Express Pest Risk Analysis for *Aleurocanthus spiniferus*

Summary of the Express Pest Risk Analysis for "*Aleurocanthus spiniferus*"			
PRA area: Italy			
Describe the endangered area: As of today, 16 Italian regions are affected: Sicily, Sardinia, Apulia, Calabria, Campania, Basilicata, Umbria, Abruzzo, Lazio, Marche, Tuscany, Emilia-Romagna, Liguria, Lombardy, Veneto, and Friuli–Venezia Giulia.			
Main conclusion: The species is widely distributed throughout Italy, where it has become permanently established. The pest is not responsible for significant economic impacts in the areas where it occurs. The species is kept under control through common agricultural practices in productive environments, also thanks to the presence of abundant natural enemies. The probability of spread to the remaining parts of the Italian territory not yet affected by the presence of the pest is high. The probability of economic, environmental, and social impact caused by the pest is low.			
Phytosanitary risk for the *endangered area*	High ☐	Moderate ☐	Low X
Level of uncertainty of assessment	High ☐	Moderate ☐	Low X
Other recommendations: To assess whether *Aleurocanthus spiniferus* meets the requirements to be considered a Unionquarantine pest.			

Document drafted by: Sabrina Bertin, Elisabetta Gargani, Roberto Rizzo of the Council for Agricultural Research and Agricultural Economics Analysis, Research Centre for Plant Protection and Certification (CREA-DC), and in collaboration with the Working Group "*Aleurocanthus spiniferus*" appointed by the National Phytosanitary Committee (CFN), ref. no. 0530367 of 8/10/2025.

Date – 27/11/2025

Stage 1. Introduction

Reason for performing the PRA:
In the PRA area, a stable infestation of the harmful organism is present, and the conditions set out in Annex section 1, points 2 and 4 of Regulation (EU) 2016/2031 are no longer met.
PRA area: Italy

Stage 2. Pest risk assessment

1. Taxonomy

- Phylum: Arthropoda (1ARTHP)
- Class: Insecta (1INSEC)
- Order: Hemiptera (1 HEMIO)
- Suborder: Sternorrhyncha (1STERR)
- Family: Aleyrodidae (1 ALEYF)
- Genus: *Aleurocanthus* (1 ALECG)
- Species: *Aleurocanthus spiniferus* (Quaintance) (ALECSN)

Synonyms: *Aleurocanthus cheni* Young; *Aleurocanthus citricolus* (Newstead); *Aleurocanthus rosae* Singh; *Aleurodes citricola* Newstead; *Aleurodes spinifera* Quaintance

Common names: citrus mealywing; citrus spiny whitefly; spiny blackfly; aleurode épineux du citronnier (French); aleurodide spinoso degli agrumi (Italian)

There is no evidence of intraspecific diversity in *A. spiniferus* (distinct phylogenetic groups within the species have been reported, but no associations between these groups and different biological traits have been identified).

2. Pest overview

2.1 Morphology

The species *A. spiniferus* has three developmental stages: egg, nymph, and adult.
The eggs are slightly elongated, approximately 0.2 mm in size, laid in a spiral pattern and attached by a short pedicel to the underside of leaves; they are initially yellowish and become darker close to hatching time.
The juvenile stages range in colour from dark brown to black and are characterized by a fringe of short white waxy filaments and by the presence of conspicuous glandular spines along the margin and in the submedian dorsal area. The first nymphal instar is mobile, with well-developed and functional three segmented legs ended by a claw and two long and shorter dorsal spines. All subsequent immature stages are sessile, have non-functional legs, and possess numerous dark dorsal spines. The fourth developmental stage (puparium) has the characteristic shape of a small black disc with numerous dorsal spines, surrounded by a white fringe of waxy secretion. Adults of *A. spiniferus* are winged, and females (1.7 mm in length) are larger than males (1.35 mm). The wings are dark grey immediately after moulting and subsequently develop a metallic grey-blue sheen with light spots.

2.2 Biology cycle

Depending on climatic conditions, the biological cycle of *A. spiniferus* generally lasts from two to four months; the whitefly can complete from three to six overlapping generations over the course of the year. Juvenile stages exhibit gregarious behaviour and may form colonies on the underside of leaves. The whitefly overwinters as a third-instar nymph or as a puparium, preferably on plants that do not shed their leaves, such as citrus and evergreen ornamentals.
The climatic conditions most favourable to the development of *A. spiniferus* include a temperature range between 20 and 34 °C, with an optimum at 25.6 °C, and a relative humidity of 70–80%; such conditions are compatible with several areas of the Italian territory. The species is sensitive to extreme temperatures, below 0 °C and above 40 °C.

2.3 Host plants

Among the host plants of *A. spiniferus* there are more than 100 plant species belonging to 38 families (Nugnes et al., 2020). Citrus (*Citrus* spp.) are the main hosts of economic importance, but *A. spiniferus* has also been reported on other crops such as grapevine (*Vitis vinifera*), guava (*Psidium guajava*), pear (*Pyrus* spp.), persimmon (*Diospyros kaki*), and rose (*Rosa* spp.). The whitefly has also been recorded on several species of Vitaceae, Araliaceae, Ebenaceae, Malvaceae, Lauraceae, Moraceae, Punicaceae, and Rosaceae in urban environments, parks, and protected natural habitats.

2.4 Dispersal ability

As with other congeneric species, adults of *A. spiniferus* are capable of limited downwind flights (187 m in 24 hours), which allow for dispersal only between plants within the same field or in adjacent fields. Among the juvenile stages, the first-instar nymph is the only one capable of active movement, albeit only over short distances.The rapid spread of *A. spiniferus* is facilitated by the wind and the accidental transport carried out by vehicles.

Therefore, natural spread cannot be considered a factor in the long-distance dispersal of the species, which is instead facilitated by humans through the trade of host plants or parts of them.

