SCIENTIFIC OPINION

EFSA Journal

ADOPTED: 1 February 2018

doi: 10.2903/j.efsa.2018.5189

Pest categorisation of *Scirtothrips citri*

EFSA Panel on Plant Health (PLH),
Michael Jeger, Claude Bragard, David Caffier, Thierry Candresse, Elisavet Chatzivassiliou, Katharina Dehnen-Schmutz, Gianni Gilioli, Jean-Claude Grégoire, Josep Anton Jaques Miret, Maria Navajas Navarro, Björn Niere, Stephen Parnell, Roel Potting, Trond Rafoss, Vittorio Rossi, Gregor Urek, Ariena Van Bruggen, Wopke Van der Werf, Jonathan West, Stephan Winter, Ciro Gardi and Alan MacLeod

Abstract

The Panel on Plant Health performed a pest categorisation of the citrus thrips, *Scirtothrips citri* (Moulton) (Thysanoptera: Thripidae), for the European Union (EU). This is a well-defined and distinguishable species, occurring in North America and Asia. Its precise distribution in Asia is uncertain. *S. citri* is a pest of citrus and blueberries and has been cited on over 50 different host species in 33 plant families. Whether all plants reported as hosts are true hosts, allowing population development of *S. citri*, is uncertain. *S. citri* feeds exclusively on young actively growing foliage and fruit. It is not known to occur in the EU and is listed in Annex IIAI of 2000/29/EC as a harmful organism. The international trade of hosts, as either plants for planting or cut flowers, provide potential pathways into the EU. However, current EU legislation prohibits the import of citrus plants for planting. Furthermore, measures aimed at the import of plants for planting in a dormant stage (no young foliage or fruits present) with no soil/growing medium attached, decreases the likelihood of the pest's entry via other hosts. Considering that there are regional climatic similarities where *S. citri* occurs in the USA with climates in the EU, and taking EU host distribution into account, *S. citri* has the potential to establish in the EU, especially in citrus and blueberry growing regions around the Mediterranean where quality losses in citrus and yield losses in blueberry could occur. Phytosanitary measures are available to inhibit the likelihood of introduction of *S. citri* from infested countries. Considering the criteria within the remit of EFSA to assess its status as a potential Union quarantine pest (QP) or as a potential regulated non-quarantine pest (RNQP), *S. citri* meets with no uncertainties the criteria assessed by EFSA for consideration as a potential Union QP.

Keywords: Citrus thrips, citrus, blueberries, pest risk, plant health, plant pest, quarantine

Requestor: European Commission

Question number: EFSA-Q-2017-00366

Correspondence: alpha@efsa.europa.eu

Panel members: Claude Bragard, David Caffier, Thierry Candresse, Elisavet Chatzivassiliou, Katharina Dehnen-Schmutz, Gianni Gilioli, Jean-Claude Gregoire, Josep Anton Jaques Miret, Michael Jeger, Alan MacLeod, Maria Navajas Navarro, Björn Niere, Stephen Parnell, Roel Potting, Trond Rafoss, Vittorio Rossi, Gregor Urek, Ariena Van Bruggen, Wopke Van der Werf, Jonathan West and Stephan Winter.

Suggested citation: EFSA Panel on Plant Health (PLH), Jeger M, Bragard C, Caffier D, Candresse T, Chatzivassiliou E, Dehnen-Schmutz K, Gilioli G, Grégoire J-C, Jaques Miret JA, Navarro MN, Niere B, Parnell S, Potting R, Rafoss T, Rossi V, Urek G, Van Bruggen A, Van der Werf W, West J, Winter S, Gardi C and MacLeod A, 2018. Scientific Opinion on the pest categorisation of *Scirtothrips citri.* EFSA Journal 2018;16(3):5189, 23 pp. https://doi.org/10.2903/j.efsa.2018.5189

ISSN: 1831-4732

The EFSA Journal is a publication of the European Food Safety Authority, an agency of the European Union.

Table of contents

1. Introduction

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

1.1.1. Background

Council Directive 2000/29/EC on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community establishes the present European Union plant health regime. The Directive lays down the phytosanitary provisions and the control checks to be carried out at the place of origin on plants and plant products destined for the Union or to be moved within the Union. In the Directive's 2000/29/EC annexes, the list of harmful organisms (pests) whose introduction into or spread within the Union is prohibited, is detailed together with specific requirements for import or internal movement.

Following the evaluation of the plant health regime, the new basic plant health law, Regulation (EU) 2016/2031 on protective measures against pests of plants, was adopted on 26 October 2016 and will apply from 14 December 2019 onwards, repealing Directive 2000/29/EC. In line with the principles of the above mentioned legislation and the follow-up work of the secondary legislation for the listing of EU regulated pests, EFSA is requested to provide pest categorizations of the harmful organisms included in the annexes of Directive 2000/29/EC, in the cases where recent pest risk assessment/pest categorisation is not available.

1.1.2. Terms of reference

EFSA is requested, pursuant to Article 22(5.b) and Article 29(1) of Regulation (EC) No 178/2002, to provide scientific opinion in the field of plant health.

EFSA is requested to prepare and deliver a pest categorisation (step 1 analysis) for each of the regulated pests included in the appendices of the annex to this mandate. The methodology and template of pest categorisation have already been developed in past mandates for the organisms listed in Annex II Part A Section II of Directive 2000/29/EC. The same methodology and outcome is expected for this work as well.

The list of the harmful organisms included in the annex to this mandate comprises 133 harmful organisms or groups. A pest categorisation is expected for these 133 pests or groups and the delivery of the work would be stepwise at regular intervals through the year as detailed below. First priority covers the harmful organisms included in Appendix 1, comprising pests from Annex II Part A Section I and Annex II Part B of Directive 2000/29/EC. The delivery of all pest categorisations for the pests included in Appendix 1 is June 2018. The second priority is the pests included in Appendix 2, comprising the group of Cicadellidae (non-EU) known to be vector of Pierce's disease (caused by *Xylella fastidiosa*), the group of Tephritidae (non-EU), the group of potato viruses and virus-like organisms, the group of viruses and virus-like organisms of *Cydonia* Mill., *Fragaria* L., *Malus* Mill., *Prunus* L., *Pyrus* L., *Ribes* L., *Rubus* L. and *Vitis* L.. and the group of Margarodes (non-EU species). The delivery of all pest categorisations for the pests included in Appendix 2 is end 2019. The pests included in Appendix 3 cover pests of Annex I part A section I and all pests categorisations should be delivered by end 2020.

For the above mentioned groups, each covering a large number of pests, the pest categorisation will be performed for the group and not the individual harmful organisms listed under "such as" notation in the Annexes of the Directive 2000/29/EC. The criteria to be taken particularly under consideration for these cases, is the analysis of host pest combination, investigation of pathways, the damages occurring and the relevant impact.

Finally, as indicated in the text above, all references to 'non-European' should be avoided and replaced by 'non-EU' and refer to all territories with exception of the Union territories as defined in Article 1 point 3 of Regulation (EU) 2016/2031.

