; Smith et al., 1997), and in Taiwan, it completes four to five generations per year (Cheng & Tao, 1963). In South Florida, the developmental period from egg to egg-depositing maturity during the late summer months averages 59–62 days, with reported variation ranging from 50 to 70 days (Fredrick, 1943). Crawler emergence is typically observed in September (Camacho & Chong, 2015). In Irapuato, Mexico, the highest number of *C. viridis* adults in guava occurred in winter, decreased in the rainy season (June–September) and increased in October, and the crawlers peaked in December–January (Salas-Araiza et al., 2020). In West Bengal, India, Kar et al. (2023) observed *C. viridis* on dragon fruit from June until September–October.

3.1.3 | Host range/species affected

Coccus viridis is polyphagous, feeding on 216 plant species assigned to 200 genera from 72 plant families (Appendix A provides a full host list) with preference for coffee (*Coffea arabica*), guava (*Psidium guajava*) and cacao (*Theobroma cacao*) (CABI, online; EPPO, online). *Coccus viridis* has also been reported on cashew (*Anacardium occidentale*), cassava (*Manihot esculenta*), citrus (*Citrus* sp.), coconut (*Cocos nucifera*), litchee (*Litchi chinensis*), loquat (*Eriobotrya japonica*), mango (*Mangifera indica*), papaya (*Carica papaya*), pear (*Pyrus communis*), pigeon pea (*Cajanus cajan*), pineapple (*Ananas comosus*), sapota (*Manilkara zapota*) and tea (*Camellia sinensis*). Moreover, it has been reported on ornamental plants such as *Camellia* sp., *Ficus* sp., *Gardenia* sp., *Ixora* sp., *Jasminum* sp. and *Nerium oleander* (García Morales et al., 2016).

3.1.4 | Intraspecific diversity

To the best of the Panel's knowledge, no information on intraspecific diversity is reported for *C. viridis*.

3.1.5 | Detection and identification of the pest

Are detection and identification methods available for the pest?

Yes. Visual detection is possible, and morphological and molecular identification methods are available.

Detection

Careful visual examination of plants and fruits is effective for detection of *C. viridis* presence. Accumulation of honeydew, sooty mould and honeydew-seeking ants are general signs of phloem feeding insect infestations; they can be used to pinpoint the areas where plants may be inspected for the presence of soft scales (Camacho & Chong, 2015). *Coccus viridis* occurs on the upper and lower surfaces of leaves, young stems, and colonises flower buds and fruits (Barrera, 2008; Figueroa-Figueroa et al., 2023; Mani, 2022; Reddy et al., 2022). Sticky traps around stems can be used to detect and monitor the crawlers (Bethke & Wilen, 2010; Siregar & Tulus, 2023).

Symptoms

Several studies have documented the main symptoms of *C. viridis* infestation (Bach, 1991; Figueroa-Figueroa et al., 2023; Hara et al., 2002; Mani, 2018; Mani, 2022; Reddy et al., 2022; Reimer et al., 1993; Rosado et al., 2014; Siregar & Tulus, 2023; Souza et al., 2023; Swirski et al., 1997; Vranjic, 1997; Wuryantini et al., 2023; Yalemar, 1999):

- Honeydew presence egested by adults and immature stages;
- Black sooty mould growing on the honeydew;
- Leaf curling;
- Partial necrosis and wilting of twigs and leaves, and;
- Yellowing, defoliation, reduced plant growth and fruit production, dieback of the branches or the entire plant caused by heavy infestations.

These symptoms are similar to those caused by many other phloem-feeding insects and should not be considered as diagnostic.

Identification

The identification of *C. viridis* requires microscopic examination of slide-mounted female adults and verification of the presence of key morphological characteristics. Detailed morphological descriptions, illustrations and keys of adult *C. viridis* can be found in Choi et al. (2018), Granara de Willink et al. (2010), and Williams and Watson (1990). The molecular identification for *C. viridis* relies on DNA fragments from various genetic markers with reference sequences available in GenBank (https://www.ncbi.nlm.nih.gov/nuccore/?term=txid589264[organism:exp), including the mitochondrial cytochrome c oxidase subunit I (COI) gene, nuclear ribosomal genes (18S and 28S) and mitochondrial ribosomal genes(12S and 16S), as well as wingless (wg) and elongation factor 1-alpha (EF-1a) genes (Choi & Lee, 2020).

Description

The eggs are whitish green and elongate oval. The nymphs or immature green scales are oval, flat and yellowish green in colour, and have six short legs. The adult female is shiny pale green with a conspicuous black, irregular U-shaped internal marking that is dorsally visible to the naked eye. Two submarginal black eye spots are also present and can be seen with a hand lens. The outline shape may be described as elongate-oval and moderately convex. Dorsum with setae cylindrical, blunt apically; tubular ducts absent; duct tubercles present; and preopercular pores present anterior to anal plates. Marginal setae short, mostly with fimbriate apices. Venter with multilocular disc pores each usually with seven loculi; tubular ducts each with a broad inner ductule, frequent in medial area between mesocoxae, between metacoxae and occasionally a few present around each procoxa; pregenital setae numbering three pairs; antenna seven segmented; and legs each with a tibio-tarsal articulatory sclerosis.

3.2 | Pest distribution

3.2.1 | Pest distribution outside the EU

Coccus viridis is thought to be either of Brazilian or East African origin (Bach, 1991; Hsieh et al., 2012; Murphy, 1991; Rivera-Salinas et al., 2018). The present distribution of *C. viridis* includes tropical and subtropical regions in Africa, Asia, North, South and Central America and Oceania (Figure 2). *Coccus viridis* has been reported in 2010 in Cornwall, England, United Kingdom, within a greenhouse that resembles the environment of a tropical rainforest (Humid Tropic Biome at The Eden Project); its origin and pathway of introduction are unknown; however, its abundance within the greenhouse indicates that it may have been present there for several years (Malumphy & Treseder, 2012). For a detailed list of countries where *C. viridis* is present, see Appendix B.

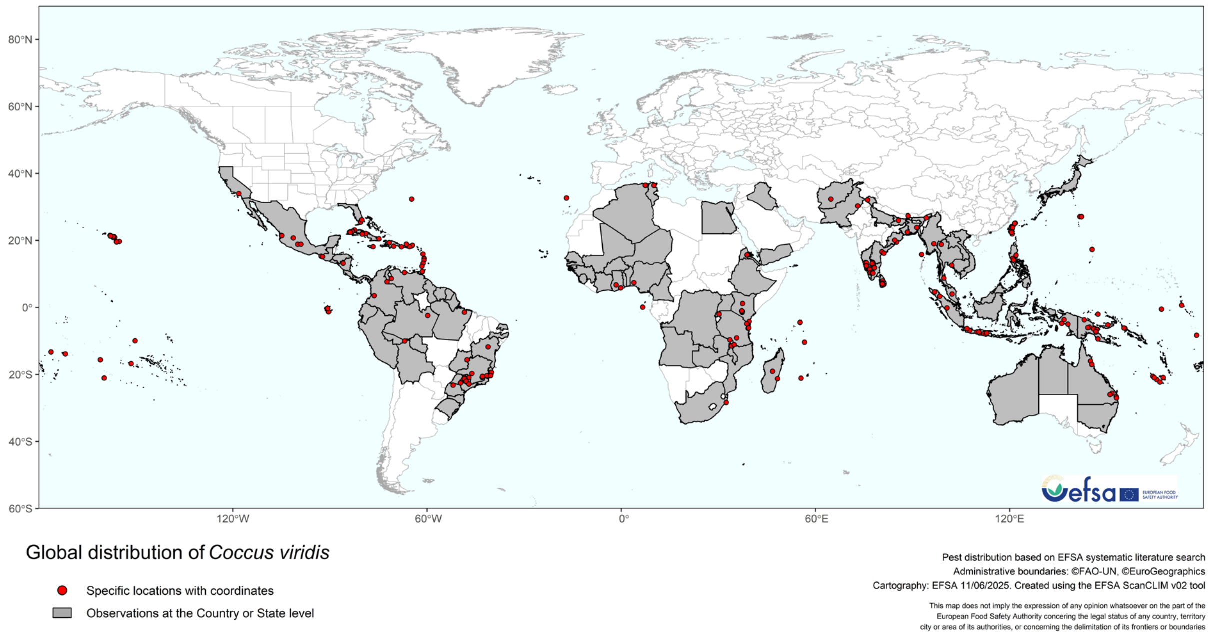

FIGURE 2 Global distribution of *Coccus viridis* (Source: EFSA literature search; for details, see Appendix B). Data indicated are based on occurrences outdoors, and greenhouse occurrences are not indicated.

3.2.2 | Pest distribution in the EU

Is the pest present in the EU territory? If present, is the pest in a limited part of the EU or is it scarce, irregular, isolated or present infrequently? If so, the pest is considered to be not widely distributed.

Yes. *Coccus viridis* is present in a limited part of the EU territory. It has been recorded only on the Azores and Madeira Islands (Portugal).

In the EU, *C. viridis* is known to be present only on the Azores and Madeira Islands (Portugal) (EPPO, online; CABI, online; Franco et al., 2011; Swirski et al., 1997). The Portuguese NPPO confirmed that '*the pest is present in Azores and Madeira Islands for a long time with few occurrences and does not occur in Portugal mainland. So far, no damage has been reported in Azores, and a few in Madeira, and official surveys not carried out*' (NPPO of Portugal, 2024).

3.3 | Regulatory status

3.3.1 | Commission Implementing Regulation 2019/2072

Coccus viridis is not listed in Annex II of Commission Implementing Regulation (EU) 2019/2072, an implementing act of Regulation (EU) 2016/2031, or in any emergency plant health legislation.

3.3.2 | Hosts or species affected that are prohibited from entering the Union from third countries

According to the Commission Implementing Regulation (EU) 2019/2072, Annex VI, the introduction of several *C. viridis* hosts into the EU from certain third countries is prohibited (Table 2). Plants for planting of *Albizia* Durazz., *Annona* L., *Cassia* L., *Diospyros* L., *Jasminum* L., *Nerium* L. and *Prunus* L., which are hosts of *C. viridis* (Appendix A) are considered high-risk plants for the EU and their import is prohibited pending risk assessment (EU 2018/2019). According to Commission Implementing Regulation (EU) 2022/1942 of 13 October 2022 amending Implementing Regulation (EU) 2018/2019, unrooted cuttings of *Jasminum polyanthum* Franchet originating in Uganda should no longer be considered high-risk plants.

TABLE 2 List of plants, plant products and other objects that are *Coccus viridis* hosts whose introduction into the Union from certain third countries is prohibited (Source: Commission Implementing Regulation (EU) 2019/2072, Annex VI).

List of plants, plant products and other objects whose introduction into the union from certain third countries is prohibited			
	Description	CN code	Third country, group of third countries or specific area of third country
8.	Plants for planting of […] *Prunus* L., *Pyrus* L. and *Rosa* L., other than dormant plants free from leaves, flowers and fruits	ex 0602 10 90 ex 0602 20 20 ex 0602 20 80 ex 0602 40 00 ex 0602 90 41 ex 0602 90 45 ex 0602 90 46 ex 0602 90 47 ex 0602 90 48 ex 0602 90 50 ex 0602 90 70 ex 0602 90 91 ex 0602 90 99	Third countries other than Albania, Andorra, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Canary Islands, Faeroe Islands, Georgia, Iceland, Liechtenstein, Moldova, Monaco, Montenegro, North Macedonia, Norway, Russia (only the following parts: Central Federal District (Tsentralny federalny okrug), Northwestern Federal District (Severo- Zapadny federalny okrug), Southern Federal District (Yuzhny federalny okrug), North Caucasian Federal District (Severo-Kavkazsky federalny okrug) and Volga Federal District (Privolzhsky federalny okrug)), San Marino, Serbia, Switzerland, Türkiye, Ukraine and the United Kingdom
9.	Plants for planting of […] *Prunus* L. and *Pyrus* L. and their hybrids, and […] other than seeds	ex 0602 10 90 ex 0602 20 20 ex 0602 90 30 ex 0602 90 41 ex 0602 90 45 ex 0602 90 46 ex 0602 90 48 ex 0602 90 50 ex 0602 90 70 ex 0602 90 91 ex 0602 90 99	Third countries other than Albania, Algeria, Andorra, Armenia, Australia, Azerbaijan, Belarus, Bosnia and Herzegovina, Canada, Canary Islands, Egypt, Faeroe Islands, Georgia, Iceland, Israel, Jordan, Lebanon, Libya, Liechtenstein, Moldova, Monaco, Montenegro, Morocco, New Zealand, North Macedonia, Norway, Russia (only the following parts: Central Federal District (Tsentralny federalny okrug), Northwestern Federal District (Severo-Zapadny federalny okrug), Southern Federal District (Yuzhny federalny okrug), North Caucasian Federal District (Severo- Kavkazsky federalny okrug) and Volga Federal District (Privolzhsky federalny okrug)), San Marino, Serbia, Switzerland, Syria, Tunisia, Türkiye, Ukraine, the United Kingdom and United States other than Hawaii
11.	Plants of *Citrus* L., […] *Poncirus* Raf., and their hybrids, other than fruits and seeds	ex 0602 10 90 ex 0602 20 20 0602 20 30 ex 0602 20 80 ex 0602 90 45 ex 0602 90 46 ex 0602 90 47 ex 0602 90 50 ex 0602 90 70 ex 0602 90 91 ex 0602 90 99 ex 0604 20 90 ex 1404 90 00	All third countries

3.4 | Entry, establishment and spread in the EU

3.4.1 | Entry

*Is the pest able to enter into the EU territory? If yes, identify and list the pathways***.**

Yes, the pest has already entered the EU territory. It could further enter the EU with plants for planting, cut flowers, fruits and vegetables.

Comment on plants for planting as a pathway.

Plants for planting are considered one of the main pathways for *C. viridis* to enter the EU.

Plants for planting, cut flowers, fruits and vegetables are potential pathways for entry into the EU of *C. viridis* (Table 3). Plants for planting are considered one of the main pathways for *C. viridis* because of the wide host range and high diversity and large volumes of plants for planting being imported (Appendix C).

TABLE 3 Potential pathways for *Coccus viridis* into the EU.

Pathways	Life stage	Relevant mitigations [e.g. prohibitions (annex VI), special requirements (Annex VII) or phytosanitary certificates (annex XI) within Implementing Regulation 2019/2072]
Plants for planting	All life stages	Plants for planting that are hosts of *C. viridis* and are prohibited to import from third countries (Regulation 2019/2072, Annex VI) are listed in Table 2. Plants for planting from third countries require a phytosanitary certificate (Regulation 2019/2072, Annex XI, Part A). Some hosts are considered high-risk plants (EU 2018/2019) for the EU and their import is prohibited subject to risk assessment.
Fruits, vegetables and cut flowers	All life stages	Fruits, vegetables and cut flowers from third countries require a phytosanitary certificate to be imported into the EU (2019/2072, Annex XI, Part A). However, no requirements are specified for C. viridis.