2.5 Symptoms and damage

The direct damage caused by *A. spiniferus* is primarily associated with the feeding activity of juvenile stages, which feed on phloem sap and may, in some cases, result in reduced plant growth and/or malformations of leaves and shoots. Indirect damage is linked to the abundant production of sugary honeydew that, by coating fruits and leaves, promotes the development of sooty mold. When infestations involve fruit-bearing species, a consequent reduction in fruit marketability and quality may occur.

2.6 Species identification

The species *A. spiniferus* can be detected through visual inspection of the abaxial surface of leaves of potential host plants, where the sessile juvenile stages can be readily observed. The presence of abundant honeydew and sooty mold may also indicate an infestation by *A. spiniferus*; however, these symptoms are non-specific and may also be caused by other phloem-feeding insects, particularly aphids or scale insects. Yellow chromotropic sticky traps show lower sensitivity in pest monitoring compared with visual inspections, especially when infestation levels are low.

For official diagnosis and unambiguous species determination, further laboratory analyses are required, including light microscopy observations following careful specimen preparation, or molecular analyses. As for all species belonging to the family Aleyrodidae, morphological identification at the genus level is based on examination of the puparium (Martin et al., 2000). The EPPO Standard PM 7/007 (2) (2022) describes the morphological characteristics used for the identification of *A. spiniferus*. However, species identification is complicated by the fact that *A. spiniferus* may be confused with other species of the genus *Aleurocanthus* like *A. woglumi* and *A. citriperdus*. Therefore, confirmation of morphological identification by a specialist is strongly recommended.

EPPO Standard PM 7/129 (2) also reports the possibility of identifying *A. spiniferus* by DNA barcoding, based on analysis of the mitochondrial cytochrome C oxidase subunit I (mtCOI) gene sequence (EPPO, 2021). The EPPO Q-bank (https://qbank.eppo.int/) contains 12 reference mtCOI (5′ end) sequences derived from Italian specimens. The primers used to amplify a 682 bp fragment of the same gene are reported in Uesugi & Sato (2011), while PCR conditions are described in Uesugi et al. (2016). A slightly modified protocol was used by Kapantaidaki et al. (2019).

3. Is the pest a vector? **Yes** ☐ **No** X

4. Is a vector needed for pest entry or spread? **Yes** ☐ **No** X

5. Regulatory status of the pest

Aleurocanthus spiniferus is listed as a Union quarantine pestand known to be present in the territory of the Union (EPPO A2 List), in accordance with Commission Implementing Regulation (EU) 2019/2072. Commission Implementing Regulation (EU) 2025/1075 amended the former Implementing Regulation (EU) 2022/1927 with respect to the designation of demarcated areas established for the containment of the pest. In several Italian Regions, official Action Plans have been adopted by the National Plant Protection Committee in accordance with Article 31(5) of Legislative Decree No. 19/2021.

6. Distribution

Aleurocanthus spiniferus is a species native to Southeast Asia, and is widespread in tropical and subtropical Asia, Africa, Oceania, and some Pacific islands. In Europe, it is present in Croatia, Montenegro, Greece, Albania, Italy, and France.

Continent	***Distribution****	***Country/State***
Africa	Present	Eswatini, Kenya, Mauritius, Nigeria, Réunion, South Africa, Tanzania, Uganda.
America	Present	Hawaii (restricted distribution).
Asia	Present	Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, India, Indonesia, Iran, Japan, South Korea, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam.
Europe	Present	Albania, Austria (transient), Croatia, France, Georgia, Greece, **Italy**, Montenegro. Eradicated in Belgium, Netherlands and Czechia
Oceania	Present	Australia, Guam, Micronesia, Islands, Northern Mariana Islands, Palau, Papua New Guinea.

*EPPO Global Database November 2025

Distribution in Italy (PRA area)

This species was first reported in Italy at the end of 2008 in a citrus orchard in the Province of Lecce (Porcelli, 2008). Subsequently, it has spread throughout the Apulia Region (Cioffi et al., 2013; El Kenawy et al., 2014) and in several other Regions, mainly in Central and Southern Italy. At present, more than 110 active outbreaks of *A. spiniferus* are recorded in Italy.

The list of records of *A. spiniferus* in the different Italian Regions from 2008 to the present (data updated to October 2025) is provided below (European Union Notification System for Plant Health Interceptions - EUROPHYT 2025; https://food.ec.europa.eu/plants/plant-health-and-biosecurity/europhyt_en).

REGION	**PROVINCE**	**FIRST RECORD**	**HOST PLANT**
Abruzzo			
	Chieti	2022	*Citrus* spp., *Vitis vinifera*
	Pescara	2022	*Rosa* spp., *Vitis vinifera*
	Teramo	2022	*Citrus* spp.
Basilicata			
	Matera	2019	*Citrus* spp., *Pyracantha* spp.
Calabria			
	Reggio Calabria	2023	*Citrus* spp.
	Cosenza	2025	*Citrus* spp.
	Catanzaro	2025	*Citrus* spp.
Campania			
	Caserta	2017	*Ceratonia siliqua*, *Citrus* spp., *Cydonia oblonga*, *Hedera helix*, *Prunus cerasus*, *Rosa* spp., *Vitis vinifera*.
	Naples	2017	
	Salerno	2017	
	Benevento	2024	
Emilia-Romagna			
	Modena	2018	*Rosa* spp., *Pyrus* spp., *Malus* spp., *Prunus* spp., *Citrus* spp., *Vitis* spp., *Pyracantha* spp., *Photinia* sp.
	Bologna	2018	