1.1.2.1. Terms of Reference: Appendix 1

List of harmful organisms for which pest categorisation is requested. The list below follows the annexes of Directive 2000/29/EC.

Annex IIAI

(a) Insects, mites and nematodes, at all stages of their development

Aleurocantus spp.
Anthonomus bisignifer (Schenkling)
Anthonomus signatus (Say)
Aschistonyx eppoi Inouye
Carposina niponensis Walsingham
Enarmonia packardi (Zeller)
Enarmonia prunivora Walsh
Grapholita inopinata Heinrich
Hishomonus phycitis
Leucaspis japonica Ckll.
Listronotus bonariensis (Kuschel)
Numonia pyrivorella (Matsumura)
Oligonychus perditus Pritchard and Baker
Pissodes spp. (non-EU)
Scirtothrips aurantii Faure
Scirtothrips citri (Moultex)
Scolytidae spp. (non-EU)
Scrobipalpopsis solanivora Povolny
Tachypterellus quadrigibbus Say
Toxoptera citricida Kirk.
Unaspis citri Comstock

(b) Bacteria

Citrus variegated chlorosis
Erwinia stewartii (Smith) Dye
Xanthomonas campestris pv. *oryzae* (Ishiyama) Dye and pv. *oryzicola* (Fang. et al.) Dye

(c) Fungi

Alternaria alternata (Fr.) Keissler (non-EU pathogenic isolates)
Anisogramma anomala (Peck) E. Müller
Apiosporina morbosa (Schwein.) v. Arx
Ceratocystis virescens (Davidson) Moreau
Cercoseptoria pini-densiflorae (Hori and Nambu) Deighton
Cercospora angolensis Carv. and Mendes
Elsinoe spp. Bitanc. and Jenk. Mendes
Fusarium oxysporum f. sp. *albedinis* (Kilian and Maire) Gordon
Guignardia piricola (Nosa) Yamamoto
Puccinia pittieriana Hennings
Stegophora ulmea (Schweinitz: Fries) Sydow & Sydow
Venturia nashicola Tanaka and Yamamoto

(d) Virus and virus-like organisms

Beet curly top virus (non-EU isolates)
Black raspberry latent virus
Blight and blight-like
Cadang-Cadang viroid
Citrus tristeza virus (non-EU isolates)
Leprosis
Little cherry pathogen (non- EU isolates)
Naturally spreading psorosis
Palm lethal yellowing mycoplasm
Satsuma dwarf virus
Tatter leaf virus
Witches' broom (MLO)

Annex IIB

(a) Insect mites and nematodes, at all stages of their development

Anthonomus grandis (Boh.)
Cephalcia lariciphila (Klug)
Dendroctonus micans Kugelan
Gilphinia hercyniae (Hartig)
Gonipterus scutellatus Gyll.
Ips amitinus Eichhof
Ips cembrae Heer
Ips duplicatus Sahlberg
Ips sexdentatus Börner
Ips typographus Heer
Sternochetus mangiferae Fabricius

(b) Bacteria

Curtobacterium flaccumfaciens pv. flaccumfaciens (Hedges) Collins and Jones

(c) Fungi

Glomerella gossypii Edgerton
Gremmeniella abietina (Lag.) Morelet
Hypoxylon mammatum (Wahl.) J. Miller

1.1.2.2. Terms of Reference: Appendix 2

List of harmful organisms for which pest categorisation is requested per group. The list below follows the categorisation included in the annexes of Directive 2000/29/EC.

Annex IAI

(a) Insects, mites and nematodes, at all stages of their development

Group of Cicadellidae (non-EU) known to be vector of Pierce's disease (caused by *Xylella fastidiosa*), such as:

1) *Carneocephala fulgida* Nottingham
2) *Draeculacephala minerva* Ball
3) *Graphocephala atropunctata* (Signoret)

Group of Tephritidae (non-EU) such as:

1) *Anastrepha fraterculus* (Wiedemann)
2) *Anastrepha ludens* (Loew)
3) *Anastrepha obliqua* Macquart
4) *Anastrepha suspensa* (Loew)
5) *Dacus ciliatus* Loew
6) *Dacus curcurbitae* Coquillet
7) *Dacus dorsalis* Hendel
8) *Dacus tryoni* (Froggatt)
9) *Dacus tsuneonis* Miyake
10) *Dacus zonatus* Saund.
11) *Epochra canadensis* (Loew)
12) *Pardalaspis cyanescens* Bezzi
13) *Pardalaspis quinaria* Bezzi
14) *Pterandrus rosa* (Karsch)
15) *Rhacochlaena japonica* Ito
16) *Rhagoletis completa* Cresson
17) *Rhagoletis fausta* (Osten-Sacken)
18) *Rhagoletis indifferens* Curran
19) *Rhagoletis mendax* Curran
20) *Rhagoletis pomonella* Walsh
21) *Rhagoletis suavis* (Loew)

(c) Viruses and virus-like organisms

Group of potato viruses and virus-like organisms such as:

1) Andean potato latent virus
2) Andean potato mottle virus
3) Arracacha virus B, oca strain
4) Potato black ringspot virus
5) Potato virus T
6) non-EU isolates of potato viruses A, M, S, V, X and Y (including Yo, Yn and Yc) and Potato leafroll virus

Group of viruses and virus-like organisms of Cydonia Mill., Fragaria L., Malus Mill., Prunus L., Pyrus L., Ribes L., Rubus L. and Vitis L., such as:

1) Blueberry leaf mottle virus
2) Cherry rasp leaf virus (American)
3) Peach mosaic virus (American)
4) Peach phony rickettsia
5) Peach rosette mosaic virus
6) Peach rosette mycoplasm
7) Peach X-disease mycoplasm
8) Peach yellows mycoplasm
9) Plum line pattern virus (American)
10) Raspberry leaf curl virus (American)
11) Strawberry witches' broom mycoplasma
12) Non-EU viruses and virus-like organisms of *Cydonia Mill., Fragaria L., Malus Mill., Prunus L., Pyrus L., Ribes L., Rubus L.* and *Vitis L.*

Annex IIAI

(a) Insects, mites and nematodes, at all stages of their development

Group of *Margarodes* (non-EU species) such as:

1) *Margarodes vitis* (Phillipi)
2) *Margarodes vredendalensis* de Klerk
3) *Margarodes prieskaensis* Jakubski

1.1.2.3. Terms of Reference: Appendix 3

List of harmful organisms for which pest categorisation is requested. The list below follows the annexes of Directive 2000/29/EC.