Notifications of interceptions of harmful organisms began to be compiled in EUROPHYT in May 1994 and in TRACES in May 2020. As of 31 May 2025, there were no records of interceptions of *C. viridis* in the EUROPHYT and TRACES databases.

Miller et al. (2014) report that *C. viridis* was intercepted 5332 times on a variety of hosts at USA ports of entry between 1995 and 2012 and is the most commonly intercepted soft scale taken at USA borders. These interceptions originated from American Samoa, Antigua and Barbuda, Aruba, Bahamas, Barbados, Colombia, Cook Islands, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Fiji, Grenada, Guatemala, Haiti, Hawaii, Honduras, India, Jamaica, Laos, Malaysia, Mexico, New Caledonia, Nicaragua, Pakistan, Panama, Peru, The Philippines, Puerto Rico, Spain, Sri Lanka, Suriname, St. Kitts and Nevis, St. Lucia, St. Maarten, St. Vincent and the Grenadines, Taiwan, Tahiti, Thailand, Togo, Tonga, Trinidad and Tobago, The U.S. Virgin Islands and Vietnam.

Malumphy and Treseder (2012) reported that *C. viridis* has been intercepted by the Plant Health and Seeds Inspectorate on plants imported into England on many occasions:

- East Riding of Yorkshire, wholesaler, on jasmine (*Jasminum* sp., Oleaceae) from Jamaica;
- Essex, London Stansted Airport, unidentified plant;
- Port of Tilbury, on lime fruit (*Citrus aurantifolia* (Christm.) Swingle, Rutaceae) from Brazil;
- Greater London, London Heathrow Airport, on mangosteen (*Garcinia mangostana* L., Clusiaceae) (new host) from Indonesia and Thailand, on *Citrus* sp. foliage from the Dominican Republic, and lime fruit from Brazil;
- Hampshire, flower importer, on *Dracaena* sp. (Asparagaceae) from Costa Rica;
- Portsmouth, on lime fruit from the Dominican Republic;
- London, wholesaler, on lime fruit from Brazil;
- West Sussex, Gatwick Airport, on *Citrus* sp. fruit from the Dominican Republic, and on lime fruit from Saint Lucia.

3.4.2 | Establishment

Is the pest able to become established in the EU territory?

Yes. Southern and central EU countries most likely provide suitable climatic conditions for the establishment of *C. viridis*. However, there is uncertainty about its ability to establish stable outdoor populations in central EU. Nevertheless, there is a possibility that *C. viridis* could occur in greenhouses and on indoor plantings in such areas.

Climatic mapping is the principal method for identifying areas that could provide suitable conditions for the establishment of a pest taking key abiotic factors into account (Baker, 2002). The approach used in EFSA pest categorisations is based on the Köppen–Geiger climate classification (version of Kottek et al., 2006; Rubel et al., 2017) which identifies potentially suitable areas based on the climate types present in Europe. Availability of hosts is considered in Section 3.4.2.1. Climatic factors are considered in Section 3.4.2.2.

3.4.2.1 | *EU distribution of main host plants*

Several host plants of *C. viridis* are present or are grown widely across the EU. Among others are *Apium graveolens*, *Citrus* spp., *Eriobotrya japonica*, *Eucalyptus camaldulensis*, *Mangifera indica*, *Pyrus communis* and some ornamental plants. The harvested area of host plants of *C. viridis* (available in EUROSTAT) in the EU between 2019 and 2023 is shown in Table 4.

TABLE 4 Harvested area (1000 ha) of some of the host plants of *Coccus viridis* in the EU (Eurostat accessed on 08 October 2024).

Harvested area (1000 ha)						
Crop	**Code**	**2019**	**2020**	**2021**	**2022**	**2023**
Celery	V2200	:	:	8.27	7.83	7.84
Citrus	T0000	512.83	522.10	519.96	520.86	523.71
Pears	F1120	110.66	108.29	106.96	103.11	100.53

3.4.2.2 | *Climatic conditions affecting establishment*

Coccus viridis is currently widely distributed throughout the tropical and sub-tropical regions of the world (Appendix B), in Africa, Asia, America and Oceania. Figure 3 shows the world distribution of Köppen–Geiger climate types (Rubel et al., 2017) that occur in the EU, and which occur in countries *where C. viridis* has been reported. Climate types of Cfc and Dfc were not included in Figure 3 due to their very limited occurrence in countries where *C. viridis* is present. The thermal biology of *C. viridis* has not been studied yet and therefore its thermal requirements and limits are not known. Based on Figure 3, southern and central EU countries most likely provide suitable climatic conditions for the establishment of *C. viridis*. However, since little is known about the pest's thermal biology and specific temperature requirements, and considering its tropical and subtropical origin, there is uncertainty about its ability to establish stable outdoor populations in central EU. Nevertheless, there is a possibility that *C. viridis* could occur in greenhouses and on indoor plantings in such areas.

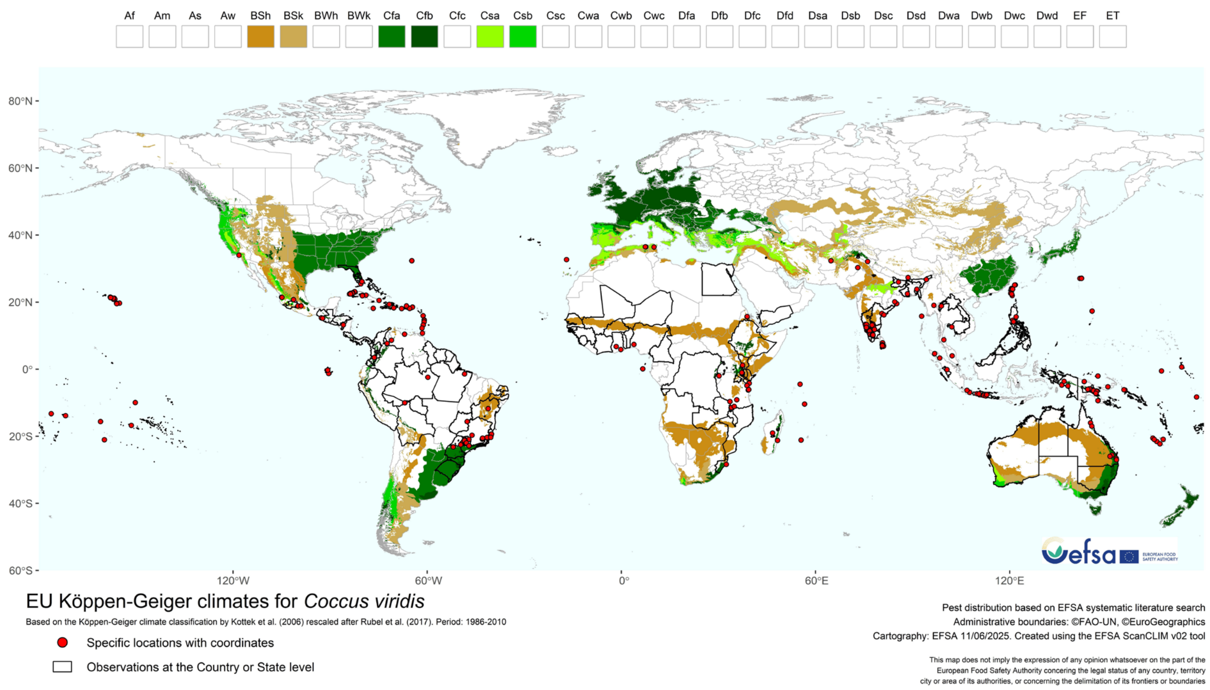

FIGURE 3 World distribution of Köppen–Geiger climate types that occur in the EU and in countries where *Coccus viridis* has been reported (red dots indicate precise locations where the insect has been observed). Climate types Dfc and Cfc were removed due to their very limited occurrence in the distribution area of *C. viridis*.

3.4.3 | Spread

Describe how the pest would be able to spread within the EU territory following establishment?

Natural spread by first instar nymphs crawling or being carried by wind, or by hitchhiking on other animals, humans or machinery, can occur locally. All stages may be moved over longer distances by movement (including trade) of infested plants specifically plants for planting, cut flowers, fruits and vegetables.

Comment on plants for planting as a mechanism of spread.

Plants for planting is likely one of the main pathways for spread (see Section 3.4.1).

First-instar nymphs (crawlers) may be carried to neighbouring plants by their own movement, wind (Vandermeer et al., 2019) or by hitchhiking on clothing, equipment or animals (EFSA PLH Panel, 2022). Movement (including trade) of infested plants for planting is likely the main pathway of spread of *C. viridis* over long distances (see Section 3.4.1).

3.5 | Impacts

Would the pests' introduction have an economic or environmental impact on the EU territory?

Yes, if *C. viridis* established more widely in the EU, it would most probably have an economic impact, but the magnitude of impact is uncertain.

Coccus viridis is a polyphagous and serious pest of coffee, citrus and other crops in several regions, causing damage due to its feeding on the phloem and egesting sugary honeydew, which serves as a medium for the growth of sooty moulds (Almeida et al., 2018; Chiu, 1981; Dekle & Fasulo, 2001; Fernandes et al., 2012; Poole, 2005; Rosado et al., 2014; Smith et al., 2004; Souza et al., 2023). The infested leaves may curl up and tender twigs drop. This hinders photosynthesis, thereby weakening the plant (Reddy et al., 2022; Rosado et al., 2014). Fruits from infested plants and infested ornamental plants are becoming unmarketable due to the presence of honeydew and sooty mould (Mani, 2022; Wuryantini et al., 2023). In West Bengal, India, Kar et al. (2023) reported that *C. viridis* was found in both developing and ripening stages of dragon fruit with a population of 5–29 insects per fruit spike depending on the length of the spike. *Coccus viridis* has been reported to cause serious damage in Brazil to Arabica coffee (*Coffea arabica)* and robusta coffee (*Coffea canephora*) plants, especially to young plants and in dense plantations (Fernandes et al., 2012).

High infestation levels by *C. viridis* have also been reported on coffee plantations in Indonesia, where it reached 100% on sparsely shaded coffee plantations with an average of 109 individuals per twig, and in densely shaded coffee plantations with 52 individuals per twig (Syadida et al., 2024).

The green coffee scale is a major insect pest of coffee in Hawaii. Although it is usually of minor importance on healthy, mature coffee trees, it can become a serious pest of nursery stock and young trees (Reimer et al., 1993). Le Pelley (1968) cites records of heavy damage by *C. viridis* in Sri Lanka, Java, India, Réunion, Cuba, Jamaica, Suriname and Brazil (Waller et al., 2007). Sathish et al. (2024) reported that *C. viridis* incidence on sapota plants (*Manilkara zapota*) was recorded on average of 27.10 scales per five infected leaves per plant. Moreover, Mani et al. (2008) declared that among 25 insects known to attack sapota in India, the soft green scale is reported to cause severe loss and found a mean number of 30.72 scales per leaf on its peak month (May) in Bangalore. Severe infestations of mango trees by this coccid were recorded in Trinidad in the 1930s (Swirski et al., 1997). Infested plants, especially young trees (less than 2 years after transplant), suffer stunting, yellowing and/or loss of leaves and fruit drop (Hara et al., 2002; Mau & Kessing, 1999). *Coccus viridis* is considered an important pest of citrus in the Kodagu of India (Shivaramu & Pillai, 2012; Singh, 1995). In field trials performed in this area to test the efficacy of some pesticides against the pest, an infestation level of more than 64% was recorded in untreated plots of citrus (Shivaramu & Pillai, 2012). In Thailand, *C. viridis* damages citrus and has been reported as one of the most dominant scale insect species in citrus orchards (Nakao et al., 1977). In the Cerrados region of Brazil, *C. viridis* has been reported as an important pest of citrus, particularly affecting young trees (Murakami et al., 1984). A survey conducted between 2014 and 2017 in citrus orchards across the main citrus-producing regions of São Paulo State, Brazil, identified *C. viridis* as the fourth most prevalent species among 22 scale insects, with infestations observed on 9% of the sampled citrus plants (Almeida et al., 2018). Moreover, Brugnara et al. (2022) reported an outbreak of sooty mould (*Capnodium* sp.) affecting the branches, leaves and fruits of citrus plants in the western region of Santa Catarina, Brazil, during a period of water deficiency in 2020–2021. The outbreak was associated with a high incidence of scale insects, predominantly *C. viridis*. In Lukore, Coast Province of Kenya, scale insects primarily *Aonidiella aurantii* and *C. viridis* have been reported as the dominant leaf-feeding pests of orange trees, with average leaf infestation levels of 11% in young trees (5–6 years old) and 23% in older trees (17–20 years old) (Ekesi, 2015). In Australia, *C. viridis* is considered a pest of citrus. In 1999, the parasitoid *Diversinervus* sp. nr *stramineus* was introduced from Kenya and released in Queensland as a biological control agent (Smith et al., 1997; Waterhouse & Sands, 2001). The Department of Agriculture and Food of Western Australia has recommended an action threshold of 5% or more of green twigs infested with one or more scales (State of Western Australia, 2007). According to the Portuguese NPPO, in the Azores, there are no records of damage to the crops. The pest has also been present in Madeira for a long time, but little damage is reported in fruit crops, mainly citrus and guava and no damage in other crops.

In a review of insect pests of citrus in Portugal, Carvalho et al. (1996) assigned *C. viridis* a pest status of 3 on a scale from 1 to 5, without providing further justification or methodological details.

Several publications refer to *C. viridis* as an important pest of citrus. However, since quantitative data mostly refer to infestations and the level of the pest populations on citrus, while yield loss data have not been found, there is uncertainty on the magnitude of potential impact in the risk assessment area.

3.6 | Available measures and their limitations

Are there measures available to prevent pest entry, establishment, spread or impacts such that the risk becomes mitigated?

Yes. Although the existing phytosanitary measures identified in Section 3.3.2 do not specifically target *C. viridis*, they mitigate the likelihood of its entry into, establishment and spread within the EU (see also Section 3.6.1).

3.6.1 | Identification of potential additional measures

Phytosanitary measures (prohibitions) are currently applied to some host plants for planting (see Section 3.3.2).

Additional potential risk reduction options and supporting measures are shown in Sections 3.6.1.1 and 3.6.1.2.

3.6.1.1 | *Additional potential risk reduction options*

Potential additional control measures are listed in Table 5.

TABLE 5 Selected control measures (a full list is available in EFSA PLH Panel, 2018) for pest entry/establishment/spread/impact in relation to currently unregulated hosts and pathways. Control measures are measures that have a direct effect on pest abundance.