	Ravenna	2018	*Pyracantha* spp., *Vitis* spp., *Crataegus* sp., *Photinia* sp., *Cotoneaster* sp., *Cercis siliquastrum*, *Parthenocissus* spp.
	Forlì-Cesena	2022	*Clematis vitalba*
	Parma	2023	*Pyracantha* spp., *Pyrus* spp., *Parthenocissus* sp., *Crataegus* sp., *Rosa* spp.
	Reggio Emilia	2023	*Vitis* spp.
	Ferrara	2023	*Quercus ilex*
Friuli Venezia Giulia			
	Gorizia	2025	*Rosa* spp., *Hedera helix*
Lazio			
	Rome (all municipalities in the province are in the infested zone)	2017	*Citrus* spp., *Hedera helix*, *Rosa* spp.
	Latina (all municipalities in the province are in the infested zone)	2023	
Liguria			
	Genova	2021	*Parthenocissus* spp., *Citrus* spp., *Hedera helix*
	La Spezia	2023	*Rosa* spp., *Citrus* spp., *Crataegus* sp., *Fatsia* spp., *Punica granatum*, *Akebia quinata*
	Savona	2024	*Citrus* spp.
Lombardy			
	Brescia	2022	*Citrus* spp., *Rosa* spp., *Hedera helix*, *Photinia* spp., *Pyracantha* spp.
	Mantua	2022	*Rosa* spp., *Hedera helix*, *Vitis* spp., *Photinia* spp., *Pyracantha* spp., *Crataegus* spp., *Citrus* spp.
	Milan	2022	*Citrus* spp., *Pyracantha* spp., *Hedera helix*
	Bergamo	2022	*Citrus* spp., *Pyracantha* spp.
Marche			
	Ascoli Piceno	2022	*Citrus* spp., *Rosa* spp., *Hedera helix* *Magnolia* sp., *Ficus carica*, *Arbutus unedo*, *Pyracantha* sp., *Punica granatum*, *Prunus laurocerasus*, *Poncirus* sp., *Photinia* sp., *Myrtus communis*, *Vitis* sp.
	Ancona	2024	*Citrus* spp., *Rosa* spp., *Laurus nobilis*, *Myrtus communis*, *Ficus carica*, *Prunus* sp., *Ailanthus altissima*, *Hedera helix*, *Pyracantha* sp., *Clematis vitalba*, *Vitis* sp., *Cercis siliquastrum*, *Crataegus* sp., *Punica granatum*, *Photinia* sp., *Arbutus unedo*
	Macerata	2024	

	Fermo	2024	*Citrus* spp.
	Pesaro-Urbino	2025	*Citrus* spp.
Apulia			
	Lecce (all municipalities in the province are in the infested zone)	2008	*Vitis* spp., *Citrus* spp., *Malus* spp., *Pyrus* spp., *Rubus fruticosus*
	Taranto	2023	
	Bari	2023	
	Foggia	2023	
	Brindisi	2023	
	Barletta-Andria-Trani	2023	
Sardinia			
	Cagliari	2025	*Citrus* spp., *Parthenocissus* sp., *Hedera* sp.
Sicily			
	Catania	2021	*Citrus* spp., *Rosa* spp.
	Siracusa	2021	*Citrus* spp., *Vitis vinifera*, *Rosa* spp.
	Palermo	2022	*Citrus* spp., *Rosa* spp., *Punica granatum*, *Myrtus communis*, *Parthenocissus tricuspidata*
	Messina	2023	*Citrus* spp.
	Caltanissetta	2023	*Citrus* spp.
	Trapani	2024	*Citrus* spp., *Hibiscus* spp.
Tuscany			
	Prato	2020	*Prunus laurocerasus*, *Pyracantha* sp., *Citrus* spp., *Pyrus* spp., *Fortunella* spp., *Cotoneaster* spp., *Rosa* spp., *Hedera helix*, *Malus* spp., *Fatsia japonica*, *Punica granatum*, *Vitis* spp., *Crataegus* spp., *Parthenocissus* spp., *Aesculus hippocastanum*, *Chaenomeles* spp., *Photinia* spp.
	Florence	2020	
	Livorno	2021	*Citrus* spp., *Rosa* spp., *Vitis* spp.
	Grosseto	2023	*Citrus* spp., *Hedera helix*, *Rosa* spp., *Vitis* spp., *Parthenocissus* spp.
	Pistoia	2023, eradicated outbreak	*Fatsia japonica*
	Massa-Carrara	2023	*Hedera helix*, *Citrus* spp., *Pyracantha* spp., *Prunus laurocerasus*, *Fatsia* spp., *Rosa* spp.
	Pisa	2023	*Hedera helix*, *Citrus* spp., *Pyracantha coccinea*, *Fatsia japonica*
Umbria			
	Perugia	2022	*Vitis vinifera*, *Hedera helix*, *Crataegus monogyna*, *Pyracantha coccinea*, *Laurus nobilis*, *Punica granatum*, *Euonymus europaeus*, *Rosa* spp., *Citrus* spp., *Clematis* spp.

Veneto			
	Rovigo	2024	*Hedera helix*, *Parthenocissus* spp.

Currently, *A. spiniferus* is not present in the following Italian Regions: Piedmont, Aosta Valley, Molise, and in the Autonomous Provinces of Trento and Bolzano.

7. Host plants and their distribution in the PRA area

Aleurocanthus spiniferus is a highly polyphagous species and has been recorded on more than 100 plant species belonging to 38 botanical families (Nugnes et al., 2020). This whitefly is considered an important phytophagous pest of plants of the genus *Citrus*, both in its area of origin and in Australia, as well as in the Nearctic region. In Europe, in addition to citrus, *A. spiniferus* has been recorded on a wide range of host plants, including economically important fruit and ornamental species, as well as species occurring in urban environments, parks and protected natural habitats.