Annex IAI

(a) Insects, mites and nematodes, at all stages of their development

Acleris spp. (non-EU)
Amauromyza maculosa (Malloch)
Anomala orientalis Waterhouse
Arrhenodes minutus Drury
Choristoneura spp. (non-EU)
Conotrachelus nenuphar (Herbst)
Dendrolimus sibiricus Tschetverikov
Diabrotica barberi Smith and Lawrence
Diabrotica undecimpunctata howardi Barber
Diabrotica undecimpunctata undecimpunctata Mannerheim
Diabrotica virgifera zeae Krysan & Smith
Diaphorina citri Kuway
Heliothis zea (Boddie)
Hirschmanniella spp., other than *Hirschmanniella gracilis* (de Man) Luc and Goodey
Liriomyza sativae Blanchard
Longidorus diadecturus Eveleigh and Allen
Monochamus spp. (non-EU)
Myndus crudus Van Duzee
Nacobbus aberrans (Thorne) Thorne and Allen
Naupactus leucoloma Boheman
Premnotrypes spp. (non-EU)
Pseudopityophthorus minutissimus (Zimmermann)
Pseudopityophthorus pruinosus (Eichhoff)
Scaphoideus luteolus (Van Duzee)
Spodoptera eridania (Cramer)
Spodoptera frugiperda (Smith)
Spodoptera litura (Fabricus)
Thrips palmi Karny
Xiphinema americanum Cobb sensu lato (non-EU populations)
Xiphinema californicum Lamberti and Bleve-Zacheo

(b) Fungi

Ceratocystis fagacearum (Bretz) Hunt
Chrysomyxa arctostaphyli Dietel
Cronartium spp. (non-EU)
Endocronartium spp. (non-EU)
Guignardia laricina (Saw.) Yamamoto and Ito
Gymnosporangium spp. (non-EU)
Inonotus weirii (Murril) Kotlaba and Pouzar
Melampsora farlowii (Arthur) Davis
Mycosphaerella larici-leptolepis Ito et al.
Mycosphaerella populorum G. E. Thompson
Phoma andina Turkensteen
Phyllosticta solitaria Ell. and Ev.
Septoria lycopersici Speg. var. *malagutii* Ciccarone and Boerema
Thecaphora solani Barrus
Trechispora brinkmannii (Bresad.) Rogers

(c) Viruses and virus-like organisms

Tobacco ringspot virus
Tomato ringspot virus
Bean golden mosaic virus
Cowpea mild mottle virus
Lettuce infectious yellows virus
Pepper mild tigré virus
Squash leaf curl virus
Euphorbia mosaic virus
Florida tomato virus

(d) Parasitic plants

Arceuthobium spp. (non-EU)

Annex IAII

(a) Insects, mites and nematodes, at all stages of their development

Meloidogyne fallax Karssen
Popillia japonica Newman
Rhizoecus hibisci Kawai and Takagi

(b) Bacteria

Clavibacter michiganensis (Smith) Davis et al. ssp. *sepedonicus* (Spieckermann and Kotthoff) Davis et al.
Ralstonia solanacearum (Smith) Yabuuchi et al.

(c) Fungi

Melampsora medusae Thümen
Synchytrium endobioticum (Schilbersky) Percival

Annex I B

(a) Insects, mites and nematodes, at all stages of their development

Leptinotarsa decemlineata Say
Liriomyza bryoniae (Kaltenbach)

(b) Viruses and virus-like organisms

Beet necrotic yellow vein virus

1.2. Interpretation of the Terms of Reference

Scirtothrips citri is one of a number of pests listed in the Appendices to the Terms of Reference (ToR) to be subject to pest categorisation to determine whether it fulfils the criteria of a quarantine pest (QP) or those of a regulated non-quarantine pest (RNQP) for the area of the European Union (EU) excluding Ceuta, Melilla and the outermost regions of Member States (MSs) referred to in Article 355 (1) of the Treaty on the Functioning of the European Union (TFEU), other than Madeira and the Azores.

Within Annex II A/I of 2000/29 EC the species is listed as *Scirtothrips citri* (Moultex). However, we assume that the given authority is a misprint which actually corresponds to Moulton, who originally described this thrips in 1909 as *Euthrips citri* (Moulton, 1909). For the purposes of this pest categorisation, the valid combination *Scirtothrips citri* (Moulton) is used.

2. Data and methodologies

2.1. Data

2.1.1. Literature search

A literature search on *S. citri* was conducted at the beginning of the categorisation in the ISI Web of Science bibliographic database, using the scientific name of the pest as search term. Relevant papers were reviewed, further references and information were obtained from experts, from citations within the references and grey literature.

2.1.2. Database search

Pest information, on host(s) and distribution, was retrieved from the EPPO Global Database (EPPO, 2017).

Data about the area of hosts grown in the EU were obtained from EUROSTAT (http://ec.europa.eu/eurostat/web/agriculture/data/database).

The Europhyt database was consulted for pest-specific notifications on interceptions and outbreaks. Europhyt is a web-based network launched by the Directorate General for Health and Consumers (DG

SANCO), and is a subproject of PHYSAN (Phyto-Sanitary Controls) specifically concerned with plant health information. The Europhyt database manages 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 MSs and the phytosanitary measures taken to eradicate or avoid their spread.

2.2. Methodologies

The Panel performed the pest categorisation for *S. citri*, following guiding principles and steps presented in the EFSA guidance on the harmonised framework for pest risk assessment (EFSA PLH Panel, 2010) and as defined in the International Standard for Phytosanitary Measures No 11 (FAO, 2013) and No 21 (FAO, 2004).

In accordance with the guidance on a harmonised framework for pest risk assessment in the EU (EFSA PLH Panel, 2010), this work was initiated following an evaluation of the EU's plant health regime. Therefore, to facilitate the decision-making process, in the conclusions of the pest categorisation, the Panel addresses explicitly each criterion for a Union QP and for a Union RNQP in accordance with Regulation (EU) 2016/2031 on protective measures against pests of plants, and includes additional information required as per the specific terms of reference received by the European Commission. In addition, for each conclusion, the Panel provides a short description of its associated uncertainty.

Table 1 presents the Regulation (EU) 2016/2031 pest categorisation criteria on which the Panel bases its conclusions. All relevant criteria have to be met for the pest to qualify either as a QP or as a RNQP. If one of the criteria is not met, the pest will not qualify. In such a case, the working group should consider the possibility to terminate the assessment early and be concise in the sections preceding the question for which the negative answer is reached. Note that a pest that does not qualify as a QP may still qualify as a regulated non-quarantine pest which needs to be addressed in the opinion.

It should be noted that the Panel's conclusions are formulated respecting its remit and particularly with regards to the principle of separation between risk assessment and risk management (EFSA founding regulation[1]); therefore, instead of determining whether the pest is likely to have an unacceptable impact, the Panel will present a summary of the observed pest impacts. Economic impacts are expressed in terms of yield and quality losses and not in monetary terms, while addressing social impacts is outside the remit of the Panel, in agreement with EFSA guidance on a harmonised framework for pest risk assessment (EFSA PLH Panel, 2010).

Table 1: Pest categorisation criteria under evaluation, as 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	Criterion in Regulation (EU) 2016/2031 regarding Union quarantine pest	Criterion in Regulation (EU) 2016/2031 regarding Union regulated non-quarantine pest	Criterion in Regulation (EU) 2016/2031 regarding protected zone quarantine pest (articles 32–35)
Identity of the pest (Section 3.1)	Is the identity of the pest established, or has it been shown to produce consistent symptoms and to be transmissible?	Is the identity of the pest established, or has it been shown to produce consistent symptoms and to be transmissible?	Is the identity of the pest established, 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 widely distributed within the EU? Describe the pest distribution briefly!	Is the pest present in the EU territory? If not, it cannot be a regulated non-quarantine pest. (A regulated non-quarantine pest must be present in the risk assessment area).	Is the pest present in the EU territory? If not, it cannot be a protected zone quarantine organism.