Control measure/ risk reduction option (blue underline = Zenodo doc, Blue = WIP)	RRO summary	Risk element targeted (entry/establishment/ spread/impact)
Require pest freedom	Pest-free place of production (e.g. the place of production and its immediate vicinity is free from the pest over an appropriate time period, e.g. since the beginning of the last complete cycle of vegetation, or past 2 or 3 cycles). Pest-free production site.	Entry/Establishment/Spread
Growing plants in isolation	The plants originate in a place of production with complete physical isolation from the pest.	Entry (reduce infestation)/ Establishment/Spread
Managed growing conditions	Used to mitigate likelihood of infestation at origin. Plants collected directly from natural habitats, have been grown, held and trained for at least two consecutive years prior to dispatch in officially registered nurseries, which are subject to an officially supervised control regime.	Entry (reduce infestation)/ Establishment/Spread
Roguing and pruning	Roguing is defined as the removal of infested plants and/or uninfested host plants in a delimited area, whereas pruning is defined as the removal of infested plant parts only without affecting the viability of the plant.	Entry/Spread/Impact
Biological control and behavioural manipulation	Many natural enemies, including predators and parasitoids, have been identified for *C. viridis* among them: *Azya orbiger* (Coleoptera: Coccinellidae), *Chilocorus nigritus* (Coleoptera: Coccinellidae), *Coccophagus* sp. (Hymenoptera: Aphelinidae), *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae) and *Encarsia* sp. (Hymenoptera: Aphelinidae) (for a detailed list of the natural enemies, see Appendix D). In Hawaii, control was achieved by the coccinellid *Azya luteipes*, while in Bermuda, *C. viridis* was controlled locally when *A. luteipes* and another coccinellid *Chilocorus cacti* had become established. In the tropical South Pacific region, it is successfully controlled by the encyrtid *Metaphycus baruensis* (Williams & Watson, 1990). *Coccophagus* sp. along with coccinellid predators *Chilocorus nigrita* and *Cryptolaemus montrouzieri* were found to suppress *C. viridis* on sapota (*Manilkara zapota*) and the parasitism by *Coccophagus* sp. was up to 95% (Mani et al., 2008). *Chilocorus nigritus* was considered effective biological control agent against *C. viridis* in acid lime (*Citrus aurantifolia*) in India (Omkar & Pervez, 2004). In Australia, in 1999, the parasitoid *Diversinervus* sp. nr *stramineus* was introduced from Kenya and released in Queensland as a biological control agent (Smith et al., 1997; Waterhouse & Sands 2001). Furthermore, entomopathogenic fungi play an important role in restraining populations of *C. viridis*. *Akanthomyces lecanii* (cited as *Lecanicillium lecanii* and *Verticillium lecanii*) is an important biological control of *C. viridis* (Jackson et al., 2016; Santharam et al., 1977). In Brazil, in the 1930s, it was found to control *C. viridis* on coffee plants (Li et al., 2010). *Akanthomyces lecaniii* at a concentration of 16×10^6 spores/mL is known to cause up to 96% mortality of the green scale on coffee plants (Easwaramoorthy & Jayaraj, 1978). *A. lecanii* is particularly effective in the rainy season when it can kill large colonies of the green coffee scale in a short period of time (Swirski et al., 1997). Also, infection of *C. viridis* by *Purpureocillium lilacinum* (cited as *Paecilomyces lilacinus*) resulted in 100% mortality of the pest (Radhakrishnan, 2022). Some of the parasitoid species that have been recorded to parasitize on *C. viridis* in its distribution range, such as *Metaphycus helvolus*, *Cocophagus* rustii, *C. ceroplastae* and *C. cowperi* are also present in the EU territory (Noyes, 2019).	Entry/Impact

TABLE 5 (Continued)

Control measure/ risk reduction option (blue underline = Zenodo doc, Blue = WIP)	RRO summary	Risk element targeted (entry/establishment/ spread/impact)
Chemical treatments on crops including reproductive material	Used to mitigate likelihood of infestation of pests susceptible to chemical treatments. The effectiveness of non-systemic insecticides against soft scales may be reduced by the waxy coating of the adult. Mortality of *C. viridis* on potted gardenia plants averaged 95, 89, and 88% when sprayed with limonene, insecticidal soap, or horticultural oil, respectively (Hollingsworth, 2005). In Australia, white oil and chlorpyriphos had been used occasionally to control *C. viridis* (Bizumungu et al., 2020). Imidacloprid, 144 hours after application, caused mortality rate at 55%. Application of imidacloprid and a mixture of neem and tobacco showed 100% mortality rate of *C. viridis* (Wuryantini et al., 2023). Easwaramoorthy and Jayaraj (1978) showed that at 14 days after treatment, when *A. lecanii* was applied alone at the highest concentration (16×10^6 spores/ml) caused 28.4% mortality of *C. viridis*, while lower concentrations resulted in 14.5% and 20.6% mortality. Among insecticides applied, fenthion at 0.1% caused 54.2% mortality, while phosphamidon at 0.1% caused 41.0%. The combination of *A. lecanii* (4×10^6 spores/ml) with fenthion at 0.05% resulted in the highest mortality at 93.7%, followed closely by fungus + fenthion 0.1% (88.8%) and fungus + phosphamidon 0.1% (73.9%). Even the lowest combination, fungus + phosphamidon 0.025%, resulted in 44.0% mortality. Synergistic interaction of *A. lecanii* and *dichlorvos* has been reported (Ambethgar, 2018; Easwaramoorthy & Jayaraj, 1977). In the EU, there are insecticides with approval that are registered against other scale insects of the same family and may have an effect on *C. viridis* too.	Entry/Establishment/Impact
Physical treatments on consignments or during processing	This risk mitigation measure deals with the following categories of physical treatments: irradiation/ionisation; mechanical cleaning (brushing, washing); sorting and grading; and removal of plant parts. This risk mitigation measure does not address heat and cold treatments. Following irradiation at 250 gray (Gy), prolonged survival of green scale, with 8.8%–11.4% of nymphs and up to 8.8% of crawlers remaining alive 3 months after irradiation An absorbed dose of 500, 750 or 1000 Gy caused 100% mortality in all stages of the green scale by 7, 6 and 3 weeks post-treatment, respectively (Arvanitoyannis & Stratakos, 2010; Follett, 2009; Follett & Griffin, 2012; Hara et al., 2002)	Entry/ Spread
Cleaning and disinfection of facilities, tools and machinery	The physical and chemical cleaning and disinfection of facilities, tools, machinery, facilities and other accessories (e.g., boxes, pots, hand tools).	Entry/Spread
Heat and cold treatments	Controlled temperature treatments aimed to kill or inactivate pests without causing any unacceptable prejudice to the treated material itself. This set of measures addresses: autoclaving; steam; hot water; hot air; cold treatment.	Entry/Spread
Controlled atmosphere	Treatment of plants by storage in a modified atmosphere (including modified humidity, O_2, CO_2, temperature, pressure).	Entry/Spread (via commodity)

3.6.1.2 | *Additional supporting measures*

Potential additional supporting measures are listed in Table 6.

TABLE 6 Selected supporting measures (a full list is available in EFSA PLH Panel, 2018) in relation to currently unregulated hosts and pathways. Supporting measures are organisational measures or procedures supporting the choice of appropriate risk reduction options that do not directly affect pest abundance.

Supporting measure	Summary	Risk element targeted (entry/ establishment/spread/impact)
Inspection and trapping	ISPM 5 (FAO, 2023) defines inspection as the official visual examination of plants, plant products or other regulated articles to determine if pests are present or to determine compliance with phytosanitary regulations. The effectiveness of sampling and subsequent inspection to detect pests may be enhanced by including trapping and luring technique.	Entry/Establishment/Spread/ Impact
Laboratory testing	Examination, other than visual, to determine if pests are present using official diagnostic protocols. Diagnostic protocols describe the minimum requirements for reliable diagnosis of regulated pests.	Entry/Establishment/Spread

(Continues)

TABLE 6 (Continued)

Supporting measure	Summary	Risk element targeted (entry/establishment/spread/impact)
Sampling	According to ISPM 31, it is usually not feasible to inspect entire consignments, so phytosanitary inspection is performed mainly on samples obtained from a consignment. It is noted that the sampling concepts presented in this standard may also apply to other phytosanitary procedures, notably selection of units for testing. For inspection, testing and/or surveillance purposes the sample may be taken according to a statistically based or a non-statistical sampling methodology.	Entry/Establishment
Phytosanitary certificate and plant passport	According to ISPM 5 (FAO, 2023), a phytosanitary certificate and a plant passport are official paper documents or their official electronic equivalents, consistent with the model certificates of the IPPC, attesting that a consignment meets phytosanitary import requirements: a. export certificate (import) b. plant passport (EU internal trade)	Entry/Establishment/Spread
Certified and approved premises	Mandatory/voluntary certification/approval of premises is a process including a set of procedures and of actions implemented by producers, conditioners and traders contributing to ensure the phytosanitary compliance of consignments. It can be a part of a larger system maintained by the NPPO in order to guarantee the fulfilment of plant health requirements of plants and plant products intended for trade. Key property of certified or approved premises is the traceability of activities and tasks (and their components) inherent the pursued phytosanitary objective. Traceability aims to provide access to all trustful pieces of information that may help to prove the compliance of consignments with phytosanitary requirements of importing countries.	Entry/Spread
Certification of reproductive material (voluntary/official)	Plants come from within an approved propagation scheme and are certified pest free (level of infestation) following testing; used to mitigate against pests that are included in a certification scheme.	Entry/Spread
Delimitation of Buffer zones	ISPM 5 defines a buffer zone as 'an area surrounding or adjacent to an area officially delimited for phytosanitary purposes in order to minimise the probability of spread of the target pest into or out of the delimited area, and subject to phytosanitary or other control measures, if appropriate' (ISPM 5). The objectives for delimiting a buffer zone can be to prevent spread from the outbreak area and to maintain a pest free production place (PFPP), site (PFPS) or area (PFA).	Spread
Surveillance	Surveillance to guarantee that plants and produce originate from a pest-free area could be an option.	Establishment/Spread

3.6.1.3 | *Biological or technical factors limiting the effectiveness of measures*

C. viridis may not be easily detected in cases where low densities occur and when only young stages (crawlers) are present. Limited effectiveness of non-systemic insecticides due to the presence of protective wax cover.

3.7 | Uncertainty

No key uncertainties of the assessment have been identified.

4 | CONCLUSIONS

While the magnitude of impact in the EU is associated with an uncertainty, *C. viridis* satisfies all criteria assessed by EFSA for consideration as a potential quarantine pest. Table 7 provides a summary of the PLH Panel conclusion.

TABLE 7 The Panel's conclusions on the pest categorisation criteria defined in Regulation (EU) 2016/2031 on protective measures against pests of plants (the number of the relevant sections of the pest categorisation is shown in brackets in the first column).

Criterion of pest categorisation	Panel's conclusions against criterion in Regulation (EU) 2016/2031 regarding Union quarantine pest	Key uncertainties
Identity of the pest (Section 3.1)	The identity of the pest is clearly defined and *Coccus viridis* (Green) is the accepted name	**None**
Absence/presence of the pest in the EU (Section 3.2)	*Coccus viridis* has a restricted distribution in the EU, it is known to occur only on the Azores and Madeira Islands (Portugal).	**None**
Pest potential for entry, establishment and spread in the EU (Section 3.4)	*Coccus viridis* is able to further enter, become established and spread within the EU territory, especially in the southern EU MS. The main pathways are plants for planting, cut flowers, fruits, and vegetables.	**None**
Potential for consequences in the EU (Section 3.5)	The introduction of the pest could cause yield and quality losses on several crops and reduce the value of ornamental plants.	**None**
Available measures (Section 3.6)	There are measures available to prevent further entry, establishment and spread of *C. viridis* within the EU. Risk reduction options include inspections, chemical and physical treatments on consignments of fresh plant material from infested countries and the production of plants for import in the EU in pest free areas. Biological control is expected at a certain extent by indigenous natural enemies.	**None**
Conclusion (Section 4)	While the magnitude of impact in the EU is associated with an uncertainty, all criteria assessed by EFSA for consideration as a potential quarantine pest are met.	
Aspects of assessment to focus on/ scenarios to address in future if appropriate:		

GLOSSARY

Containment (of a pest)	Application of phytosanitary measures in and around an infested area to prevent the spread of a pest (FAO, 2023).
Control (of a pest)	Suppression, containment or eradication of a pest population (FAO, 2023).
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, 2023).
Eradication (of a pest)	Application of phytosanitary measures to eliminate a pest from an area (FAO, 2023).
Establishment (of a pest)	Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO, 2023).
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 the release of plant protection products (PPPs) into the environment.
Hitchhiker	An organism sheltering or transported accidentally via inanimate pathways including with machinery, shipping containers and vehicles; such organisms are also known as contaminating pests or stowaways (Toy & Newfield, 2010).
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, 2023).
Pathway	Any means that allows the entry or spread of a pest (FAO, 2023).
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, 2023).
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, 2023).
Risk reduction option (RRO)	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 RRO 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, 2023).

ABBREVIATIONS

EPPO	European and Mediterranean Plant Protection Organization
FAO	Food and Agriculture Organization
IPPC	International Plant Protection Convention
ISPM	International Standards for Phytosanitary Measures
MS	Member State
PLH	EFSA Panel on Plant Health
PZ	Protected Zone

TFEU Treaty on the Functioning of the European Union
ToR Terms of Reference

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APPENDIX A

Coccus viridis host plants/species affected

Host plant records based on literature as indicated in the table below.