The list of host plants of *A. spiniferus* (https://gd.eppo.int/taxon/ALECSN/hosts) is provided below and is divided into species known to be present and of economic importance in Italy (PRA area) and species that are absent or have a limited distribution in the country. This list should be considered non-exhaustive and subject to continuous updating; the pest may likely be able to develop on additional plant species whose susceptibility is not currently known.

Host plants in PRA area	
Rutaceae	**Ebenaceae**
Citrus sp.	*Diospyros kaki*
Citrus medica **(major host)**	**Ericaceae**
Citrus reticulata **(major host)**	*Arbutus unedo*
Citrus x aurantium var. sinensis **(major host)**	*Rhododendron latoucheae*
Citrus x limon **(major host)**	**Fabaceae**
Citrus x aurantium	*Ceratonia siliqua*
Citroncirus sp.	*Wisteria sinensis*
Fortunella sp.	**Lauraceae**
Rosaceae	*Cinnamomum camphora*
Cydonia sp.	*Laurus nobilis*
Eriobotrya japonica	*Persea americana*
Malus spp.	**Lythraceae**
Mespilus germanica	*Punica granatum*
Photinia x fraseri	**Malvaceae**
Prunus armeniaca	*Gossypium sp.*
Prunus avium	*Hibiscus cannabinus*
Prunus cerasus	*Hibiscus rosa-sinensis*
Prunus domestica	*Malva sp.*
Prunus persica	**Moraceae**
Prunus serotina	*Ficus carica*
Pyracantha coccinea	*Ficus sp.*
Pyrus communis	*Morus alba*
Pyrus pyraster	**Myrtaceae**
Pyrus pyrifolia	*Psidium guajava*
Rosa sp.	**Ranunculaceae**
Rosa banksiae	*Clematis vitalba*
Rosa chinensis	**Rubiaceae**
Rosa indica	*Gardenia jasminoides*
Rosa x damascena	**Salicaceae**
Anacardiaceae	*Salix spp.*

Pistacia vera	**Simaroubaceae**
Araliaceae	*Ailanthus altissima*
Fatsia spp.	**Vitaceae**
Hedera helix	*Parthenocissus tricuspidata*
Schefflera sp.	*Vitis vinifera*

Other host plants not relevant in PRA area	
Altingiaceae: *Liquidambar formosana*	**Lecythidaceae:** *Barringtonia acutangula*
Annonaceae: *Annona muricata; A. reticulata*; *A. squamosa x atemoya; Rollinia mucosa*	**Malvaceae:** *Hibiscus tiliaceus*; *Urena lobata*
Apocynaceae: *Plumeria rubra*	**Meliaceae:** *Toona ciliata*
Arecaceae: *Cocos nucifera*	**Moraceae:** *Ficus racemosa*; *Ficus sur*; *Streblus sp.*
Asteraceae: *Synedrella nodiflora*	**Myricaceae:** *Myrica rubra*
Betulaceae: *Alnus formosana*	**Myrtaceae:** *Syzygium samarangense*
Cannabaceae: *Aphananthe philippinensis*	**Pentaphylacaceae:** *Eurya japonica*
Chrysobalanaceae: *Maranthes corymbosa*	**Piperaceae:** *Piper kadsura*
Convolvulaceae: *Erycibe henryi*	**Primulaceae:** *Maesa perlarius*
Ebenaceae: *Diospyros maritima*	**Rubiaceae:** *Gardenia jasminoides*
Elaeocarpaceae: *Sloanea dasycarpa*	**Rutaceae:** *Flindersia sp.*; *Murraya koenigii*; *Zanthoxylum nitidum*
Euphorbiaceae: *Macaranga tanarius; Manihot esculenta; Triadica sebifera*	**Sabiaceae:** *Meliosma rigida*
Fabaceae: *Bauhinia championii*; *Entada phaseoloides*; *Senna siamea*; *Vigna unguiculata subsp. sesquipedalis*	**Salicaceae:** *Casearia aculeata; Scolopia oldhamii; Xylosma congesta*
Lardizabalaceae: *Akebia longeracemosa*; *A. quinata*; *A. trifoliata*	**Sapindaceae:** *Cupaniopsis anacardioides; Ganophyllum falcatum*
Lauraceae: *Machilus zuihoensis*; *Phoebe formosana*	**Urticaceae:** *Boehmeria virgata var. Densiglomerata; Boehmeria zollingeriana var. blinii*

In Italy, *A. spiniferus* has also been reported on additional host plants, including *Crataegus* spp., *Cotoneaster* spp., *Cercis siliquastrum*, *Myrtus communis*, *Rubus fruticosus*, *Prunus laurocerasus*, *Aesculus hippocastanum*, *Chaenomeles* spp., *Euonymus europaeus* and *Quercus ilex*.

Commission Implementing Regulation (EU) 2019/2072 and subsequent amendments introduced by Commission Implementing Regulation (EU) 2021/2285 lay down specific requirements for the introduction and movement within the territory of the EU of the following host plants of *A. spiniferus*: plants for planting of *Citrus* L., *Fortunella* Swingle, *Poncirus* Raf., and their hybrids, *Diospyros kaki* L., *Ficus carica* L., *Hedera helix* L., *Laurus nobilis* L., *Magnolia* L., *Malus* Mill., *Melia* L., *Mespilus germanica* L., *Parthenocissus* Planch., *Prunus* L., *Psidium guajava* L., *Punica granatum* L., *Pyracantha* M. Roem., *Pyrus* L., *Rosa* L., and *Vitis vinifera* L. (excluding seeds, pollen and plants in tissue culture).
Commission Implementing Regulation (EU) 2022/1927 includes the following host plants in the measures for the containment of *A. spiniferus* within designated demarcated areas: plants for planting of *Citrus* L., *Fortunella* Swingle, *Poncirus* Raf., and their hybrids, *Ceratonia siliqua* L., *Cercis siliquastrum* L., *Clematis vitalba* L., *Cotoneaster* Medik., *Crataegus* L., *Cydonia oblonga* L., *Diospyros kaki* L., *Eriobotrya japonica* (Thunb.) Lindl., *Ficus carica* L., *Hedera* L., *Magnolia* L., *Malus* Mill., *Melia* L., *Mespilus germanica* L., *Myrtus communis* L., *Parthenocissus* Planch., *Photinia* Lindl., *Prunus cerasus* L., *Prunus laurocerasus* L., *Psidium guajava* L., *Punica granatum* L., *Pyracantha* M. Roem., *Pyrus* L., *Rosa* L., *Vitis* L. and *Wisteria* Nutt. (excluding seeds, pollen and plants in tissue culture).