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

Criterion of pest categorisation	Criterion in Regulation (EU) 2016/2031 regarding Union quarantine pest	Criterion in Regulation (EU) 2016/2031 regarding Union regulated non-quarantine pest	Criterion in Regulation (EU) 2016/2031 regarding protected zone quarantine pest (articles 32–35)
Regulatory status (Section 3.3)	If the pest is present in the EU but not widely distributed in the risk assessment area, it should be under official control or expected to be under official control in the near future.	Is the pest regulated as a quarantine pest? If currently regulated as a quarantine pest, are there grounds to consider its status could be revoked?	The protected zone system aligns with the pest free area system under the International Plant Protection Convention (IPPC). The pest satisfies the IPPC definition of a quarantine pest that is not present in the PRA area (i.e. protected zone).
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!	Is spread mainly via specific plants for planting, rather than via natural spread or via movement of plant products or other objects? Clearly state if plants for planting is the main pathway!	Is the pest able to enter into, become established in, and spread within, the protected zone areas? Is entry by natural spread from EU areas where the pest is present possible?
Potential for consequences in the EU territory (Section 3.5)	Would the pests' introduction have an economic or environmental impact on the EU territory?	Does the presence of the pest on plants for planting have an economic impact, as regards the intended use of those plants for planting?	Would the pests' introduction have an economic or environmental impact on the protected zone areas?
Available measures (Section 3.6)	Are there measures available to prevent the entry into, establishment within or spread of the pest within the EU such that the risk becomes mitigated?	Are there measures available to prevent pest presence on plants for planting such that the risk becomes mitigated?	Are there measures available to prevent the entry into, establishment within or spread of the pest within the EU such that the risk becomes mitigated? Is it possible to eradicate the pest in a restricted area within 24 months after the presence of the pest was confirmed in the PZ?
Conclusion of pest categorisation (Section 4)	A statement as to whether (1) all criteria above for consideration as a potential quarantine pest were met and (2) if not, which one(s) were not met.	A statement as to whether (1) all criteria above for consideration as a potential regulated non-quarantine pest were met, and (2) if not, which one(s) were not met.	A statement as to whether (1) all criteria above for consideration as potential protected zone quarantine pest were met, and (2) if not, which one(s) were not met.

The Panel will not indicate in its conclusions of the pest categorisation whether to continue the risk assessment process, but, following the agreed two-step approach, will continue only if requested by the risk managers. However, during the categorisation process, experts may identify key elements and knowledge gaps that could contribute significant uncertainty to a future assessment of risk. It would be useful to identify and highlight such gaps so that potential future requests can specifically target the major elements of uncertainty, perhaps suggesting specific scenarios to examine.

3. Pest categorisation

3.1. Identity and biology of the pest

3.1.1. Identity and taxonomy

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

Yes, *S. citri* is a well-defined insect in the order Thysanoptera, family Thripidae.

The citrus thrips, *S. citri* (Moulton) (Thysanoptera: Thripidae) was initially described by Moulton in 1909 from specimens collected in California, along with remarks on its life history, nature of injury, pupation site and a tobacco extract remedy (Tanigoshi and Nishio-Wong, 1982). Synonyms include *Euthrips citri* Moulton, 1909 and *Scirtothrips clivicola* Hood, 1957.

A series of 15 new *Scirtothrips* species found on mango in Mexico were described by Johansen and Mojica-Guzman (1998) and differentiated based on the arrangement of setae. However, the 15 species were later recognised as synonyms of *S. citri* by Mound and Hoddle (2016) given that the arrangement of setae is variable within populations of *S. citri.* While molecular analysis of two genes, CO1 and 28S-D2, indicated that there is variation at a molecular level between populations, the variation is not sufficient to support the species designations of Johansen and Mojica-Guzman (1998) (Mound and Hoddle, 2016).

The genus *Scirtothrips* is comprised of over 100 described species worldwide; they can easily be distinguished from other genera within the same family (CABI, 2017) but identification to species is not easy (Mound and Palmer, 1981). Keys exist for the adults (winged males and females) of the different species within the genus (e.g. Mound and Palmer, 1981). Both morphological and molecular data can be used to distinguish species (EPPO, 2005; Hoddle et al., 2008; Mound and Hoddle, 2016; CABI, 2017).

3.1.2. Biology of the pest

Scirtothrips citri overwinters only in the egg stage (Lewis, 1973). In California, these overwintering eggs are mostly laid in the autumn during the last leaf flush of the season and they do not enter diapause (Tanigoshi and Nishio-Wong, 1982). All *Scirtothrips* spp. go through five developmental stages (EPPO, 2005; CABI, 2017): the egg, two actively feeding immature instars, known as first and second instar larvae, two non-feeding immature instars, known as prepupa and pupa, and the winged feeding adults. Munger (1942) reported that at 31°C adult female *S. citri* live for between 26 and 30 days. As with all thrips belonging to the Terebrantia suborder, *Scirtothrips* spp. females insert individual eggs into young, soft tissues of leaves, stems and fruit with their distinctive saw-like ovipositor. Where eggs are embedded relatively deeply into a host, the incision closes almost completely after the ovipositor is withdrawn (Lewis, (1973). Females typically lay around 25–35 eggs over their lifetime (Munger, 1942; University of California (UC), 1991; Smith et al., 1997) although up to 250 eggs has been reported by Tanigoshi and Nishio-Wong (1982). Virgin females produce only male offspring but fertilised females produce mostly females and some males (Lewis, (1973).

Adults of the first generation appear from February to March. First and second generations are usually discrete but successive generations overlap. Depending on temperature, up to 11 generations may develop in a year. Motile stages (larvae and adults) feed actively on tender leaves and fruit, especially under the sepals of young fruit. After completion of the second instar, some larvae drop to the ground to pupate while others pupate in crevices and curled leaves on the tree (Tanigoshi and Nishio-Wong, 1982; UC, 1991; Kerns et al., 2001). Indeed, in a study carried out in California less, than one-third of the adults in an orange orchard originated from larvae that pupated in the ground (Grout et al., 1986). Adults actively fly (Moreno et al., 1984).

Munger (1942) reported that at 25°C development from egg to adult took 16 days while at 31°C such development took just under 13 days. The lower development threshold for *S. citri* is 14.6°C and 300 degree days are necessary for a generation to be completed (UC, 1991). A constant temperature of 37.5°C prevented egg hatching and moulting to the second stage (Tanigoshi and Nishio-Wong, 1982).

3.1.3. Detection and identification of the pest

Are detection and identification methods available for the pest?
Yes, EPPO produced a standard addressing the detection and identification of *S. citri* (EPPO, 2005).