Host name	Plant family	Common name	Reference
Aegle sp.	Rutaceae		Ali (1969)
Aegle marmelos	Rutaceae	Bael fruit	D'Souza et al. (1969)
Aeglopsis chevalieri	Rutaceae		Ballou (1926)
Afraegle paniculata (cited as Balsamocitrus paniculata)	Rutaceae		Ballou (1926)
Agave amica (cited as Polianthes tuberosa)	Asparagaceae	Tuberose	Dias Trindade (2011)
Ageratum houstonianum	Asteraceae	Blue billy-goat weed	Viswanathan (1971)
Albizia sp.	Fabaceae		D'Souza et al. (1969)
Alcea rosea (cited as Althea rosea)	Malvaceae	Common hollyhock	Khan and Agarwal (1976)
Alpinia purpurata	Zingiberaceae	Red ginger	Hata and Hara (1992)
Alstonia macrophylla	Apocynaceae	Devil tree	Nakahara (1981)
Alstonia scholaris	Apocynaceae	Devil tree	Malumphy and Treseder (2012)
Alyxia sp.	Apocynaceae		Nakahara (1981)
Alyxia oliviformis (cited as Alyxia olivaeformis)	Apocynaceae		Nakahara (1981)
Amaranthus sp.	Amaranthaceae		Singh and Rao (1977)
Amaranthus spinosus	Amaranthaceae	Prickly caterpillar	Singh and Rao (1977)
Anacardium occidentale	Anacardiaceae	Cashew	Schmutterer et al. (1978)
Ananas comosus	Bromeliaceae	Pineapple	Williams and Watson (1990; as cited in García Morales et al., 2016)
Annona sp.	Annonaceae		Hodgson and Hilburn (1990); Kondo and Hardy (2008)
Annona squamosa	Annonaceae	Cachiman	Mille et al. (2016)
Anthocephalus cadamba			
Anthurium sp.	Araceae		Visalaksy et al. (2014)
Antidesma sp.	Euphorbiaceae		Kannan (1918)
Antidesma bunius	Euphorbiaceae	Salamander tree	D'Souza et al. (1969)
Antidesma venosum	Euphorbiaceae	Tasselberry	Prinsloo (1985)
Apium graveolens	Apiaceae	Celery	Rodríguez-Tapia et al. (2022); Yalemar (1999)
Aralia sp.	Araliaceae		Dias Trindade (2011)
Aralia armata	Araliaceae		Martin and Lau (2011)
Arctotis sp.	Asteraceae		Nakahara (1981)
Ardisisa crispa	Primulaceae	Japanese holly	Nakahara (1981)
Areca catechu	Arecaceae	Areca-nut palm	Dubey et al. (2022)
Artocarpus sp.	Moraceae		Medina-Torres et al. (2013)
Artocarpus integer (cited as *Artocarpus integrifolia*	Moraceae		D'Souza et al. (1969)
Atalantia citroides	Rutaceae		Ballou (1926)
Atractocarpus tahitensis (cited as Randia tahitensis)	Rubiaceae		Williams and Watson (1990; as cited in García Morales et al., 2016)
Baccharis sp.	Asteraceae		Dias Trindade (2011)
Baccharis halimifolia	Asteraceae	Groundsel bush	Fredrick (1943)
Balsamocitrus dawei	Rutaceae	Uganda powder flask	Ballou (1926)
Bassia latifolia	Amaranthaceae		Miller (1931)
Begonia sp.	Begoniaceae		Dias Trindade (2011)
Bidens sp.	Asteraceae		Krishnan (1973)
Bidens pilosa	Asteraceae	Beggartick, blackjack	D'Souza et al. (1969)

(Continued)

Host name	Plant family	Common name	Reference
Bischofia sp.	Phyllanthaceae		Krishnan (1973)
Boninia grisea	Rutaceae		Kawai and Matsubara (1971)
Brunfelsia nitida	Solanaceae		Ballou (1926)
Buxus sempervirens	Buxaceae	Common box	Dias Trindade (2011)
Byrsonima crassifolia	Malpighiaceae	Craboo, nance	Medina-Torres et al. (2013)
Cajanus cajan	Fabaceae	Pigeon pea	Matile-Ferrero (2006)
Caladium sp.	Araceae		Nakahara (1981)
Callicarpa lanata	Lamiaceae		Ali (1969); D'Souza et al. (1969)
Camellia japonica	Theaceae	Camellia	Dias Trindade (2011)
Camellia sinensis	Theaceae	Tea	Dias Trindade (2011); Kannan (1918); Radhakrishnan (2022)
Campnosperma brevipetiolatum	Anacardiaceae		Williams and Watson (1990; as cited in García Morales et al., 2016)
Carica papaya	Caricaceae	Papaya	Dias Trindade (2011); Padilla et al. (2016)
Carissa carandas	Apocynaceae	Caranda (plum)	Cheng and Tao (1963)
Carissa macrocarpa	Apocynaceae	Natal plum	Hara et al. (2002); Yalemar (1999)
Carissa spinarum	Apocynaceae	Bush plum	Varshney (1992, as cited in García Morales et al., 2016)
Carissa sp.	Apocynaceae		Ali (1971); Ramakrishna (1919, as cited in García Morales et al., 2016)
Cascabela thevetia (cited as Thevetia neriifolia)	Apocynaceae	Be-still tree	Ballou (1926)
Casimiroa edulis	Rutaceae	White sapote	Pellizzari and Porcelli (2014)
Cassia sp.	Fabaceae		Malumphy et al. 2012)
Cedrus sp.	Pinaceae		Krishnan (1973)
Ceodes umbellifera	Nyctaginaceae		Kawai et al. (1971
Cestrum sp.	Solanaceae		Williams & Watson, 1990; as cited in García Morales et al., 2016)
Cestrum auriculatum	Solanaceae		Lincango et al. (2010)
Cestrum nocturnum	Solanaceae		Viswanathan (1971)
Chassalia umbraticola	Rubiaceae		Lim et al. (2008)
Chiococca racemosa	Rubiaceae		Ballou (1926)
Chrysalidocarpus sp.	Arecaceae		Suh et al. (2013)
Chrysophyllum cainito	Sapotaceae	Star apple	Mani et al. (2022)
Cinchona sp.	Rubiaceae		Dias Trindade (2011), Kannan (1918)
Cinchona calisaya	Rubiaceae	Ledger-bark cinchona	Hutson (1930)
Cinchona officinalis	Rubiaceae	Brown Peru bark	D'Souza et al. (1969)
Cinchona pubescens	Rubiaceae	Red quinine tree	Plank and Winters (1949)
Cinnamomum verum	Lauraceae	Ceylon cinnamon	Holway et al. (2002)
Citharexylum spinosum (cited as Citharexylum fruticosum)	Verbenaceae	Cutlet	Martorell (1945)
Citropsis articulata (cited as Citropsis schweinfurthii)	Rutaceae		Ballou (1926)
Citrus sp.	Rutaceae		Hara et al. (2002), Kannan (1918), Kawai and Matsubara (1971), Khan et al. (2007), Schmutterer et al. (1978)
Citrus × aurantiifolia	Rutaceae	Lime	Padilla et al. (2016)
Citrus × aurantium	Rutaceae	Bitter orange	Vieira (1953)
Citrus × aurantium var. sinensis	Rutaceae	Sweet orange	Almeida et al. (2018), Fernandes et al. (2011), Jutsum et al. (1981), Khaladi et al. (2024), Nais and Busoli (2012); Rodríguez-Tapia et al. (2022)
Citrus australis (cited as Microcitrus australis)	Rutaceae	Australian round lime	Ballou (1926)

(Continues)

(Continued)

Host name	Plant family	Common name	Reference
Citrus × limon	Rutaceae	Lemon	Almeida et al. (2018), Yalemar (1999), Padilla et al. (2016)
Citrus× limonia	Rutaceae	Mandarin lime	Almeida et al. (2018)
Citrus lucida (cited as Feroniella oblata)	Rutaceae		Ballou (1926)
Citrus maxima	Rutaceae	Pummelo	Lin et al. (2013)
Citrus medica	Rutaceae	Cidran; citron	De Charmoy and Gebert (1921)
Citrus × nobilis	Rutaceae	King orange	Vieira (1953)
Citrus × paradisi	Rutaceae	Grapefruit	Matile-Ferrero and Étienne (2006)
Citrus × reticulata	Rutaceae	Clementine; tree mandarin	Almeida et al. (2018), Styrsky and Eubanks (2007), Tandon and Veeresh (1987), Tandon and Veeresh (1988)
Clausena excavata (cited as Clausena lunulata)	Rutaceae	Pink limeberry	Cheng and Tao (1963)
Clausena lansium	Rutaceae	Wampee	Ballou (1926)
Clerodendrum speciosissimum (cited as Clerodendrum fallax)	Lamiaceae	Java glorybower	Ballou (1926)
Coccoloba diversifolia	Polygonaceae		Martorell (1945)
Coccoloba uvifera	Polygonaceae	Sea grape	Martorell (1945)
Coccoloba venosa	Polygonaceae	Chicory grape	Martorell (1945)
Cocos sp.	Arecaceae		De Lotto (1960)
Coffea sp.	Rubiaceae		Malumphy and Treseder (2012)
Coffea arabica	Rubiaceae	Arabica coffee	Camacho and Chong (2015), Dias Trindade (2011), Easwaramoorthy and Jayaraj (1978), Fernandes et al. (2010), Fernandes et al. (2011), Fernandes et al. (2012), Fornazier et al. (2017), Gonthier et al. (2013), González-Hernández et al. (1999), Green et al. (2015), Hara et al. (2002), Iverson et al. (2018), Jackson et al. (2012), Jha et al. (2009), Koutouleas et al. (2023), Liere and Perfecto (2008), Murphy (1991), Nais and Busoli (2012); Padilla et al. (2016), Ponsonby (2009), Reddy et al. (2022), Reimer et al. (1993), Ruiz-Orta et al. (2023), Rodríguez-Tapia et al. (2022), Rosado et al. (2014), Saengyot (2016), Schmutterer et al. (1978), Vandenberg et al. (2018), Varshney (1985)
Coffea canephora	Rubiaceae	Robusta coffee	Fernandes et al. (2011), Fernandes et al. (2012), Fornazier et al. (2017), Green et al. (2015), Lim et al. (2008), Magalhães et al. (2010), Souza et al., 2023, Varshney (1985)
Coffea excelsa	Rubiaceae		Lim et al. (2008)
Coffea liberica	Rubiaceae	Liberian coffee	Fornazier et al. (2017), Lim et al. (2008)
Commelina sp.	Commelinaceae		Williams and Watson (1990; as cited in García Morales et al., 2016)
Cordia sp.	Boraginaceae		Vieira et al. (1983)
Cordia alba	Boraginaceae	Jackwood	Ballou (1926)
Cordia laevigata (cited as Cordia nitida)	Boraginaceae	Glossy cordia	Ballou (1926)
Cordia myxa	Boraginaceae	Assyrian plum	Mamet (1943); as cited in García Morales et al., 2016)
Cordyline fruticosa (cited as Cordyline terminalis)	Asparagaceae	Bongbush	Nakahara (1981)
Crossandra infundibuliformis	Acanthaceae	Firecracker flower	Vadivelu et al. (1976)

(Continued)

Host name	Plant family	Common name	Reference
Cryptostegia grandiflora	Apocynaceae	Palay rubber vine	Nakahara (1981)
Cymbidium sp.	Orchidaceae		Suh (2023)
Datura stramonium	Solanaceae	Thorn apple	Viswanathan (1971)
Dimocarpus longan (cited as Euphoria longana)	Sapindaceae	Dragon's eye; longan	Ballou (1926)
Diospyros nigra (cited as *Diospyros digyna)*	Ebenaceae		Padilla et al. (2016)
Dodonaea viscosa (cited as Dodonaea eriocarpa)	Sapindaceae	Broad-leaf hopbush	Mille et al. (2016); Nakahara (1981)
Dombeya wallichii	Malvaceae	African mallow	Dias Trindade (2011)
Dracaena sp.	Asparagaceae		Nakahara (1981)
Duranta erecta (cited as Duranta repens)	Verbenaceae	Angel's whisper	Dias Trindade (2011)
Dypsis sp.	Arecaceae		Suh (2023)
Ehretia tinifolia	Boraginaceae		Ballou (1926)
Eriobotrya japonica	Rosaceae	Loquat	Mani et al. (2022), Padilla et al. (2016), Varshney (1985)
Eucalyptus camaldulensis	Myrtaceae	Long-beak eucalyptus	Lim et al. (2008)
Eucalyptus sp.	Myrtaceae		Malumphy and Treseder (2012)
Eugenia sp.	Myrtaceae		Kannan (1918)
Eugenia sprengelii	Myrtaceae		Dias Trindade (2011)
Eugenia uniflora	Myrtaceae	Pitanga	Nakahara (1981)
Eulophia alta	Orchidaceae	Wild coco	Diaz et al. (2004)
Fallopia convolvulus (cited as Polygonum convolvulus)	Polygonaceae	Bearbind	Ballou (1926)
Faramea sp.	Rubiaceae		Ballou (1926)
Faramea odoratissima	Rubiaceae		Ballou (1926)
Ficus sp.	Moraceae		Choi et al. (2018)
Fitchia sp.	Asteraceae		Nakahara (1981)
Funtumia elastica	Apocynaceae	African wild rubber	Miller (1931)
Garcinia mangostana	Clusiaceae	Mangosteen	Malumphy and Treseder (2012)
Gardenia sp.	Rubiaceae		Arvanitoyannis and Stratakos (2010), Follett and Griffin (2012), Hara et al. (2002), Kannan (1918), Neumann et al. (2010), Yalemar (1999)
Gardenia augusta	Rubiaceae		Hollingsworth (2005)
Gardenia jasminoides	Rubiaceae		Hara et al. (1994), Padilla et al. (2016)
Gardenia taitensis	Rubiaceae		Nakahara (1981)
Genipa americana	Rubiaceae	Genip	Cheng and Tao (1963)
Gerbera jamesonii	Asteraceae	African daisy	Mille et al. (2016)
Gliricidia maculata	Fabaceae		Light (1928)
Gliricidia sepium	Fabaceae	Mexican lilac	Light (1928)
Gomphrena globosa	Amaranthaceae	Bachelor's button	Nakahara (1981)
Guarea guidonia (cited as Guarea trichilioides)	Meliaceae	Muskwood	Martorell (1945)
Hamelia patens	Rubiaceae	Butterfly bush	Srinivasa (1987)
Harungana madagascariensis	Hypericaceae	Orange-milk tree	Lim et al. (2008)
Heptapleurum sp.	Araliaceae		Suh (2023)
Heritiera littoralis	Malvaceae	Looking glass tree	Ali (1971), Cheng and Tao (1963)
Hevea sp.	Euphorbiaceae		Reyne (1919)
Hibiscus sp.	Malvaceae		Follett and Griffin (2012), García-Valente et al. (2009)

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Host name	**Plant family**	**Common name**	**Reference**
Hiptage sp.	Malpighiaceae		Frappa (1929)
Hiptage benghalensis (cited as Hiptage madablota)	Malpighiaceae	Helicopter flower	Ali (1971), D'Souza et al. (1969)
Holmskioldia sanguinea	Lamiaceae	Chinese hat plant	Matile-Ferrero (2006)
Selenicereus undatus (cited as Hylocereus undatus)	Cactaceae	Dragon fruit	Kar et al. (2023)
Inga flexuosa (cited as Inga micheliana)	Fabaceae		Schmitt et al. (2020)
Inga sp.	Fabaceae		Jackson et al. (2014), Jackson et al. (2016), MacDonald et al. (2013), Rivera-Salinas et al. (2018)
Ixora sp.	Rubiaceae		Hansen et al. (1991), Hara et al. (2002), Kannan (1918), Malumphy (2014)
Ixora chinensis	Rubiaceae	Flame of the woods	Dias Trindade (2011)
Ixora coccinea	Rubiaceae	Burning love	Dias Trindade (2011), Padilla et al. (2016)
Ixora macrothyrsa	Rubiaceae		Dias Trindade (2011), Yalemar (1999)
Jasminum nitidum	Oleaceae	Angel-wing jasmine	Dias Trindade (2011)
Jasminum sp.	Oleaceae		Malumphy and Treseder (2012)
Jatropha sp.	Euphorbiaceae		Suh et al. (2013)
Justicia betonica	Acanthaceae	White shrimp plant	Van der Goot (1916)
Justicia spicigera (cited as Jacobinia mohintli)	Acanthaceae	Mexican indigo	Ballou (1926)
Kalanchoe pinnata (cited as Bryophyllum pinnatum)	Crassulaceae	Chandelier plant	Nakahara (1981)
Khaya senegalensis	Meliaceae	African mahogany	Ganhao (1956)
Lagerstroemia sp.	Lythraceae		Choi et al. (2018)
Lagerstroemia indica	Lythraceae		Gómez-Menor Ortega (1941)
Lagerstroemia speciosa	Lythraceae	Bloodwood	Martorell (1945)
Laguncularia racemosa	Combretaceae	White buttonwood	Lincango et al. (2010)
Landolphia kirkii	Apocynaceae		Rutherford (1914)
Lantana camara	Verbenaceae	Common lantana	Viswanathan (1971)
Litchi chinensis	Sapindaceae	Litchee	Hara et al. (2002), Yalemar (1999)
Loranthus sp.	Loranthaceae		Kannan (1918)
Madhuca longifolia	Sapotaceae	Honey tree	Lim et al. (2008)
Maesa indica	Primulaceae		Varshney (1992)
Maesa perlarius	Primulaceae		Martin and Lau (2011)
Maieta guianensis	Melastomataceae		Lapola et al. (2005)
Malpighia emarginata	Malpighiaceae	Acerola	Matile-Ferrero (2006)
Malpighia glabra	Malpighiaceae	Barbados cherry	Reyne (1919)
Mammea americana	Calophyllaceae	Mamey apple	Beatty (1944)
Mangifera indica	Anacardiaceae	Mango	Dias Trindade (2011), Schmutterer et al. (1978)
Manicaria saccifera	Arecaceae		Malumphy and Treseder (2012)
Manihot esculenta	Euphorbiaceae	Cassava	Kannan (1918)
Manilkara zapota	Sapotaceae	Sapota, bully tree	Dias Trindade (2011), Dix-Luna et al. (2018), Kawai and Matsubara (1971), Lim et al. (2008), Mani et al. (2008), Padilla et al. (2016)
Maxillaria multifoliata	Orchidaceae		Malumphy and Treseder (2012)
Maytenus spp.	Celastraceae		Vieira et al. (1983)
Melia azedarach	Meliaceae	Chinaberry tree	Corseuil and Barbosa (1971), as cited in García Morales et al., 2016)
Melicoccus bijugatus (cited as Melicocca bijuga)	Sapindaceae	Genip	Gómez-Menor Ortega (1941