8. Pathways for entry
The main pathways of introduction identified for *A. spiniferus* are the movement of:

• host plants for planting, excluding seeds;
• host cut flowers or branches.

The Regulation (EU) 2019/2072 prohibits (Annex VI ,points 8 to 12) or regulates the entry, after request of the Phytosanitary Certificate (Annexes XI and XII), of some host plants of *A. spiniferus* and their products into the EU and, consequently, into the PRA area.
The Regulation (EU) 2021/2285 amends and supplements Annexes VII (point 30.1) and VIII (point 17.1) of the previous Regulation (EU) 2019/2072 with specific prohibitions and requirements for some host plants of *A. spiniferus*.

Aleurocanthus spiniferus is known to infest leaves attached to fruits of plant hosts, notably *Citrus* spp. However, the marketed fruits of the main host plants belonging to the genera *Citrus* spp. and *Fortunella* spp. and their related hybrids originating from third countries shall be free from peduncles and leaves and the packaging shall bear an appropriate origin mark (Implementing Regulation (EU) 2019/2072, Annex VII, point 57). Therefore, the introduction of the pest through the commercial trade of host fruits is limited. Moreover, the fruits are inspected and washed before being moved within the EU, further reducing the likelihood of this pathway of entry. Indeed, none of the *Aleurocanthus* species were classified as potentially at risk of introduction through imports of oranges and mandarins into the EU (Suffert et al., 2018).

The current EU legislation regulating or prohibiting the movement of the main host plants of *A. spiniferus* reduces the likelihood of entry into the PRA area from both third countries and other countries within EU. However, not all the host plants are subject to such regulations, and the movement of ornamental plants, or parts of them, coming from infested areas still represents a possible pathway of entry for *A. spiniferus*. On the other hand, the phytosanitary measures should ensure the safety of all exported products. **Therefore, the likelihood of pest's entry into the PRA area is considered moderate, with a low level of uncertainty. Given the widespread distribution of the pest in the PRA area, it should be noted that further new entries would not significantly modify its impact on the Italian territory.**

Rating of the likelihood of entry	*Low* ☐	*Moderate* X	*High* ☐
Rating of uncertainty	*Low* X	*Moderate* ☐	*High* ☐

9. Likelihood of establishment outdoors in the PRA area
Aleurocanthus spiniferus originates from tropical areas. However, this species has shown to adapt to a wide range of climatic and environmental conditions, including those of the PRA area.

9.1 Host plants
Many plant species reported as hosts of *A. spiniferus* occur in the EU. Some of them are cultivated (e.g. *Citrus* spp., *Vitis vinifera*) and ornamental plants or plants present in parks, recreational areas, and public and private gardens. The presence of many potential hosts in the EU territory has favoured the establishment of *A. spiniferus* into the PRA area. Many of these plant species have been reported as hosts for the first time in Italy (Cioffi et al., 2013), demonstrating that, following its introduction, the whitefly was able to adapt to new hosts and to further expand the range of plants for reproduction.

9.2 Climatic conditions
The climatic conditions optimal for the development of *A. spiniferus* are temperatures ranging between 20 and 34°C, with an optimum at 25.6°C, and a relative humidity of 70-80%. These conditions occur in several Italian areas, and the species is established in most of the Central and Southern regions. Although it cannot develop at extreme temperatures below 0°C, *A. spiniferus* showed a higher tolerance to low temperatures than the related species, such as *Aleurocanthus woglumi* (Nguyen, 2022).
The availability of host plants and the climatic conditions have not limited the establishment of *A. spiniferus* in a large part of the PRA area and are not expected to hinder its further spread in the areas of Northern Italy where no findings are yet known. **Therefore, the likelihood of pest's establishment in the PRA area is considered high, with a low level of uncertainty.**

Rating of the likelihood of establishment outdoors	*Low* ☐	*Moderate* ☐	*High* X
Rating of uncertainty	*Low* X	*Moderate* ☐	*High* ☐

10. Likelihood of establishment in protected conditions in the PRA area

Given the above-mentioned host range, protected crops are not a target of *A. spiniferus*.

11. Spread in the PRA area

11.1 Natural spread

Adults of *A. spiniferus* are capable of limited downwind flights (187 m in 24 hours), which only allow dispersal to plants in the same or adjacent fields. Among the nymphs, the first instar is the only one that can move actively, albeit only over short distances. Hence, natural spread cannot be considered an important source of long-range dispersal.

11.2 Human assisted spread

The spread of *A. spiniferus* over long distances mainly occurs through the commercial trade of host plants and plant products. Meyerdink et al. (1979) mentioned cars or people as potential vehicles for the long-distance movement of *A. spiniferus* adults. Within the PRA area, the species has rapidly spread across Southern and Central Italy over hundreds of kilometres in just a few years. Since it was first reported in 2008 in Apulia (El Kenawy et al., 2014), *A. spiniferus* was found in the urban area of Salerno (Campania) in June 2017, and in both public and private gardens of the municipality of Rome (Lazio) in July of the same year. The following year, the species was found in Emilia-Romagna, in Basilicata in 2019, in Tuscany in 2020, in Liguria and Sicily in 2021, and gradually in other regions. The pathway of spread was not always clearly identified, but the movement of host plants is considered the main route.