Detection: all developmental stages of this insect, both actively feeding and quiescent, can be found on host buds, leaves, and fruit. However, detection may be difficult as (a) eggs (bean-shaped, < 0.2 mm long) are inserted into the plant tissue; (b) larvae (spindle shaped, colourless when recently hatched and yellowish afterwards, < 0.8 mm long) undergo a moulting phase in between instars for which they usually seek refugia such as leaf veins and subaxillary pits; (c) prepupae (yellowish, with short wing pads and the four segmented antennae directed forward) and pupae (longer wing-parts

and antennae directed backward over the head) may be also found in the soil; and (d) adults (winged, yellowish, < 0.9 mm long) are minute, which makes visual detection challenging (Tanigoshi and Nishio-Wong, 1982; EPPO, 2005). Therefore, use of Berlese funnels is recommended. Furthermore, as larvae are almost exclusively localised on young growing buds, young leaves, sepals and young fruits, these organs should be examined particularly carefully (EPPO, 2005). As adult *S. citri* are attracted to white and yellow colours, yellow sticky cards can be used as a relative indicator of *S. citri* presence and activity (Kerns et al., 2001).

Symptoms: because of the typical asymmetrical piecing-sucking mouthparts of thrips, their puncturing of epidermal cells results in scabby, greyish or silvery scars on leaves and rind in citrus (Morse, 1995). In citrus in California, second instar larvae of the second generation do most of the damage when feeding under the sepals of young fruit. As the fruit grow, this damage results in a ring of scarred tissue around the fruit peduncle. Outer fruit suffers heavier symptoms than those protected in the canopy (UC, 1991; EPPO, 2005).

Identification: conventional morphological keys and a diagnostic protocol are available for the identification of adult species of *Scirtothrips*. Cleared specimens mounted on microscopic slides can be identified at a magnification factor between 100x and 600x. Characters allowing species determination based on Palmer et al. (1989) can be found in the EPPO diagnostic standard (EPPO, 2005). However, it is not possible to distinguish between immature stages of *Scirtothrips* spp. using conventional morphological techniques and molecular methods must be used (Hoddle et al., 2008).

3.2. Pest distribution

3.2.1. Pest distribution outside the EU

Scirtothrips citri is a Nearctic species native to the south-western United States and north-western Mexico (Tanigoshi and Nishio-Wong, 1982), it also occurs in Florida. A record of occurrence in India in Jammu (Bhagat et al., 1999) is regarded by EPPO as unreliable because at that time EPPO noted that 'This is the only record outside America and is therefore considered very doubtful' (EPPO, 2017). However, since the report by Bhagat et al. (1999), there have been subsequent reports of *S. citri* elsewhere in India (e.g. Sharma, 2007) and findings in other Asian countries (China, 2003 and Iran, 2007) (EPPO, 2017). However, in a 2017 checklist of thrips in India, Rachana and Varatharajan (2017) did not record *S. citri* as occurring in India.

In 2003, the UK intercepted *S. citri* from Thailand (a country where *S. citri* was not known to occur) (see Section 3.4.2 Entry, below). The reported distribution of *S. citri* is shown in Table 2 and illustrated in Figure 1. The distribution of this species in Asia is considered uncertain.

Table 2: Global distribution of *S. citri*

Region	Country	Subnational distribution	Status	Reference
North America	Mexico		Present, restricted distribution	EPPO (2017)
	USA		Present, restricted distribution	EPPO (2017)
		Arizona	Present, no details	EPPO (2017)
		California	Present, no details	EPPO (2017)
		Florida	Present, no details	EPPO (2017)
		Nevada	Present, no details	Weeks et al. (2012)
		Washington	Present, no details	CABI (2017)
Asia	China		Present, restricted distribution	EPPO (2017)
		Jiangxi	Present, no details	EPPO (2017)
	India	Jammu & Kashmir	Present, no details	Bhagat et al. (1999)*, Satyagopal et al. (2014)
		Punjab	Present, no details	Sharma (2007)
	Iran		Present, no details	EPPO (2017)
	Thailand		Detected in UK from a consignment exported from Thailand	Europhyt (see Section 3.4.2 Entry)

*: Regarded by EPPO as an unreliable record as this was the first report of *S. citri* outside of North America at the time.

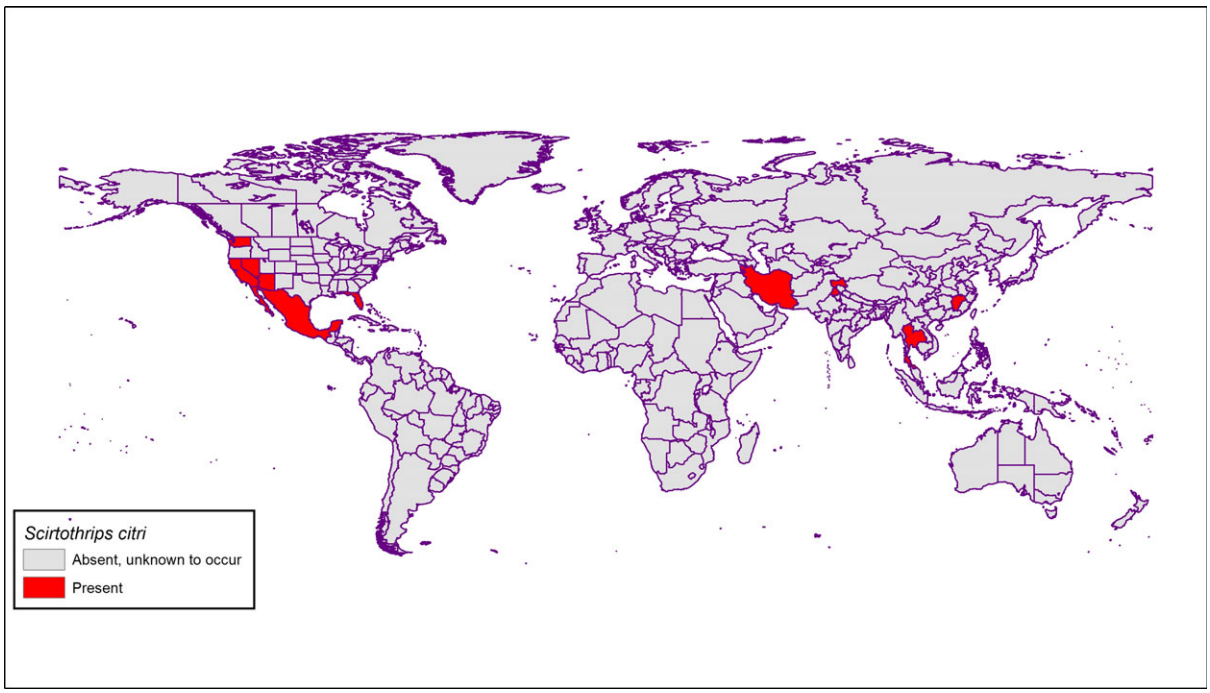

Figure 1: Global distribution of *S. citri* (based on Table 2)

3.2.2. Pest distribution in the EU

Is the pest present in the EU territory? If present, is the pest widely distributed within the EU?
No, the pest is not present in the EU

Scirtothrips citri is not known to occur in the EU. Its absence from the Netherlands has been confirmed by surveys (EPPO, 2017). The Belgium NPPO declares *S. citri* as absent based on the lack of pest records (EPPO, 2017).