(Continued)

Host name	Plant family	Common name	Reference
Miconia prasina	Melastomataceae		Martorell (1945)
Miconia robinsoniana	Melastomataceae		Lincango et al. (2010)
Microcos paniculata	Malvaceae		Varshney (1992)
Mimusops elengi	Sapotaceae	Bullet wood	Mani et al. (2022)
Mirabilis jalapa	Nyctaginaceae	False jalap	Viswanathan (1971)
Morinda citrifolia	Rubiaceae	Cheese fruit	Hara et al. (2002), Yalemar (1999)
Morinda sp.	Rubiaceae		Srinivasa (1987)
Morinda coreia (cited as Morinda tinctoria)	Rubiaceae		Ayyar (1935)
Murraya paniculata	Rutaceae	Burmese boxwood	Culik et al. (2007)
Musa sp.	Musaceae		Dias Trindade (2011), Follett (2009)
Myrciaria dubia	Lithomyrtus		Wolff et al. (2016)
Naringi crenulata (cited as Hesperethusa crenulate)	Rutaceae		Ballou (1926)
Nectandra sp.	Lauraceae		Fredrick (1943)
Nephelium lappaceum	Sapindaceae	Rambutan	Hara et al. (2002), Yalemar (1999)
Nerium oleander	Apocynaceae	Common oleander	Chazeau (1981)
Nerium odorum (cited as Nerium indicum)	Apocynaceae	Sweet oleander	Srinivasa (1987)
Neolamarckia cadamba (cited as Anthocephalus cadamba)	Rubiaceae	Burflower tree	Mani et al. (2022)
Ochrosia nakaiana	Apocynaceae		Kawai and Matsubara (1971)
Oxalis sp.	Oxalidaceae		Krishnan (1973)
Oxalis acetosella	Oxalidaceae		Viswanathan (1971)
Ozoroa obovata	Anacardiaceae	Broad-leaved resin tree	Prinsloo (1985)
Palaquium formosanum	Sapotaceae		Tao et al. (1983)
Pandanus sp.	Pandanaceae		Malumphy and Treseder (2012)
Pittosporum tobira	Pittosporaceae	Japanese pittosporum	Nakahara (1981)
Planchonella sp.	Sapotaceae		Williams and Watson (1990); as cited in García Morales et al., 2016)
Pluchea indica	Asteraceae	Indian fleabane	Bach (1991), García-Valente et al. (2009), Holway et al. (2002), Moya-Raygoza and Nault (2000), Simberloff and Von Holle (1999), Styrsky and Eubanks (2007), Vranjic (1997)
Plumeria sp.	Apocynaceae		D'Souza et al. (1969)
Plumeria obtusa	Apocynaceae	Frangipani	Charanasri and Nishida (1975)
Plumeria rubra	Apocynaceae	Red frangipani	Hara et al. (2002)
Plumeria rubra f. acutifolia (cited as Plumeria rubra var. acutifolia)	Apocynaceae	Mexican frangipani	De Lotto (1960)
Plumeria tricolour	Apocynaceae		Vieira et al. (1983)
Polyscias guilfoylei (cited as Aralia guilfoylei)	Araliaceae	Geranium-leaf aralia	Williams and Watson (1990; as cited in García Morales et al., 2016)
Polyscias sp.	Araliaceae		Suh et al. (2013)
Polysphaeria sp.	Rubiaceae		Lim et al. (2008)
Poncirus trifoliata	Rutaceae	Golden apple	Nakahara (1981)
Pouteria caimito	Sapotaceae		Dias Trindade (2011)
Pouteria campechiana (cited as Lucuma nervosa)	Sapotaceae	Canistel	Ballou (1926)
Pouteria obovata	Sapotaceae		Kawai and Matsubara (1971)
Prosthechea cochleata	Orchidaceae		Mestre Novoa et al. (2011)
Prunus salicina	Rosaceae	Chinese plum	Padilla et al. (2016)
Psidium sp.	Myrtaceae		Malumphy and Treseder (2012)

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Host name	Plant family	Common name	Reference
Psidium araca	Myrtaceae		Dias Trindade (2011)
Psidium cattleyanum	Myrtaceae		Williams (1985)
Psidium friedrichsthalianum	Myrtaceae	Costa Rican guava	Ballou (1926)
Psidium guajava	Myrtaceae	Guava	Dias Trindade (2011), Hara et al. (2002), Kannan (1918), Lim et al. (2008), Miranda-Calixto et al. (2023), Padilla et al. (2016), Rosado et al. (2014), Varshney (1985), Yalemar (1999)
Psychotria boninensis	Rubiaceae		Kawai and Matsubara (1971)
Psychotria laurifolia	Rubiaceae		Ballou (1926)
Psydrax dicoccos (cited as Canthium dicoccum)	Rubiaceae		Krishnan (1973)
Psydrax odoratus (cited as Canthium odoratum)	Rubiaceae		Nakahara (1981)
Pyrus communis	Rosaceae	Common pear	Viswanathan (1971)
Randia nigrescens	Rubiaceae		Ballou (1926)
Rauvolfia mombasiana	Apocynaceae		Lim et al. (2008)
Rauvolfia nitida	Apocynaceae		Martorell (1945)
Rauvolfia vomitoria	Apocynaceae	Swizzlestick	García Morales et al. (2016)
Rosa sp.	Rosaceae		Dias Trindade (2011)
Rothmannia annae	Rubiaceae		Malumphy and Treseder (2012)
Salvia rosmarinus (cited as Rosmarinus officinalis)	Lamiaceae	Garden rosemary	Dias Trindade (2011)
Sanchezia oblonga (cited as Sanchezia nobilis)	Acanthaceae	Brilliant-flowered sanchezia	Nakahara (1981)
Santalum album	Santalaceae	Indian sandalwood	Rostaman (1997)
Scaevola sp.	Goodeniaceae		Malumphy and Treseder (2012)
Schefflera sp.	Araliaceae		Suh et al. (2013)
Schinus sp.	Anacardiaceae		Vieira et al. (1983)
Schinus molle	Anacardiaceae	California pepper tree	Vieira et al. (1983)
Schinus terebinthifolia	Anacardiaceae	Brazilian pepper tree	Dias Trindade (2011)
Senecio sp.	Asteraceae		Malumphy and Treseder (2012)
Sideroxylon ferrugineum	Sapotaceae		Cheng and Tao (1963)
Sideroxylon foetidissimum	Sapotaceae	Akouma	Dias Trindade (2011)
Sigesbeckia orientalis	Asteraceae	Eastern St Paul's wort	Viswanathan (1971)
Spermacoce laevis (cited as Borreria laevis)	Rubiaceae	Buttonplant	Williams and Watson (1990); as cited in García Morales et al., 2016)
Strychnos nux-vomica	Loganiaceae	Nux-vomica poison nut	Ali (1971)
Swinglea glutinosa (cited as Chaetospermum glutinosum)	Rutaceae	Tabog	Ballou (1926)
Synsepalum sp.	Sapotaceae		Suh (2023)
Syzygium aromaticum	Myrtaceae	Clove	Lim et al. (2008)
Syzygium cumini	Myrtaceae	Black plum	Lim et al. (2008)
Syzygium malaccense (cited as Eugenia malaccensis)	Myrtaceae	Kelat oil	Ballou (1926)
Tabernaemontana citrifolia	Apocynaceae		Ballou (1926)
Tabernaemontana divaricata	Apocynaceae	Butterfly gardenia	Visalaksy et al. (2014)
Talinum paniculatum (cited as Talinum patens)	Talinaceae		Ballou (1926)
Tecomaria capensis	Bignoniaceae	Cape honeysuckle	Nakahara (1981)
Terminalia catappa	Combretaceae	Bengal almond	Martorell (1945)
Tetrazygia sp.	Melastomataceae		Fredrick (1943)
Theobroma cacao	Malvaceae	Cacao	Dias Trindade (2011), Hara et al. (2002), Rosado et al. (2014), Yalemar (1999)

(Continued)

Host name	**Plant family**	**Common name**	**Reference**
Timonius sp.	Rubiaceae		Williams and Watson (1990); as cited in García Morales et al., 2016)
Tipuana sp.	Fabaceae		Nakahara (1981)
Tococa bullifera	Melastomataceae		Lapola et al. (2005)
Triphasia trifolia	Rutaceae		Nakahara (1981)
Triplaris sp.	Polygonaceae		Dias Trindade (2011)
Vallaris solanacea	Apocynaceae		Srinivasa (1987)
Verbena rigida	Verbenaceae		Viswanathan (1971)
Veronica sp.	Plantaginaceae		Vieira et al. (1983)
Viburnum sp.	Adoxaceae		Cheng and Tao (1963)
Wrightia tinctoria	Apocynaceae		D'Souza et al. (1969)
Zamioculcas sp.	Araceae		Suh et al. (2013)
Zingiber officinale	Zingiberaceae		Nakahara (1981)

APPENDIX B

Distribution of *Coccus viridis*

Distribution records are based on literature as indicated in the table below.

Region	Country	Sub-national (e.g. state)	Status	Reference
Africa	Algeria	Guelma	Present	Khaladi et al. (2024)
Asia	Angola		Present	Malumphy and Treseder (2012), Mascarenhas de Almeida (1973), as cited in García Morales et al., 2016)
	Benin		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016)
	Burkina Faso		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016)
	Cameroon		Present	Malumphy and Treseder (2012), Vayssière (1913), as cited in García Morales et al., 2016)
	Cabo Verde		Present	Malumphy and Treseder (2012); van Harten et al. (1990)
	Cabo Verde	Fogo	Present	Schmutterer et al. (1978)
	Comoros		Present	Ben-Dov (1993), as cited in García Morales et al., 2016); Malumphy and Treseder (2012)
	Congo		Present	Waller et al. (2007)
	Côte d'Ivoire		Present	Waller et al. (2007)
	Egypt		Present	Abd-Rabou and Evans (2021), Malumphy and Treseder (2012)
	Eritrea		Present	Waller et al. (2007)
	Ethiopia		Present	De Lotto (1960), Waller et al. (2007)
	Ghana		Present	De Lotto (1960), Waller et al. (2007)
	Guinea		Present	Fernandes (1987), as cited in García Morales et al., 2016); Waller et al. (2007)
	Guinea- Bissau		Present	Fernandes (1987), as cited in García Morales et al., 2016)
	Kenya		Present	Choi et al. (2018), De Lotto (1960), Swirski et al. (1997), Waller et al. (2007)
	Kenya	Central	Present	Melville (1945)
	Kenya	Coast	Present	De Lotto (1960), Githae et al. (2021)
	Kenya	Eastern	Present	Melville (1945), Morstatt (1913), Olubayo et al. (2011)
	Kenya	Khayewa	Present	Olubayo et al. (2011)
	Kenya	Kiambu	Present	Noyes (1988)
	Kenya	Kilifi	Present	Githae et al. (2021)
	Kenya	Kithimani	Present	Olubayo et al. (2011)
	Kenya	Kwale	Present	Murphy (1991)
	Kenya	Makueni	Present	Githae et al. (2021)
	Kenya	Muranga	Present	Murphy (1991), Noyes (1988)
	Kenya	Nairobi	Present	Anderson (1917)
	Kenya	Nyanza	Present	De Lotto (1960)
	Madagascar	Ambatondrazaka	Present	Frappa (1928), Waller et al. (2007)
	Madagascar	Antsirabe	Present	Frappa (1928), Waller et al. (2007)
	Madagascar	Betafo	Present	Frappa (1928), Waller et al. (2007)
	Madagascar	Itasy	Present	Frappa (1928), Waller et al. (2007)
	Madagascar	Mananjary	Present	Frappa (1928), Waller et al. (2007)
	Mali		Present	Waller et al. (2007)
	Mauritius	Agalega Islands	Present	Malumphy and Treseder (2012), Mamet (1978)
	Mauritius		Present	de Charmoy and Gebert (1921), Malumphy and Treseder (2012), Waller et al. (2007), Waterston (1916)

(Continued)