In conclusion, the likelihood of spread of *A. spiniferus* over long distances through infested plant material is considered high with a low level of uncertainty.

Rating of the magnitude of spread	*Low* ☐	*Moderate* ☐	*High* X
Rating of uncertainty	*Low* X	*Moderate* ☐	*High* ☐

12. Impact in the current area of distribution

12.1 Nature of the damage

As reported in section 2.5, infestations of *A. spiniferus* may be responsible for a general weakening of the host plant. This decline is due to the sap sucking occurring during the trophic activity of nymphs, and to the significant reduction in photosynthetic activity caused by the sooty mold that develops after high infestations. When infestations involve fruit-bearing species, a consequent reduction in fruit marketability and quality may occur.

12.2 Observed impact

In the areas of Africa, America and Asia where *A. spiniferus* is present, most of the economic losses are related to citrus plants. Further damage is ascribable to the production and marketing of ornamental plants, as reported in Florida and India (El Kenawy et al., 2014; Gyeltshen et al., 2025).

The infestations of *A. spiniferus* in urban environments and in public and private parks and gardens are primarily responsible for a visual and landscape impact that is due to the blackening produced by sooty mold covering leaves and branches of the host plants.

12.3 Existing control measures

Chemical control has been shown to be ineffective against *A. spiniferus* (Gyeltshen and Hodges, 2010). Furthermore, it has been observed that frequent insecticide treatments, performed with improper timing, can negatively impact the populations of natural enemies, further increasing the extent of *A. spiniferus* infestations (Zhang et al., 2006).

Several species of both predators and parasitoids have proven effective in containing *A. spiniferus* populations in the areas where the pest is widespread. Predators include several species of dipterans, neuropterans and coccinellids, but these have a polyphagous behaviour and they can also prey on congeneric species such as *A. woglumi* (Evans, 2007). Hymenopteran parasitoids currently represent the most effective and sustainable way for the control of *A. spiniferus*. At least ten species are reported as potential parasitoids of *A. spiniferus*: *Ablerus connectans* Silvestri, *Encarsia smithi* (Silvestri) and *Eretmocerus* spp. (family Aphelinidae) and *Amitus hesperidum* Silvestri (family Platygastridae). The species *E. smithi* has been successfully used in Japan (Kuwana and Ishii, 1927; Ohgushi, 1969), Hawaii (Clausen, 1978; Cioffi et al., 2013), Micronesia (Muniappan et al., 1992) and Southern Africa (van den Berg & Greenland, 1997) in biological control programmes; the same species, together with *A. hesperidum*,

has proven effective in containing *A. spiniferus* in Guam on citrus fruits, but not on rose and vine (Clausen, 1978).

Rating of the magnitude of impact in the current area of distribution	*Low* ☐	*Moderate* X	*High* ☐
Rating of uncertainty	*Low* X	*Moderate* ☐	*High* ☐

13. Impact in the PRA area

13.1 Observed impact

Since 2008, *A. spiniferus* has spread in several Italian areas, firstly in Southern and subsequently in Central and Northern regions. To date, the whitefly has been reported in 16 Italian regions (Sicily, Sardinia, Apulia, Calabria, Campania, Basilicata, Umbria, Abruzzo, Lazio, Marche, Tuscany, Emilia-Romagna, Liguria, Lombardy, Veneto, Friuli-Venezia Giulia). To gain a general picture of the pest impact in the different areas, a questionnaire was provided to the Regional Phytosanitary Services of those regions where the pest is present. The Phytosanitary Services provided monitoring data regarding the pest distribution across the regional territories, and data on insecticide treatments and other control methods. They also provided an estimate of the economic, environmental and social impact of the ongoing infestations.

In all regions, most of the *A. spiniferus* reports are from urban areas: parks, public and private gardens, and roadside trees. Such infestations are mostly related to *Citrus* spp. and to several other ornamental host species. These plants have exclusively a landscape and recreational value, and the whitefly infestations are not responsible for direct economic damage to plant production but only for aesthetic damage due to the sooty mold. On the other hand, all regions agreed that the applied phytosanitary measures can be more impactful than the infestations themselves. Moreover, in many cases the insecticide treatments cannot be performed because of the rules set out in the National Action Plan for the Sustainable Use of Phytosanitary Products (NAP), which severely limits the use of pesticides in areas frequented by people and vulnerable groups such as the urban environment. Finally, it was pointed out that there are currently no licensed insecticide formulations targeting *A. spiniferus* in urban greenery.

Plants of the genus *Citrus* are among the main hosts of *A. spiniferus* and this has mainly concerned the citrus-growing productions of Southern regions, such as Sicily, Apulia, Basilicata and Calabria, as well as smaller areas of Liguria. In general, the economic impacts on citrus production are almost zero, with no drops in production yield. Moreover, the treatments performed against several phytophagous insects, such as *Dialeurodes citri*, *Aleurothrixus floccosus* and *Aonidiella aurantii*, may contribute to control also the population of *A. spiniferus*. Only in Sicily, the treatments required to reduce the aesthetic damage on fruits produced a slight increase in costs.

For the wine sector, records of *A. spiniferus* infestations have been sporadic in Apulia, Abruzzo, Campania, Marche, Umbria, and Emilia-Romagna, and no damage has been reported.

Finally, the other sector at risk of economic damage is the production of ornamental plants in nurseries. Also in this case, the records occurred in Apulia, Tuscany, Lazio, Marche and Emilia-Romagna showed that the official control measures are sufficient to control the pest.

13.2 Current control measures

The answers to the questionnaire distributed to the Regional Phytosanitary Services showed that *A. spiniferus* can be kept under control through the measures already used against other phytophagous insects. On the other hand, it is known from scientific literature and experiences in areas where the pest is widespread that chemical control does not significantly contribute to reduce the pest's populations in the medium and long term, while it can negatively impact the populations of natural enemies.