In 2008, *S. citri* was found on a yellow sticky trap in a glasshouse within a public botanic garden in southern England, UK. Action was taken against the finding and eradication was successful (Defra, unpublished data). *S. citri* is not known to occur in the UK.

3.3. Regulatory status

3.3.1. Council Directive 2000/29/EC

The organism subject to pest categorisation is listed in Council Directive 2000/29/EC as *Scirtothrips citri*. Details are presented in Tables 3 and 4.

Table 3: *Scirtothrips citri* in Council Directive 2000/29/EC

Annex II, Part A Harmful organisms whose introduction into, and spread within, all Member States shall be banned if they are present on certain plants or plant products		
Section I Harmful organisms not known to occur in the Community and relevant for the entire Community		
(a)	Insects, mites and nematodes, at all stages of their development	
	Species	Subject of contamination
27.	*Scirtothrips citri* (Moultex)	Plants of *Citrus* L, *Fortunella* Swingle, *Poncirus* Raf., and their hybrids, other than fruit and seeds

(Note that the authority (Moultex) is interpreted as being (Moulton) - see 1.2)

3.3.2. Legislation addressing plants and plant parts on which *Scirtothrips citri* is regulated

Table 4: Regulated hosts and commodities that may involve *S. citri* in Annexes III, IV, and V of Council Directive 2000/29/EC

Annex III, Part A	**Plants, plant products and other objects the introduction of which shall be prohibited in all Member States**	
	Description	Country of origin
16	Plants of *Citrus* L, *Fortunella* Swingle, *Poncirus* Raf., and their hybrids, other than fruit and seeds	Third countries

Annex IV, Part A	**Special requirements which shall be laid down by all member states for the introduction and movement of plants, plant products and other objects into and within all member states**	
Section I	**Plants, plant products and other objects originating outside the community**	
	Plants, plant products and other objects	Special requirements
16.1	Fruits of *Citrus* L, *Fortunella* Swingle, *Poncirus* Raf., and their hybrids, originating in third countries	The fruits should be free from peduncles and leaves and the packaging should bear an appropriate origin mark.
16.5	Fruits of *Citrus* L, *Fortunella* Swingle, *Poncirus* Raf., and their hybrids, originating in third countries	Without prejudice to the provisions applicable to the fruits in Annex IV(A)(I) (16.1), (16.2) and (16.3), official statement that: (a) the fruits originate in areas known to be free from the relevant organism; or, if this requirement cannot be met; (b) no signs of the relevant organism have been observed at the place of production and in its immediate vicinity since the beginning of the last complete cycle of vegetation, on official inspections carried out at least monthly during the three months prior to harvesting, and none of the fruits harvested at the place of production has shown, in appropriate official examination, signs of the relevant organism, or if this requirement can also not be met; (c) the fruits have shown, in appropriate official examination on representative samples, to be free from the relevant organism in all stages of their development; or, if this requirement can also not be met; (d) the fruits have been subjected to an appropriate treatment, any acceptable vapour heat treatment, cold treatment, or quick freeze treatment, which has been shown to be efficient against the relevant organism without damaging the fruit, and, where not available, chemical treatment as far as it is acceptable by Community legislation.
Annex V	**Plants, plant products and other objects which must be subject to a plant health inspection (at the place of production if originating in the Community, before being moved within the Community—in the country of origin or the consignor country, if originating outside the Community) before being permitted to enter the Community**	
Part B	**Plants, plant products and other objects originating in territories, other than those territories referred to in Part A**	
Section I	**Plants, plant products and other objects which are potential carriers of harmful organisms of relevance for the entire Community**	
1	Plants, intended for planting, other than seeds but including seeds of [. . .] *Citrus* L., *Fortunella* Swingle and *Poncirus* Raf., and their hybrids [. . .]	
3	Fruits of: — *Citrus* L., *Fortunella* Swingle, *Poncirus* Raf., *Microcitrus* Swingle, *Naringi* Adans., *Swinglea* Merr. and their hybrids [. . .]	

3.4. Entry, establishment and spread in the EU

3.4.1. Host range

The main hosts of primary concern within North America are *Citrus* and *Vaccinium corymbosum*. However, the reported host range of *S. citri* is fairly broad with more than 50 species from 33 plant families reported as hosts (Horton, 1918; Morse, 1995; CABI, 2017). Appendix A provides a list of plant species reported to be *S. citri* hosts. However, as Morse (1995) and Smith et al. (1997) note, some records may represent plant species on which *S. citri* was found casually or on which only adults were found feeding. Incidence of adults alone does not constitute evidence that the plant is a true host. A true host must allow reproduction and sustain development of all life stages.

Rhus larina and *Quercus* sp. are believed to be the original hosts of *S. citri* in its native California (Tanigoshi and Nishio-Wong, 1982; Morse, 1995). *S. citri* adapted to citrus, non-native plants in California, and eventually became significant pests of citrus in the early 20th Century (Moulton, 1909). *S. citri* also further adapted to *Vaccinium corymbosum* after highbush blueberry cultivars adapted to California's climate were grown in California (Haviland et al., 2009). There is scope for the polyphagous *S. citri* to further adapt and expand its host range.

Plant legislation (Dir. 2000/29/EC), in relation specifically to *S. citri*, applies only to *Citrus* L., *Fortunella* Swingle *Poncirus* Raf. and their hybrids. Therefore other hosts are not covered.

3.4.2. Entry

Is the pest able to enter into the EU territory? (Yes or No)
Yes, pathways that could allow *S. citri* to enter the EU exist.

Up to December 2017, there is one record of an EU interception of *S. citri* in the Europhyt database. It relates to an interception in 2003 in the UK on a consignment of *Festuca pratensis* seeds (plants for planting not yet planted) coming from Thailand. This is considered an unusual interception given that *S. citri* feeds on actively growing leaf and fruit tissues rather than grass seed.

More likely pathways for *S. citri* would be:

- plants for planting, on either young leaves or fruit (all stages), or in the associated soil/litter (prepupae and pupae),
- cut flowers with young leaves or fruit (all stages),
- fruit, most likely on young fruit (all developmental stages). Very unlikely on mature commercial fruit.

Current EU legislation prohibits the import of plants of *Citrus*, *Fortunella, Poncirus* and their hybrids, other than fruit and seeds from third countries. Therefore, pathways 1 and 2 can be considered as closed for citrus. For other hosts, the number of plant species that could provide a pathway via plants for planting or cut flowers is uncertain because of the lack of sound data supporting the status of plants reported as hosts (Morse, 1995; CABI, 2017). Nevertheless, *S. citri* is potentially highly polyphagous and the current measures aimed at the import of plants for planting in a dormant stage (no young foliage or fruits present) with no soil/growing medium/debris attached decreases the likelihood of *S. citri* being carried with imports of host plants.

The third pathway is considered unlikely as *S. citri* does not feed on mature commercial fruit.