Region	Country	Sub-national (e.g. state)	Status	Reference
	Niger		Present	Kondo et al. (2022, as cited in García Morales et al., 2016)
	Nigeria		Present	De Lotto (1960)
	Réunion		Present	Luziau (1953), Waller et al. (2007)
	Rwanda		Present	Bizumungu and Majer (2019)
	São Tomé and Principe		Present	de Seabra (1919), Reyne (1919), Waller et al. (2007)
	Senegal		Present	Kondo et al. (2022, as cited in García Morales et al., 2016)
	Seychelles		Present	Holway et al. (2002), Waller et al. (2007)
	Sierra Leone		Present	De Lotto (1960)
	South Africa		Present	Swirski et al. (1997)
	Tanzania		Present	De Lotto (1960), Green (1916), Swirski et al. (1997), Waller et al. (2007)
	Togo		Present	Kondo et al. (2022, as cited in García Morales et al., 2016)
	Tunisia	Zaghouan	Present	Elimem et al. (2019)
	Uganda		Present	De Lotto (1960), Kannan (1918), Swirski et al. (1997), Waller et al. (2007)
	Zambia		Present	Cheng and Tao (1963), Malumphy and Treseder (2012)
	Bangladesh		Present	Varshney (1985), Varshney (1992)
	Brunei		Present	Kondo et al. (2022, as cited in García Morales et al., 2016); Waterhouse (1993)
	Cambodia[1]		Present	Waller et al. (2007), Waterhouse (1993)
	Hong Kong		Present	Malumphy and Treseder (2012), Martin and Lau (2011)
	Japan	Bonin Islands	Present	Kawai and Matsubara (1971)
	India		Present	Easwaramoorthy and Jayaraj (1978), George et al. (2022), Mani et al. (2008), Omkar and Pervez (2016), Swirski et al. (1997), Varshney (1985), Waller et al. (2007)
	India	Andhra Pradesh	Present	Avasthi and Shafee (1991); Srinivasa (1987)
	India	Assam	Present	Avasthi and Shafee (1991), Varshney (1992)
	India	Bihar	Present	Kar et al. (2023), Kondo et al. (2022, as cited in García Morales et al., 2016)
	India	Himachal Pradesh	Present	Kondo et al. (2022, as cited in García Morales et al., 2016); Reddy et al. (2022)
	India	Karnataka	Present	Avasthi and Shafee (1991), Dubey et al. (2022), Joshi et al. (2017), Kannan (1918), Mani et al. (2008), Noyes (1988), Ponsonby (2009), Sathish et al. (2024), Tandon and Veeresh (1987), Varshney (1985)
	India	Kerala	Present	Balakrishnan et al. (1992), Mathew and Duraimurugan (2002), Samuel et al. (1981); Varshney (1992)
	India	Orissa	Present	Varshney (1992)
	India	Sikkim	Present	Joshi and Sangma (2015)
	India	Tamil Nadu	Present	Easwaramoorthy and Jayaraj (1977, 1978), Kumar et al. (2005), Mani et al. (2008), Noyes (1988), Ponsonby (2009), Santharam et al. (1977)
	India	Tripura	Present	Varshney (1992)
	India	Uttar Pradesh	Present	Khan and Agarwal (1976)
	India	West Bengal	Present	Kar et al. (2023)
	Indonesia		Present	Holway et al. (2002)
	Indonesia	Aceh Tengah	Present	Syadida et al. (2024)
	Indonesia	Bali	Present	Gavrilov-Zimin (2017)
	Indonesia	Bebesen	Present	Syadida et al. (2024)

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Region	Country	Sub-national (e.g. state)	Status	Reference
	Indonesia	East Java	Present	Muhammad et al. (2024), Wuryantini et al. (2023)
	Indonesia	Java	Present	Wuryantini et al. (2023)
	Indonesia	Jawa Timur	Present	Ultee (1931), Wurth (1920)
	Indonesia	Lampung	Present	Susilo (2015)
	Indonesia	Nusatenggara Barat	Present	Van Hall (1919)
	Indonesia	Nusatenggara Timur	Present	Rostaman (1997)
	Indonesia	Sulawesi Tenggara	Present	Gavrilov-Zimin (2013)
	Indonesia	Sumatra	Present	Ali (1971)
	Iraq		Present	Hamdia et al. (2020)
	Laos		Present	Choi et al. (2018), Suh and Bombay (2015)
	Malaysia		Present	Waller et al. (2007)
	Malaysia	Sabah	Present	Kondo et al. (2022, as cited in García Morales et al., 2016)
	Malaysia	Sarawak	Present	Kondo et al. (2022, as cited in García Morales et al., 2016)
	Malaysia	West Malaysia	Present	Distribution Maps of Pests (1972)
	Myanmar/Burma		Present	Cheng and Tao (1963), Choi et al. (2018), Waller et al. (2007)
	Pakistan		Present	Sarwar (2006), Varshney (1992)
	Philippines		Present	Waller et al. (2007)
	Philippines	Bataan	Present	Ali (1971), Mamet (1943)
	Philippines	Laguna	Present	Ali (1969)
	Philippines	Los Banos	Present	Ali (1969)
	Philippines	Luzon	Present	Ali (1969)
	Philippines	Manilla	Present	Ali (1969)
	Philippines	Rizal	Present	Ali (1969)
	Singapore		Present	Kondo and Watson (2022, as cited in García Morales et al., 2016), Waterhouse (1993)
	Sri Lanka		Present	Kannan (1918), Reimer et al. (1993), Varshney (1985), Waller et al. (2007)
	Taiwan		Present	Lin et al. (2013), Swirski et al. (1997), Waller et al. (2007)
	Thailand	Chiang Mai	Present	Nakao et al. (1977), Smith et al. (2004)
	Thailand	Chiang Rai	Present	Saengyot (2016), Ueda et al. (2010)
	Thailand	Chiengmai	Present	Ali (1969)
	Thailand	Chon Buri	Present	Smith et al. (2004)
	Thailand	Mt. Sutep	Present	Ali (1969)
	Vietnam		Present	Waller et al. (2007)
	Yemen		Present	Malumphy and Treseder (2012), Waller et al. (2007)
Europe	Portugal	Azores	Present	Franco et al. (2011)
	Portugal	Madeira	Present	Carvalho and Aguiar (1997), Franco et al. (2011), Swirski et al. (1997)
North America	Antigua and Barbuda		Present	Ballou (1916), Cheng and Tao (1963)
	Bahamas		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016)
	Barbados		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016), Reyne (1919), Skeete (1925)
	Bermuda		Present	Hodgson and Hilburn (1991)
	British Virgin Islands		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016)

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Region	Country	Sub-national (e.g. state)	Status	Reference
	Cayman Islands		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016)
	Costa Rica		Present	Waller et al. (2007)
	Cuba		Present	Swirski et al. (1997), Waller et al. (2007)
	Cuba	La Habana	Present	Rodríguez-Tapia et al. (2022), Mestre Novoa et al. (2011)
	Cuba	Pinar Del Rio	Present	Hernandez Martinez et al. (2021), Mestre Novoa et al. (2011)
	Cuba	Playa	Present	Rodríguez-Tapia et al. (2022)
	Dominican Republic		Present	Waller et al. (2007)
	El Salvador		Present	Quezada et al. (1972)
	Grenada		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016)
	Guadeloupe		Present	Waller et al. (2007)
	Guatemala		Present	Waller et al. (2007), Williams (2010)
	Haiti		Present	Swirski et al. (1997), Waller et al. (2007)
	Honduras		Present	Waller et al. (2007)
	Jamaica		Present	Waller et al. (2007)
	Martinique		Present	Waller et al. (2007)
	Mexico		Present	Figueroa-Figueroa et al. (2023), Koutouleas et al. (2023), Ruiz-Orta et al. (2023)
	Mexico	Chiapas	Present	Caballero and Ramos-Portilla (2018), Cowal et al. (2023), Gonthier et al. (2013), Hajian-Forooshani et al. (2023), Hsieh et al. (2012), Iverson et al. (2018), Iverson et al. (2022), Jackson et al. (2012), Jackson et al. (2014), Jackson et al. (2016), Jha et al. (2009), Jiménez-Soto et al. (2013), Liere and Perfecto (2008), Liere et al. (2014), Liere and Larsen (2010), Livingston et al. (2008), MacDonald et al. (2013), Marin and Perfecto (2013), Ong and Vandermeer (2014), Padilla et al. (2016), Perfecto and Vandermeer (2006), Rivera-Salinas et al. (2018), Schmitt et al. (2020), Vandenberg et al. (2018)
	Mexico	Colima	Present	Miller (1996), Padilla et al. (2016)
	Mexico	Guanajuato	Present	Salas-Araiza et al. (2020)
	Mexico	Morelos	Present	Padilla et al. (2016)
	Mexico	Michoacan	Present	Padilla et al. (2016)
	Mexico	Nayarit	Present	Medina-Torres et al. (2013)
	Montserrat		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016), Nag Raj and George (1959), Nowell (1916)
	Nicaragua		Present	Matus Miranda and Jiménez-Martínez (2020)
	Panama		Present	Waller et al. (2007)
	Puerto Rico		Present	Hajian-Forooshani et al. (2023), Swirski et al. (1997), Waller et al. (2007)
	Saint Kitts and Nevis		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016)
	Saint Lucia		Present	Malumphy (2014)
	Saint Vincent and the Grenadines		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016)
	Trinidad and Tobago		Present	Gullan (1997), as cited in García Morales et al., 2016)
	U.S. Virgin Islands	Saint Croix	Present	Beatty (1944), Swirski et al. (1997)
	United States	Florida	Present	Camacho and Chong (2015), Choi et al. (2018), Pellizzari and Porcelli (2014), Swirski et al. (1997)
	United States	Los Angeles	Present	Von Ellenrieder (2025)

(Continues)

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Region	Country	Sub-national (e.g. state)	Status	Reference
Oceania	Australia	New South Wales	Present	Poole (2005)
	Australia	Northern Territory	Present	Poole (2005)
	Australia	Queensland	Present, restricted distribution	Bizumungu et al. (2020), Khan et al. (2007)
	Australia	Western Australia	Present	Poole (2005)
	Cook Islands		Present	Waller et al. (2007)
	Federated States of Micronesia		Present	Waller et al. (2007)
	Fiji		Present	Waller et al. (2007), Yalemar (1999)
	French Polynesia		Present	Malumphy and Treseder (2012)
	Guam		Present	Ben-Dov (1993), as cited in García Morales et al., 2016), Malumphy and Treseder (2012)
	Kiribati		Present	Malumphy and Treseder (2012)
	Nauru		Present	Ben-Dov (1993), as cited in García Morales et al., 2016); Malumphy and Treseder (2012)
	New Caledonia		Present	Waller et al. (2007)
	Niue		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016)
	Northern Mariana Islands		Present	Mamet (1943), as cited in García Morales et al., 2016)
	Palau		Present	Mamet (1943), as cited in García Morales et al., 2016)
	Papua New Guinea		Present	Choi et al. (2018), Murphy (1991), Noyes (1988), Swirski et al. (1997), Waller et al. (2007)
	Samoa		Present	Swirski et al. (1997), Waller et al. (2007)
	Solomon Islands		Present	Williams and Watson (1990); as cited in García Morales et al., 2016)
	Tonga		Present	Swirski et al. (1997), Waller et al. (2007)
	Tuvalu		Present	Williams and Watson (1990); as cited in García Morales et al., 2016)
	Vanuatu		Present	Swirski et al. (1997), Waller et al. (2007)
Other	United Kingdom[2]	England	Present	Malumphy and Treseder (2012), Pellizzari and Porcelli (2014)
South America	Bolivia		Present	Boa and Bentley (2001), Waller et al. (2007)
	Brazil	Alagoas - Vicosa	Present	Fernandes et al. (2012), Magalhães et al. (2010)
	Brazil	Amapa	Present	Silva et al. (2021)
	Brazil	Amazonas	Present	Murakami et al. (1984), Silva et al. (2021)
	Brazil	Bahia	Present	Dias Trindade (2011), Fornazier et al. (2017), Granara de Willink et al. (2010)
	Brazil	Distrito Federal	Present	Murakami et al. (1984)
	Brazil	Espirito Santo	Present	Fornazier et al. (2017), Granara de Willink et al. (2010), Silva et al. (2021)
	Brazil	Goias	Present	Kawai and Matsubara (1971), Murakami et al. (1984), Silva et al. (2021)
	Brazil	Mato Grosso Do Sul	Present	Murakami et al. (1984)
	Brazil	Minas Gerais	Present	Dias Trindade (2011), Fernandes et al. (2011), Fornazier et al. (2017), Granara de Willink et al. (2010), Murakami et al. (1984), Rosado et al. (2014), Silva et al. (2021), Waller et al. (2007)
	Brazil	Para	Present	Dias Trindade (2011), Fornazier et al. (2017), Wolff et al. (2016)
	Brazil	Parana	Present	Dias Trindade (2011), Fornazier et al. (2017)
	Brazil	Pernambuco	Present	Bondar (1928)

(Continued)

Region	Country	Sub-national (e.g. state)	Status	Reference
	Brazil	Rio de Janeiro	Present	Dias Trindade (2011), Fornazier et al. (2017), Silva et al. (2021)
	Brazil	Rio Grande Do Norte	Present	Dias Trindade (2011), Fernandes et al. (2011), Fornazier et al. (2017)
	Brazil	Rio Grande do Sul	Present	Dias Trindade (2011), Fornazier et al. (2017), Granara de Willink et al. (2010); Silva et al. (2021)
	Brazil	Rondonia	Present	Santos et al. (2023)
	Brazil	Santa Catarina	Present	Dias Trindade (2011), Fornazier et al. (2017)
	Brazil	Sao Paulo	Present	Almeida et al. (2018), Dias Trindade (2011), Fornazier et al. (2017), Nais and Busoli (2012), Silva et al. (2021), Souza et al., 2023
	Brazil		Present	Li et al. (2010), Swirski et al. (1997), Waller et al. (2007)
	Colombia		Present	Caballero et al. (2020), Dix-Luna et al. (2018), Roba (1936), Waller et al. (2007)
	Ecuador		Present	Causton et al. (2006), Lincango et al. (2010)
	French Guiana		Present	Kondo and Watson (2022), as cited in García Morales et al., 2016)
	Guyana		Present	Waller et al. (2007)
	Hawaii		Present	Bach (1991), Hata and Hara (1992), Holway et al. (2002), Reimer et al. (1993), Yalemar (1999), Waller et al. (2007)
	Hawaii	Honolulu	Present	Charanasri and Nishida (1975), Hara et al. (2002)
	Lesser Antilles		Present	Malumphy (2014)
	Peru		Present	Waller et al. (2007)
	Suriname		Present	Waller et al. (2007)
	Trinidad and Tobago		Present	Jutsum et al. (1981), Swirski et al. (1997), Waller et al. (2007)
	Venezuela		Present	Waller et al. (2007)
	Venezuela	Merida	Present	Hanks and Sadof (1990)

[1]CABI (online); EPPO (online) declare that it is an invalid record.

[2]Malumphy and Treseder (2012) reported that *C. viridis* was found in Cornwall, England, United Kingdom, in a greenhouse that mimics the environment of a tropical rainforest.

APPENDIX C

Import data

TABLE C.1 Fresh tamarinds, cashew apples, lychees, jackfruit, sapodilla plums, passion fruit, carambola and pitahaya (CN Code: 081090) imported in 100 kg into the EU (27) from regions where *Coccus viridis* is known to occur (Source: Eurostat accessed on 08/10/2024).