Biological control could be considered the most valuable method for containing the pest. In addition to the natural enemies already reported in the main areas of origin and distribution, recent studies conducted in Italy have allowed the identification of species (native and non-native) of predators and parasitoids which are active against *A. spiniferus*. Coccinellid species native to the Palearctic region have been reported as potential predators of *A. spiniferus*: *Clitostetus arcuatus* (Rossi) (Cioffi et al., 2013); *Delphastus catalinae* (Corno) (Nugnes et al., 2020); *Oenopia conglobata* (L.) (Nugnes et al., 2020). Furthermore, investigations conducted in infested citrus groves in Sicily showed the presence of the exotic ladybug *Serangium montazerii* Fursch and its predation activity associated with *A. spiniferus* (Cocuzza et al., 2023). Among the parasitoids, new hymenopteran aphelinids associated with *A. spiniferus* have been identified in Italy. A first study carried out in five regions of Central-Southern Italy (Apulia, Campania, Lazio, Marche and Sicily) allowed to detect a significant parasitization by a species belonging to the genus *Eretmocerus* (*serius* group). This species has been classified as *Eretmocerus iulii* Laudonia et Melone (Melone et al., 2024). In

the last two years, records show that *E. iulii* has successfully parasitized *A. spiniferus* in Campania and Sicily (Melone et al., 2024; Farina & Rapisarda, 2025). Also in Campania, *Encarsia smithi* (Silvestri) has been recorded for the first time, this species has been used worldwide in numerous biological control programs against *Aleurocanthus* spp. and its presence was yet not recorded in Europe until recently (Meloni et al., 2025). A very recent work has reported the presence of another parasitoid *Encarsia nipponica* Silvestri in Emilia-Romagna region (Costi et al., 2025).

Therefore, the activity of natural enemies already present in the Italian areas appears to be promising for an effective control of *A. spiniferus* infestations. For example, the experience gained in Campania region confirms that in some areas *A. spiniferus* is currently effectively controlled by *E. iulii* and predatory coccinellids (Melone et al., 2024; 2025).

In conclusion, the economic, environmental and social impact in the PRA area can be considered low with a low level of uncertainty.

Will the impacts be largely the same as in the current distribution area? ~~Yes~~/No

IF No:

Rating of the magnitude of impact in the PRA area	*Low* X	*Moderate* ☐	*High* ☐
Rating of uncertainty	*Low* X	*Moderate* ☐	*High* ☐

14. Identification of the endangered area

Since 2008, *A. spiniferus* has spread in several Italian regions. To date, the whitefly has been reported in 16 Italian regions: Sicily, Sardinia, Apulia, Calabria, Campania, Basilicata, Umbria, Abruzzo, Lazio, Marche, Tuscany, Emilia-Romagna, Liguria, Lombardy, Veneto, and Friuli-Venezia Giulia. The availability of host plants and the climatic conditions have not limited the establishment of *A. spiniferus* in a large part of the PRA area and are not expected to hinder its further spread in the areas of Northern Italy where no findings are yet known. However, the economic impact observed in the PRA area was found to be almost zero.

15. Overall risk assessment

The likelihood of establishment and spread of *A. spiniferus* over the remaining parts of the Italian territory where no findings are yet known is high.
The likelihood of economic, environmental and social impacts of the pest in the PRA area can be considered low. In fact, the common practices used in the productive sites are sufficient to control *A. spiniferus*. The control is also favoured by the diversity and abundance of natural enemies.

Stage 3. Pest risk management

16. Phytosanitary measures

The pest is widespread in Italy where it is permanently established. *Aleurocanthus spiniferus* can be kept under control through the measures already used against other phytophagous insects. The control is also favoured by the diversity and abundance of natural enemies. The phytosanitary measures are necessary only in the nurseries.

17. Uncertainty

There are no sources of uncertainty in the assessment and management of pest risk.

18. Remarks

The presence of *A. spiniferus* in Italy can no longer be considered limited, being present in 16 regions. In these regions, the whitefly has a more than acceptable economic, social and environmental impact, since:

- no quantitative and qualitative losses of product are reported, especially for *Citrus* spp.;
- the costs of control measures are not significant as the infestations are indirectly kept under control by the containment measures already used against other phytophagous insects;
- replanting costs and/or plant losses are not expected as *A. spiniferus* infestations do not generally cause the death of the infested plants;

- no significant effects on the existing production practices, and on roadside trees, parks, natural areas, native plants, biodiversity and ecosystems are expected;
- no effects on the establishment and spread of other pests can be envisaged, as *A. spiniferus* is not a vector for other harmful organisms;
- no, or reduced, effects on producers' profits, production costs, yields and price levels are reported;
- no, or reduced, effects on the environment are reported, since the pest does not involve changes in ecological processes and in the stability of ecosystems, including further effects on plant species;
- no costs of environmental restoration and prevention measures are foreseen;
- no effects on food security, employment, water quality, leisure, tourism, landscape heritage, pastures, hunting and fishing are envisaged.

As stated above, the national risk assessment suggests that it is reasonable to reconsider the regulatory status of *Aleurocanthus spiniferus* as a Union quarantine pest since the criteria set out in Annex I to Reg. (EU) 2016/2031, Section 1, points 2 and 4 are not respected.