Eurostat trade data do not discriminate between species of plants for planting. Fortunately, the Netherlands NPPO kindly provided EFSA with detailed trade inspection data regarding plants for planting from 2012 to 2014 (Table 5). These data show that a number of genera reported to be hosts of *S. citri* were imported into the EU as plants for planting from China, Thailand and USA over the period 2012–2014, indicating that potential pathways exist for the entry of *S. citri*.

Table 5: *Scirtothrips citri* host plants which have been imported into the EU as plants for planting from countries where *S. citri* is known to occur (Source: The Netherlands NPPO)

	China			Thailand			USA		
Genus	**2012**	**2013**	**2014**	**2012**	**2013**	**2014**	**2012**	**2013**	**2014**
Laurus									✓
Magnolia	✓	✓	✓				✓	✓	
Mangifera							✓		
Phoenix					✓	✓	✓	✓	✓
Quercus							✓		
Rosa	✓	✓							
Vaccinium		✓					✓	✓	

3.4.3. Establishment

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

Yes, hosts of *S. citri* occur in areas of the EU with suitable climatic conditions, comparable to regions in North America where *S. citri* occurs. The areas of citrus and blueberry production around the Mediterranean basin would be especially suitable for establishment of *S. citri*.

3.4.3.1. EU distribution of main host plants

A range of plant species reported as hosts to *S. citri* occurs in the EU. For example, cultivated fruit such as *Citrus* spp, *Vitis* sp. and *Mangifera indica,* as well as on ornamental plants, e.g. *Rosa* spp., *Phoenix* spp., and wild plants, e.g., *Vaccinium* sp., *Quercus* spp. and *Abies* spp. However, from these plant species, *S. citri* has reached pest status only in highbush blueberries (*V. corymbosum*) in California and in citrus in south-western USA (UC, 1991; Haviland et al., 2009; Dreistadt et al., 2011) and Asia (Bhagat et al., 1999; Sharma, 2007). The main hosts in the EU at risk are assumed to be citrus and blueberry plants, for which the cultivated area is shown in Tables 6 and 7.

Table 6: Citrus cultivation area (10^3 ha) in the EU. Source: Eurostat (data extracted on 7 June 2017)

Country	**2011**	**2012**	**2013**	**2014**	**2015**
Spain	317.61	310.50	306.31	302.46	298.72
Italy	160.72	146.79	163.59	140.16	149.10
Greece	52.06	50.61	49.88	49.54	46.92
Portugal	19.59	19.85	19.82	19.80	20.21
France	3.77	3.89	4.34	4.16	4.21
Cyprus	3.06	3.21	2.63	2.69	2.84
Croatia	2.12	1.88	2.17	2.17	2.21
EU (28 MS)	558.93	536.73	548.75	520.99	524.21

Table 7: Blueberry cultivation area (10^3 ha) in the EU. Source: USHBC Report (2014)

Country	**2007**	**2008**	**2010**	**2014**
Poland	2,713	2,794	3,158	3,740
Germany	1,781	2,050	2,146	2,316
Spain	757	850	1,053	1,824
France	328	340	360	416
Netherlands	235	243	259	700
Italy	219	243	275	472
United Kingdom	–	–	–	380
Romania	–	–	–	140
Austria	–	–	–	86

Country	2007	2008	2010	2014
Latvia	–	–	–	70
Lithuania	–	–	–	70
Estonia	–	–	–	60
Sweden	32	32	36	44
Denmark	20	20	24	30
Ireland	–	–	–	22
EU (28 MS)	6,085	6,572	7,311	10,370

3.4.3.2. Climatic conditions affecting establishment

The Koppen–Geiger classification of climatic regions (Peel et al., 2007) in North America where *S. citri* occurs, includes regions that are also found in Europe where citrus and *Vaccinium* are grown. We assume establishment in these areas would be possible outdoors. Moreover, given the polyphagy of this thrips, its establishment under protected cultivation might also possible further north in Europe.

3.4.4. Spread

Is the pest able to spread within the EU territory following establishment? (Yes or No) How?

Yes, *S. citri* can spread naturally. However, this type of spread is most likely limited.

RNQPs: Is spread mainly via specific plants for planting, rather than via natural spread or via movement of plant products or other objects?

Yes, the invasion of areas distant from its native range should be most probably attributed to human-assisted dispersal.

The potential for *Scirtothrips* spp. to spread naturally is relatively limited (EPPO, 2017). Although *S. citri* adults actively fly they do not move long distances between hosts (Moreno et al., 1984; UC, 1991). Long distance international spread is most likely via trade in plants or plant parts in a non-dormant stage (i.e. with actively growing leaf flush and/or young fruit).

3.5. Impacts

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

Yes, the introduction of *S. citri* would most likely impact at least the quality of citrus and blueberry production in the EU.

RNQPs: Does the presence of the pest on plants for planting have an economic impact, as regards the intended use of those plants for planting?[2]

Yes, the presence of *S. citri* on plants for planting would impact their intended use.

3.5.1. Potential pest impacts

3.5.1.1. Direct impacts of the pest

In the USA, *S. citri* is considered as a pest of citrus (e.g. Morse, 1995; CABI, 2017) and highbush blueberries (Haviland et al., 2009). In India, *S. citri* is regarded as a pest of *Citrus* and is of regional, rather than national, importance (Satyagopal et al., 2014). *S. citri* is generally not damaging to its many other hosts (UC, 1991; Haviland et al., 2009; Dreistadt et al., 2011; Haviland, 2014).

Scirtothrips citri feeding and oviposition in citrus does not reduce yields but can produce unacceptable cosmetic damage which may affect the marketability of fruit, at least for fresh consumption. The cosmetic damage is caused by feeding which punctures plant tissues and drains the contents of cells causing their cell walls to collapse (Lewis, (1973). Such damage in citrus often results in a conspicuous ring of scarred tissue around the apex of young fruits (Parker et al., 1995; Mound and Kibby, 1998). Oviposition damage (oviposition scars) on fruit may be a problem in early harvested

[2] See Section 2.1 on what falls outside EFSA's remit.

citrus fruit only. Most economic damage to fruits occurs from petal fall until the fruit are about 4 cm in diameter. Damage is greatest on fruit on the outside of the canopy (UC, 1991; EPPO, 2017).

Damage in blueberry consists of curling and abnormal growth of new leaves, as well as scarring of new twigs, which would lead to lower fruit set the following year. However, fruit quality is not affected in this case (Haviland et al., 2009; Haviland, 2014).

The type of damage caused by *S. citri* in North America could be expected in the EU.

3.6. Availability and limits of mitigation measures

Are there measures available to prevent the entry into, establishment within or spread of the pest within the EU such that the risk becomes mitigated?

Yes, phytosanitary measures against *S. citri* are available to reduce the likelihood of its introduction into the EU. Further control measures are available to hamper establishment and spread of this thrips.

3.6.1. Phytosanitary measures

Phytosanitary measures are currently applied to *Citrus* L., *Fortunella* Swingle, *Poncirus* Raf. and their hybrids (see Section 3.3.2), however, pathways exist via other hosts. The following phytosanitary measures are available for them:

- sourcing plants for planting (and cut flowers) from pest free area (PFA), pest free place of production (PFPP), pest free site (PFS)
- introduction of plants for planting in a dormant stage with no soil attached.