Country	2019	2020	2021	2022	2023
Angola	20,572.00	43,593.00	188,355.00	210,059.00	167,607.00
Australia		1250.00		0.00	
Bangladesh	20,612.00	38,200.00	102,499.00	95,662.00	138,295.00
Benin	80.00				
Brazil	96,663.00	122,026.00	175,862.00	401,369.00	316,578.00
Burkina Faso	523.00	350.00		210.00	827.00
Cambodia	110,117.00	71,282.00	205,628.00	261,020.00	309,382.00
Colombia	8,984,731.00	9,074,120.00	12,128,665.00	13,725,606.00	12,810,645.00
Congo	185.00	50.00	270.00	20.00	76.00
Costa Rica	1862.00		5.00	438.00	2651.00
Côte d'Ivoire	790.00	1019.00	4603.00	5145.00	6156.00
Cuba				207.00	23.00
Dominican Republic	82,348.00	60,484.00	48,038.00	40,782.00	66,830.00
Ethiopia			1920.00		
French Polynesia				10.00	
Ghana	526,803.00	677,925.00	541,615.00	346,750.00	115,493.00
Guatemala	856.00	6088.00	1520.00	558.00	1.00
Guinea	4913.00	1152.00	30.00	1739.00	1356.00
Guinea-Bissau	430.00				
Honduras		2.00		2045.00	
India	11,869.00	75,433.00	7500.00	50,975.00	163,303.00
Indonesia	24,667.00	44,164.00	54,065.00	27,008.00	29,906.00
Jamaica				142.00	
Japan	2.00			3.00	15.00
Kenya	48,100.00	69,714.00	68,097.00	21,057.00	13,967.00
Laos	46,973.00	23,857.00	15,078.00	8606.00	6842.00
Madagascar	16,452,438.00	13,580,960.00	14,276,791.00	13,173,261.00	13,223,375.00
Malaysia	1423,596.00	784,958.00	679,487.00	455,713.00	494,020.00
Mali	644.00	2528.00	2170.00	1514.00	227.00
Mauritius	116715.00	114,597.00	9528.00	210,607.00	171,513.00
Mexico	66,987.00	233,191.00	556,083.00	629,229.00	573,932.00
Myanmar/Burma		996.00			
New Caledonia					33.00
Nicaragua	399.00	3196.00	3981.00		
Nigeria	191.00	309.00	84.00	6.00	674.00
Pakistan			250.00		87.00
Panama			25.00	24.00	166.00
Peru	80,103.00	148,633.00	467,311.00	227,815.00	151,482.00
Philippines	88.00		56.00	103.00	578.00
Rwanda	1175.00	1728.00	412.00	515.00	
Senegal				757.00	1.00
Singapore			2588.00	3.00	1.00
South Africa	2,721,568.00	1,990,315.00	2,345,808.00	4,238,329.00	1,686,041.00
Sri Lanka	10,462.00	8524.00	25,201.00	11,466.00	8800.00
St Lucia			70.00	20.00	

TABLE C.1 (Continued)

Country	2019	2020	2021	2022	2023
Suriname	198.00	44.00	4596.00	302.00	
Taiwan	2597.00	897.00	820.00	0.00	
Tanzania	877.00	452.00	563.00	405.00	1.00
Thailand	1,490,021.00	1,013,875.00	1,050,459.00	1,025,834.00	1,273,883.00
Togo	636.00	1244.00	184.00	414.00	796.00
Uganda	66,657.00	57,189.00	64,551.00	37,673.00	20,717.00
United Kingdom	562,956.00	494,928.00	198,134.00	7140.00	11,381.00
United States		2.00	11.00	3854.00	6.00
Viet Nam	5,284,633.00	4,565,267.00	4,789,302.00	3,151,509.00	4493426.00
Zambia	352,604.00	308,769.00	764,211.00	712,545.00	544,350.00

TABLE C.2 Fresh or chilled celery (excl. celeriac) (CN Code: 070940) imported in 100 kg into the EU (27) from regions where *Coccus viridis* is known to occur (Source: Eurostat accessed on 08/10/2024).

Country	2019	2020	2021	2022	2023
Australia				3.00	
Cambodia	10.00				39.00
Congo			12.00		
Costa Rica				1.00	
Guatemala	1960.00				
Hong Kong				1.00	
India					5005.00
Kenya					14.00
Laos	2941.00	2901.00	311.00		
Malaysia	211.00	262.00	269.00		
Mexico	4.00				
Pakistan	2.00				
Suriname	843.00	240.00	1643.00	962.00	931.00
Thailand	8617.00	6254.00	6914.00	3765.00	7674.00
United Kingdom	1,651,493.00	1,406,511.00	917,055.00	843,485.00	1,115,655.00
United States			59.00	0.00	17.00
Viet Nam		1.00	15.00		12.00

TABLE C.3 Citrus fruit, fresh or dried (CN Code: 0805) imported in 100 kg into the EU (27) from regions where *Coccus viridis* is known to occur (Source: Eurostat accessed on 08/10/2024).

Country	2019	2020	2021	2022	2023
Antigua and Barbuda	1983.00				
Australia	1,064,540.00	234,347.00	409,742.00	378,445.00	167,570.00
Bangladesh	32,242.00	118,366.00	28,922.00	46,452.00	50,325.00
Belize	396,030.00	324,376.00	25,000.00	102,400.00	
Bolivia	21,008.00	1,407,940.00	299,700.00		
Brazil	82,213,446.00	90,259,026.00	106,211,108.00	117,870,096.00	118,009,773.00
Brunei					1512.00
Burkina Faso	3895.00	5352.00		7500.00	0.00
Cambodia	276.00	284.00	79.00	13,093.00	15,222.00
Colombia	13,691,485.00	17,219,770.00	19,496,308.00	20,764,483.00	18,136,325.00
Congo			197.00	20.00	
Costa Rica	23,120.00	46,160.00	3520.00	21,870.00	24,480.00
Côte d'Ivoire				6.00	

(Continues)

TABLE C.3 (Continued)

Country	2019	2020	2021	2022	2023
Cuba	342,211.00	55,603.00	1870.00		
Dominican Republic	735,536.00	1,288,658.00	1,278,040.00	846,422.00	1,096,502.00
Ghana			26,157.00	12,986.00	22,139.00
Grenada			1.00		
Guatemala	1,181,609.00	1,781,426.00	871,280.00	831,394.00	580,077.00
Guyana		2400.00			
Haiti	3100.00	24,829.00	33,730.00	14,900.00	6615.00
Honduras	852,182.00	1,137,041.00	1,126,350.00	1,188,892.00	1,545,338.00
Hong Kong	227.00	100.00	2.00	42.00	774.00
India	8851.00	25,495.00	2237.00	16,485.00	34,505.00
Indonesia	83,673.00	86,454.00	87,268.00	89,040.00	87,903.00
Jamaica	240,955.00	164,687.00	244,176.00	171,886.00	98,478.00
Japan	31,924.00	16,250.00	18426.00	18,449.00	11,786.00
Kenya		3456.00	2.00	1.00	229.00
Laos		2023.00	95.00		
Madagascar	716.00	2216.00	191.00	269.00	21,481.00
Malaysia	771.00				131.00
Mali			12.00		
Mauritius		735.00			
Mexico	44,374,354.00	34,964,863.00	18,418,248.00	13,546,146.00	7,171,991.00
Nigeria	10.00	20,000.00		6.00	5.00
Pakistan	59.00		27,200.00	107,740.00	88.00
Panama		65,040.00		0.00	
Peru	36,925,164.00	41,836,228.00	54,598,470.00	38,870,148.00	53,895,781.00
Philippines	771.00	10.00		8.00	
Singapore			3.00		0.00
South Africa	619,683,796.00	783,014,760.00	795,085,787.00	790,906,599.00	865,059,916.00
Sri Lanka	20.00	6010.00	3.00	2685.00	2291.00
Suriname	10.00		10,900.00	2500.00	
Taiwan		1.00			0.00
Tanzania	3595.00	7550.00	13,227.00	3267.00	10,579.00
Thailand	62,493.00	19,487.00	24,531.00	12,673.00	66,960.00
Togo	42.00				
Uganda	735.00	1188.00	912.00	662.00	121.00
United Kingdom	51,637,365.00	53,652,275.00	1,743,757.00	3,177,744.00	2,851,084.00
United States	17,775,545.00	14,860,892.00	11,411,050.00	6,451,065.00	5,716,376.00
Uruguay	40,277,868.00	33,446,813.00	43,324,833.00	21,610,225.00	21,651,365.00
Viet Nam	7,396,435.00	6,373,002.00	8,172,952.00	6,624,459.00	6,858,214.00
Yemen			240.00		

TABLE C.4 Coconuts, Brazil nuts and cashew nuts, fresh or dried (CN Code: 0801) whether or not shelled or peeled imported in 100 kg into the EU (27) from regions where *Coccus viridis* is known to occur (Source: Eurostat accessed on 08/10/2024).

Country	2019	2020	2021	2022	2023
Angola					16.00
Australia	309.00	2.00	8.00	5.00	43.00
Bangladesh			443.00	1768.00	2248.00
Barbados				15,968.00	
Benin	877,477.00	1,141,880.00	864,514.00	866,473.00	1,424,324.00
Bolivia	11,509,889.00	12,679,626.00	12,417,335.00	11,819,580.00	10,596,658.00
Brazil	5,992,459.00	7,571,561.00	4,556,033.00	4,152,015.00	4,649,943.00

TABLE C.4 (Continued)

Country	2019	2020	2021	2022	2023
Brunei		15,875.00			234.00
Burkina Faso	1,655,992.00	2,080,827.00	2,631,030.00	2,721,825.00	3,029,180.00
Cabo Verde					690.00
Cambodia	95.00	377.00	22,676.00	1357.00	15,698.00
Cayman Islands		5.00			
Colombia	62.00		517.00	23,479.00	1856.00
Congo	8.00			7.00	88.00
Costa Rica	955,716.00	649,974.00	932,174.00	677,256.00	784,523.00
Côte d'Ivoire	22,293,219.00	21,472,815.00	27,233,981.00	31,718,380.00	32,403,316.00
Cuba		11,700.00			
Dominican Republic	59,468.00	46,796.00	72,424.00	1789.00	117,878.00
Ethiopia			0.00	65.00	
French Polynesia	105.00				0.00
Ghana	1,508,942.00	2,076,902.00	2,059,764.00	1,154,882.00	2,482,648.00
Guatemala		22.00	2.00	12.00	1.00
Guinea	75,919.00	16,576.00	31,967.00	9167.00	40,005.00
Guinea-Bissau	305,173.00	441,520.00	422,509.00	601,669.00	625,574.00
Honduras	28,140.00	13,138.00	126,537.00	61,798.00	30,917.00
Hong Kong		24.00	45.00	145.00	420.00
India	20,569,306.00	17,213,865.00	12,696,809.00	10,908,874.00	17,492,121.00
Indonesia	25,964,402.00	23,872,048.00	35,425,962.00	26,154,760.00	18,716,828.00
Jamaica	26.00		7.00	2.00	1853.00
Japan				4.00	43.00
Kenya	24,449.00	119,189.00	173,417.00	93,192.00	231,198.00
Laos	23.00				0.00
Madagascar	42,635.00	52,437.00	99,183.00	72,193.00	109,692.00
Malaysia	232,906.00	441,177.00	836,684.00	795,478.00	736,363.00
Mali	100.00	13,201.00	1512.00	4549.00	144,455.00
Mauritius	176.00	2.00		172.00	413.00
Mexico	25.00	10.00	8230.00	189.00	1124.00
Myanmar/Burma		1000.00	6290.00	72,911.00	1.00
New Caledonia	162.00				481.00
Nicaragua	478,368.00	424,580.00	459,264.00	523,554.00	39,512.00
Nigeria	383,389.00	544,062.00	987,237.00	1,463,464.00	1,906,118.00
Pakistan	2460.00	2570.00	2733.00	945.00	4685.00
Panama			92.00	57,728.00	
Papua New Guinea				1.00	
Peru	231,831.00	366,935.00	597,431.00	513,361.00	584,728.00
Philippines	39,810,992.00	39,572,176.00	39,401,884.00	42,368,292.00	41,943,996.00
São Tomé and Principe	607.00	4903.00	8805.00	60.00	11235.00
Senegal	38,960.00	23,372.00	37,366.00	29,558.00	103,051.00
Seychelles			10.00	219.00	4.00
Sierra Leone	10.00			6000.00	3120.00
Singapore	726,220.00	384,387.00	704,764.00	363,926.00	355,174.00
South Africa	79.00	20,546.00	15,602.00	42,310.00	32,636.00
Sri Lanka	7,643,004.00	6,059,736.00	7,462,439.00	8,944,712.00	8,209,294.00
St Lucia	2.00		117.00		
Suriname	5738.00	10.00	5.00	4266.00	3349.00
Taiwan		1.00	941.00	171.00	0.00
Tanzania	193,129.00	180,005.00	371,503.00	460,523.00	644,838.00

(Continues)

TABLE C.4 (Continued)

Country	2019	2020	2021	2022	2023
Thailand	5,901,335.00	3,516,102.00	3,207,159.00	3,481,209.00	2,994,346.00
Togo	571,447.00	634,680.00	863,266.00	850,715.00	592,411.00
Tonga				16,670.00	
Uganda	361.00	190.00	410.00	111.00	3.00
United Kingdom	10,990,603.00	11,296,573.00	2,364,691.00	434,481.00	314,976.00
United States	51,155.00	84,558.00	145,747.00	43,641.00	198,006.00
Uruguay					37.00
Venezuela			180.00		
Viet Nam	96,789,387.00	117,797,448.00	128,566,519.00	122,085,853.00	131,224,494.00
Virgin Islands, United States	15,876.00				

TABLE C.5 Fresh or dried guavas, mangoes and mangosteens (CN Code: 080450) imported in 100 kg into the EU (27) from regions where *Coccus viridis* is known to occur (Source: Eurostat accessed on 08/10/2024).