19. REFERENCESBubici G., Prigigallo M.I., Garganese F., Nugnes F., Jansen M., Porcelli F. (2020). First report of Aleurocanthus spiniferus on Ailanthus altissima: Profiling of the insect microbiome and microRNAs. Insects 11(3).
Cioffi M, Corner D, Corrado I, Jansen MGM, Porcelli F (2013) The status of *Aleurocanthus spiniferus* from its Unwanted introduction in Italy to date. *Bulletin of Insectology* 66, 273-281.
Cocuzza M.G.E., Jovi˘ci´c I., Frisenna F., Tumminelli R., Siscaro G (2023) Discovery of *Serangium montazerii* Fursch (Coleoptera, Coccinellidae) as a predator of *Aleurocanthus spiniferus* (Quaintance) (Hemiptera, Aleyrodidae) in Italy. *EPPO Bull*etin 53, 376–386.
Costi, E.; Giannetti, D.; Cesari, M.; Rapisarda, C.; Polaszek, A.; Kresslein, R.L.; Maistrello, L. (2025) A European Debut: The Asian Parasitoid *Encarsia nipponica* Targets the Invasive *Aleurocanthus spiniferus* in Northern Italy. *Insects* 16, 1181.
El Kenawy A., Cornara D., Corrado I., El-Heneidy A., Rapisarda C., Porcelli F. (2014) *Aleurocanthus spiniferus* (Quaintance) (Hemiptera Aleyrodidae) is spreading throughout the Italian region Apulia. In *Proceedings of the 5th International Scientific Agricultural Symposium 'Agrosym 2014'*, Jahorina, Bosnia and Herzegovina, 23–26 October 2014.
EPPO (2021) EPPO Standard PM 7/129 (2) DNA barcoding as an identification tool for a number of regulated pests. *OEPP/EPPO Bulletin* (2021) 51 (1), 100-143.
EPPO (2022) EPPO Standard PM 7/007 (2) Diagnosics *Aleurocanthus spiniferus*. *OEPP/EPPO Bulletin* 52, 346-361.
EUROPHYT, 2025. European Union Notification System for Plant Health Interceptions (available online). https://food.ec.europa.eu/plants/plant-health-and-biosecurity/europhyt_en (accessed 25 November 2025).
Evans G.A. (2007). The Whiteflies (Hemiptera: Aleyrodidae) of the World and Their Host Plants and Natural Enemies; USDA/Animal SDA/Animal Plant Health Inspection Service: Riverdale, MD, USA; p. 708.
Farina A., Rapisarda C. (2025) Parasitization activity by Eretmocerus iulii over the Orange Spiny Whitefly, Aleurocanthus spiniferus, in Sicily. Insects 16, 1074.
Gyeltshen J, Hodges A (2010). Orange Spiny Whitefly, *Aleurocanthus spiniferus* (Quaintance) (Insecta: Hemiptera). University of Florida, UF/IFAS. Available online: http://entnemdept.ufl.edu/creatures/citrus/orange_spiny_whitefly.htm
Gyeltshen J., Hodges A., Hodges G.S. (2025) Orange Spiny Whitefly, *Aleurocanthus spiniferus* (Quaintance) (Insecta: Hemiptera: Aleyrodidae). Available online: https://edis.ifas.ufl.edu/pd_les/IN/IN61800.pdf
Kapantaidaki DE, Antonatos S, Kontodimas D, Milonas P, Papachristos DP (2019) Presence of the invasive whitefly *Aleurocanthus spiniferus* (Hemiptera: Aleyrodidae) in Greece. *OEPP/EPPO Bulletin* 49(1), 127-131.
Martin JH, Mifsud D, Rapisarda C (2000) The whiteflies (Hemiptera: Aleyrodidae) of Europe and the Mediterranean basin. *Bulletin of Entomological Research* 90(5), 407-448.
Melone G., Andretta L., Pica F., Donnarumma F.P., Ascolese R., Nugnes F., Laudonia S. (2025) First detection of Encarsia smithi in Italy and co-occurrence with Eretmocerus iulii: a case of unintentional introductions and new associations with the invasive species Aleurocanthus spiniferus. Insects, 16, 891.
Melone G., Ascolese R., Nugnes F., Porcelli F., Rapisarda C., Farina A., Picciotti U., Garganese F., Laudonia S. (2024). An *Eretmocerus* Species, Parasitoid of *Aleurocanthus spiniferus*, was found in Europe: the secret savior of threatened plants. Sustainability, 16, 2970.
Meyerdink DE, Hart WG, Burnside J (1979). Marking and dispersal study of the citrus blackfly, *Aleurocanthus woglumi*. *Southwestern Entomologist* 4, 325–329.
Nguyen R. (2022). *Aleurocanthus woglumi* (citrus blackfly), In: *CABI Compendium*. CABI. doi: 10.1079/cabicompendium.4137.
Nugnes F., Laudonia S., Jesu G., Jansen M.G.M., Bernardo U., Porcelli F. (2020) *Aleurocanthus spiniferus* (Hemiptera: Aleyrodidae) in some European countries: diffusion, hosts, molecular characterization, and natural enemies. *Insects*, 11, 42.
Porcelli F (2008) First record of *Aleurocanthus spiniferus* (Homoptera: Aleyrodidae) in Apulia, Southern Italy. *OEPP/EPPO Bulletin* 38(3), 516-518.
Uesugi R & Sato Y (2011) Differentiation of the tea-infesting population of citrus spiny whitefly *Aleurocanthus spiniferus* (Homoptera: Aleyrodidae) from the citrus-infesting population in Japan on the basis of differences in the mitochondrial cytochrome c oxidase subunit I gene. *Japanese Journal of Applied Entomology and Zoology* 55, 155-161. https://doi.org/10.1303/jjaez.2011.155
Uesugi R, Sato Y, Han BY, Huang ZD, Yara K & Furuhashi K (2016) Molecular evidence for multiple phylogenetic groups within two species of invasive spiny whiteflies and their parasitoid wasp. *Bulletin of Entomological Research* 106, 328-340.
Zhang QB (2006). The reasons for rampage of citrus spiny white fly and its control. *South China Fruits* 2, 20–21.