Country	2019	2020	2021	2022	2023
Angola	65,815.00	35,150.00	52,266.00	45,471.00	44,197.00
Australia			1.00	9.00	154.00
Bangladesh	31,073.00	32391.00	153,810.00	255,142.00	544,216.00
Benin		22,679.00	259,032.00	416,137.00	420,608.00
Bolivia	4.00			33.00	1215.00
Brazil	143,756,920.00	157,704,399.00	179,901,286.00	157,087,614.00	177,107,128.00
Burkina Faso	6,535,419.00	6,440,444.00	6,034,055.00	10,738,440.00	7,744,022.00
Cambodia	153,379.00	90,449.00	63,164.00	143,658.00	323,075.00
Colombia	683,302.00	413,175.00	501,270.00	462,984.00	536,888.00
Comoros	9492.00				
Congo	41.00		713.00	19,777.00	1189.00
Costa Rica	1,283,062.00	1495,059.00	2,398,426.00	1,718,682.00	1,403,652.00
Côte d'Ivoire	28,161,027.00	23,015,491.00	27,408,591.00	29,728,544.00	27,027,920.00
Cuba	10,334.00	23,060.00	13,511.00	23,056.00	
Dominican Republic	11,850,800.00	11,048,133.00	16,121,709.00	11,994,703.00	17,548,354.00
Ethiopia			1450.00		
French Polynesia			17.00		0.00
Ghana	1,113,806.00	3,029,655.00	1,526,344.00	2,461,354.00	2,493,594.00
Guam		22,400.00			
Guatemala	1,095,340.00	809,952.00	756,728.00	63,943.00	82,942.00
Guinea	310,688.00	87,501.00	44,532.00	477,226.00	699.00
Honduras		4190.00	36.00		3330.00
Hong Kong		656.00	801.00	116.00	387.00
India	931,551.00	734,761.00	1,657,661.00	1,289,495.00	1,862,486.00
Indonesia	238,627.00	140,694.00	162,972.00	393,795.00	797,800.00
Japan		1.00	766.00	214.00	610.00
Kenya	1030.00	6653.00	149,711.00	478,067.00	837,406.00
Laos	80,650.00	52,532.00	28,598.00	17467.00	16,243.00
Madagascar	66.00	105.00	2064.00	140.00	8688.00
Malaysia	7272.00	4456.00	1901.00	198.00	964.00
Mali	9,182,906.00	8,545,870.00	5,809,670.00	6,935,451.00	6,110,213.00
Mexico	5,093,579.00	5,184,189.00	4,667,791.00	4,528,410.00	5,340,760.00
Myanmar/Burma	100.00				
Nauru				22,176.00	

TABLE C.5 (Continued)

Country	2019	2020	2021	2022	2023
New Caledonia					3.00
Nicaragua		22,400.00	22,400.00		1.00
Nigeria	195.00	3.00	2859.00	64.00	1380.00
Pakistan	2,920,733.00	1,619,650.00	1,973,288.00	1,733,987.00	2,969,906.00
Peru	101,283,488.00	118,783,517.00	120,772,601.00	123,412,675.00	110,065,216.00
Philippines	36,897.00	12,810.00	15,367.00	25,468.00	31,547.00
Rwanda			1859.00		
Senegal	12,525,279.00	8,896,902.00	17,283,295.00	10,203,617.00	10,345,532.00
Sierra Leone	5506.00				
Singapore	23.00	15.00	2.00	1.00	2.00
South Africa	1,211,695.00	865,628.00	577,796.00	2,261,245.00	1,303,033.00
Sri Lanka	81,383.00	42,316.00	54,013.00	95,135.00	50,289.00
St Kitts and Nevis		750.00			
Suriname	17,170.00			28.00	
Taiwan	1734.00	92.00	528.00	43.00	114.00
Tanzania	114.00		9.00	1642.00	679.00
Thailand	674,391.00	526,084.00	491,906.00	480,911.00	574,985.00
Togo	22,165.00	4000.00	562.00		132.00
Trinidad and Tobago			1.00		4.00
Uganda	66,225.00	38,956.00	66,880.00	69,893.00	43,041.00
United Kingdom	3,316,110.00	4,742,957.00	600,549.00	90,706.00	89,395.00
United States	8,258,054.00	8,285,221.00	5,111,101.00	6,254,963.00	6,491,125.00
United States Minor Outlying Islands			10,368.00	1728.00	2294.00
Venezuela	193,911.00	28,269.00	52,230.00	48,817.00	20,721.00
Viet Nam	154,669.00	96,531.00	276,109.00	474,589.00	494,692.00
Zambia		2304.00			

TABLE C.6 Fresh or dried pineapples (CN Code: 080430) imported in 100 kg into the EU (27) from regions where *Coccus viridis* is known to occur (Source: Eurostat accessed on 08/10/2024).

Country	2019	2020	2021	2022	2023
Angola	3024.00	5111.00	20,054.00	80,225.00	45,340.00
Australia	0.00	1.00		0.00	112.00
Bangladesh	126.00		4.00	50.00	142.00
Benin	748,167.00	1,287,578.00	1,318,029.00	1,400,336.00	2,897,414.00
Brazil	63,905.00	28,066.00	13,429.00	5094.00	24,873.00
Burkina Faso	1968.00	357.00	1012.00		662.00
Cambodia	50.00		170.00	126.00	83.00
Colombia	5,366,349.00	4,213,678.00	5,758,981.00	1,447,884.00	250,794.00
Congo		7.00	46.00	1372.00	16,561.00
Costa Rica	754,305,071.00	665,502,534.00	723,161,071.00	677,294,138.00	684,401,153.00
Côte d'Ivoire	24,417,593.00	203,55,253.00	25,554,295.00	25,009,029.00	15,961,620.00
Cuba	199,842.00	97,685.00	86,955.00	24.00	
Dominican Republic	2,056,635.00	2,052,591.00	2,689,446.00	1,328,677.00	309,720.00
French Polynesia	48.00	24.00		3.00	
Ghana	11,472,371.00	11,193,458.00	10,674,211.00	7,274,723.00	4,066,227.00
Guatemala	6403.00	28,250.00	12,800.00	20.00	145,937.00
Guinea	7290.00	1995.00	350.00		2771.00
Guyana		2200.00			
Honduras	1,526,316.00	3,297,712.00	3,517,421.00	3,170,498.00	3,019,664.00

(Continues)

TABLE C.6 (Continued)

Country	2019	2020	2021	2022	2023
Hong Kong			600.00	3.00	
India	1152.00	100.00	1168.00	8136.00	2926.00
Indonesia		250.00	69.00		8192.00
Jamaica				41.00	
Japan				1.00	16.00
Kenya	214,797.00	2,379,906.00	2,938,299.00	2,391,524.00	4,420,398.00
Madagascar	35.00	316.00	1976.00	1623.00	259.00
Malaysia	240.00		1040.00		36,000.00
Mauritius	1,572,437.00	884,538.00	1,656,713.00	1,276,510.00	1,210,605.00
Mexico	14,242.00	17,497.00	20,144.00	20,443.00	19,112.00
Myanmar/Burma	70,674.00	37,870.00	40,807.00		
New Caledonia					46.00
Nigeria	24.00	1.00		800.00	12.00
Panama	7,237,124.00	6,477,159.00	3,940,575.00	8,914,458.00	9,925,135.00
Peru	325,455.00	58,517.00	38,213.00	279,704.00	15,522.00
Philippines	8603.00	56,604.00	78.00	1852.00	4849.00
Rwanda	16,237.00	11,120.00	15,940.00	4300.00	17,171.00
Singapore	29.00			92.00	34.00
South Africa	746,018.00	603,845.00	524,683.00	1128,095.00	844,916.00
Sri Lanka	267,519.00	263,602.00	167,054.00	199,287.00	18,265.00
St Kitts and Nevis		750.00			
Suriname			11,250.00	1350.00	600.00
Taiwan	7.00	5.00	963.00		2038.00
Tanzania	15,083.00	18,737.00	194,129.00	33,473.00	17395.00
Thailand	805,649.00	882,872.00	905,425.00	1,134,665.00	877,612.00
Togo	2,619,588.00	1,591,463.00	1,811,040.00	1,248,095.00	964,497.00
Uganda	136,967.00	173,112.00	204,033.00	154,012.00	292,494.00
United Kingdom	26,869,483.00	19,038,328.00	765,890.00	80,917.00	120,921.00
United States	2828.00	5729.00	145,169.00	56,785.00	80.00
Venezuela	4.00				
Viet Nam	2020.00	218.00	13,047.00	2675.00	9404.00

APPENDIX D

List of predator and parasitoid species of *Coccus viridis*

(Source: Iverson et al., 2018; Liere & Perfecto, 2008; Mani et al., 2008; Mani, 2022; Nais & Busoli, 2012; Neumann et al., 2010; Ponsonby, 2009; Siregar & Tulus, 2023; Waller et al., 2007)

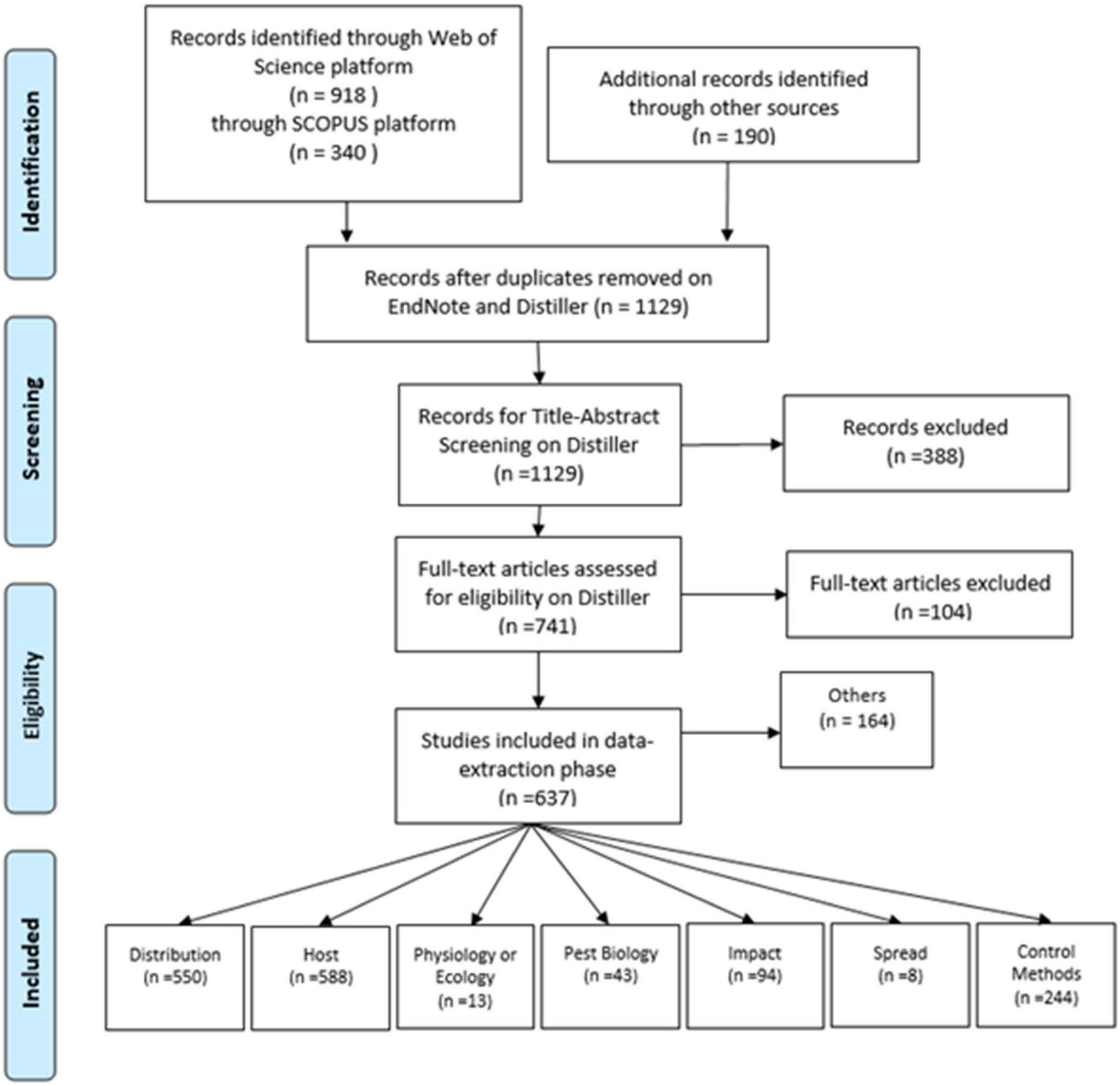
Anicetus annulatus, *A. ceylonensis* (Hymenoptera: Encyrtidae), *Aprostocetus gravans*, *A. minutus*, *A. purpureus*, *A. sicarius* (Hymenoptera: Eulophidae), *Azya lutipes* (Coleoptera: Coccinellidae), *Azya orbigera* (Coleoptera: Coccinellidae), *Cheilomenes sexmaculata* (Coleoptera: Coccinellidae), *Cheiloneuromyia javensis* (Hymenoptera: Encyrtidae), *Chilocorus adustus, C. angolensis, C. cacti, C. circumdatus, C. melanophthalmus, C. nigrita, C. politus, C. schioedtei* (Coleoptera: Coccinellidae), *Cephaleta australiensis*, *Cephaleta australiensis* var. *javensis* (Hymenoptera: Pteromalidae), *Cerapteroceroides* sp. (Hymenoptera: Encyrtidae), *Chilocorus adustus, C. angolensis, C. cacti, C. circumdatus, C. melanophthalmus, C. politus, C. schioedtei* (Coleoptera: Coccinellidae), *Chrysoperla externa* (Neuroptera: Chrysopidae), *Coccidiphaga scitula* (Lepidoptera: Noctuidae) *Coccophagus* sp., *C. rustii, C. bogoriensis, C. ceroplastae, C. cowperi, C. hawaiiensis, C. lycimnia*, *C. ochraceus* (Hymenoptera: Aphelinidae), *Cryptoblabes proleucella* (Lepidoptera: Pyralidae), *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae), *Curinus coeruleus* (Coleoptera: Coccinellidae), *Cybocephalus* sp. (Coleoptera: Nitidulidae), *Cycloneda sanguinea* (Coleoptera: Coccinellidae), *Diomus* sp. (Coleoptera: Coccinellidae), *Encarsia* sp., *Encarsia diaspidicola* (Hymenoptera; Aphelinidae), *Diadiplosis* sp. (Diptera: Cecidomyiidae), *Diversinervus silvestrii* (Hymenoptera: Encyrtidae), *Encyrtus aurantii* (Hymenoptera: Encyrtidae), *Eublemma costimacula*, *Eublemma* rubra (Lepidoptera: Noctuidae), *Exochomus ventralis* (Coleoptera: Coccinellidae), *Harmonia* sp. (Coleoptera: Coccinellidae), *Hyperaspis senegalensis, H. silvestrii* (Coleoptera: Coccinellidae), *Gahaniella saissetiae* (Hymenoptera: Encyrtidae), *Halmus chalybeus* (Coleoptera: Coccinellidae), *Jauravia pallidula* (Coleoptera: Coccinellidae), *Marietta caridei* (Hymenoptera: Aphelinidae), *Metaphycus baruensis, M. helvolus, M. lichtensiae, M. maculatus* (Hymenoptera: Encyrtidae), *Microterys nietneri* (Hymenoptera: Encyrtidae), *Myiocnema comperei* (Hymenoptera: Aphelinidae), *Neobrachista javae* (Hymenoptera: Trichogrammatidae), *Novius koebelei* (Coleoptera: Coccinellidae), *Olla v-nigrum* (Coleoptera: Coccinellidae), *Orcus* sp., *Orcus janthinus* (Coleoptera: Coccinellidae), *Phrynocaria quadrivittata* (Coleoptera: Coccinellidae), *Prochiloneurus* sp. (Hymenoptera: Encyrtidae), *Promuscidea unfasciativentris* (Hymenoptera: Aphelinidae), *Pseudocaecillius elutus africanus* (Psocodea: Pseudocaecilidae), *Rhyzobius ventralis* (Coleoptera: Coccinellidae), *Scymnus* sp. (Coleoptera: Coccinellidae), *Synona inaequalis* (Coleoptera: Coccinellidae), *Tetrastichus* sp., *T. ibseni* (Hymenoptera: Eulophidae), *Telsimia* sp. (Coleoptera: Coccinellidae).

APPENDIX E

Prisma 2009 Flow Diagram

Name of the Pest: *Coccus viridis*
Date of the search: 03/01/2025

Approved Literature Search String: "Coccus viridis" OR "Lecanium viride" OR "Lecanium viridis" OR "Eulecanium viridis" OR "green coffee scale" OR "escama verde" OR "green scale" OR "lapa-verde" OR " Cochenille verte du caféier" OR "cochinilla verde del café" OR "cochonilha-verde" OR "groene dopluis" OR "Grüne Kaffeeschildlaus" OR "midori-kata-kaigaramushi" OR "escamas del café" OR "groene koffieluis" OR "groene dopluis".



From: Moher et al. (2009). For more information, visit www.prisma-statement.org.