3.6.2. Biological or technical factors affecting the feasibility and effectiveness of measures to prevent the entry, establishment and spread of the pest

- The minute size of *S. citri* hampers its detection.
- The high polyphagy of *S. citri*, with many potential hosts remaining unregulated with respect to *S. citri*.
- Development of resistance to some pesticides (Parker et al., 1995)
- Uncertainty regarding hosts and geographical distribution in Asia – a wider distribution of this thrips outside of its native range on perhaps 50 or more hosts means that there may be a high diversity of potential pathways that could facilitate entry into the EU.

3.6.3. Biological or technical factors limiting the ability to prevent the presence of the pest on plants for planting

Not applicable as not considered to be RNQP.

3.6.4. Pest Control methods

- Biological control: in its native range, *S. citri* has many natural enemies, mostly predatory mites.
- Chemical control: insecticides may have to be applied 2–3 months after petal-fall to protect young growing citrus fruit.
- Cultural control: avoid potential hosts near (windbreaks) or in (cover-crops) the orchard.
- Integrated pest management (IPM): economic thresholds have been established for this pest in citrus in California. These are based on the scouting fruit for infestation (% fruit with mature thrips) and damage (% scarred fruit), as well as on the presence of predaceous mites on leaves.

3.7. Uncertainty

There are two principles sources of uncertainty, the first regards hosts and the second its distribution in Asia. *S. citri* is highly polyphagous and phytosanitary measures are targeted on citrus. Other hosts could provide pathways but until the host status of plants on which *S. citri* has been recorded is established, the range of possible plants that could provide a pathway is uncertain.

Regarding the geographical distribution of *S. citri* in Asia, the literature is contradictory. Some authors report *S. citri* as a pest of citrus (e.g. Bhagat et al., 1999; Sharma, 2007) but a recent check

list of thrips in India by Tyagi and Kumar (2016) does not include *S. citri*. The occurrence and distribution of *S. citri* in Asia remains uncertain. Nevertheless, these uncertainties do not affect the conclusions on the categorisation.

4. Conclusions

Considering the criteria within the remit of EFSA to assess the status as a potential Union QP, or as a potential RNQP, *S. citri* meets with no uncertainties the criteria assessed by EFSA for consideration as a potential Union QP (Table 8).

Table 8: 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	Panel's conclusions against criterion in Regulation (EU) 2016/2031 regarding Union regulated non-quarantine pest	Key uncertainties
Identity of the pest (Section 3.1)	The identity of the pest is established. Conventional taxonomic keys based on morphology of adults exist	The identity of the pest is established. Conventional taxonomic keys based on morphology of adults exist	No uncertainties
Absence/ presence of the pest in the EU territory (Section 3.2)	The pest is not present in the EU territory. Therefore, it could be regulated as a Union quarantine pest	The pest is not present in the EU territory. Therefore, it fails a criterion required for it to be a regulated non-quarantine organism	No uncertainties
Regulatory status (Section 3.3)	The pest is not present in the EU and is currently regulated as a quarantine pest	The pest is currently regulated as a quarantine pest and there are no grounds to consider its status could be revoked	No uncertainties
Pest potential for entry, establishment and spread in the EU territory (Section 3.4)	The pest could enter into, become established in, and spread within, the EU territory and the main pathways would be: • Cut flowers with young leaves or fruit • Plants for planting • Young fruits	Spread is most likely mainly via specific plants for planting, rather than via natural spread or via movement of plant products because young foliage or fruit is required for the thrips to survive	Given the high polyphagy of *S. citri*, but lack of detailed information regarding hosts, there is uncertainty over pathway details (i.e. which plants could provide a pathway). Also, the distribution of *S. citri* in Asia is uncertain, so pathway origins are unknown
Potential for consequences in the EU territory (Section 3.5)	The pests' introduction could cause quality losses to citrus and yield losses to *Vaccinium* in the EU	The presence of the pest on plants for planting would most likely have an impact on plants for planting	No uncertainties
Available measures (Section 3.6)	There are risk reduction options available to prevent the entry into, establishment within or spread of the pest within the EU, starting with the sourcing of plants for planting and cut flowers from pest free countries/areas, the introduction of dormant plants with no soil/growing medium attached to chemical control	Risk reduction options including chemical control and the trade of dormant plants with no soil/ growing/media/debris attached, may help to prevent pest presence on plants for planting	No uncertainties

Criterion of pest categorisation	Panel's conclusions against criterion in Regulation (EU) 2016/2031 regarding Union quarantine pest	Panel's conclusions against criterion in Regulation (EU) 2016/2031 regarding Union regulated non-quarantine pest	Key uncertainties
Conclusion on pest categorisation (Section 4)	All criteria above for consideration as a potential quarantine pest are met	As this pest is not present in the EU, this criterion, which should be fulfilled for consideration as a potential regulated non-quarantine pest, is not met. As a consequence, *S. citri* does not meet all the criteria for consideration as a potential regulated non-quarantine pest	No uncertainties
Aspects of assessment to focus on/ scenarios to address in future if appropriate	Any further assessment should gather information on (i) the geographic distribution of *S. citri* in Asia, and (ii) the true host status of plants reported as hosts		

References

Bhagat KC, Nehru RK and Koul VK, 1999. Sap feeding pests of citrus in Jammu. Insect Environment, 5, 123. Available online: https://www.cabdirect.org/cabdirect/abstract/20001107657

CABI, 2017. *Scirtothrips citri* (California citrus thrips) Datasheeet 49063, Crop Protection Compendium. Last modified 11 October 2017. Available online: https://www.cabi.org/isc/datasheet/49063 [Accessed: 13 December 2017]

Dreistadt SH, Phillips PA and O'Donnell CA, 2011. Pest notes: Thrips. UC ANR Publication 7429. IPM Education and Publications, University of California Statewide IPM Program. Available online: http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7429.html [Accessed: 12 December 2017]

EFSA PLH Panel (EFSA Panel on Plant Health), 2010. PLH Guidance on a harmonised framework for pest risk assessment and the identification and evaluation of pest risk management options by EFSA. EFSA Journal 2010;8(2): 1495, 66 pp. https://doi.org/10.2903/j.efsa.2010.1495

EPPO (European and Mediterranean Plant Protection Organization), 2005. Diagnostics. *Scirtothrips aurantii*, *Scirtothrips citri*, *Scirtothrips dorsalis*. PM 7/56 (1). Bulletin OEPP/EPPO Bulletin, 35, 353–356.

EPPO (European and Mediterranean Plant Protection Organization), 2017. EPPO Global Database. Available online: https://gd.eppo.int

FAO (Food and Agriculture Organization of the United Nations), 2004. ISPM (International Standards for Phytosanitary Measures) 21—Pest risk analysis of regulated non-quarantine pests. FAO, Rome, 30 pp. Available online: https://www.ippc.int/sites/default/files/documents//1323945746_ISPM_21_2004_En_2011-11-29_Refor.pdf

FAO (Food and Agriculture Organization of the United Nations), 2013. ISPM (International Standards for Phytosanitary Measures) 11—Pest risk analysis for quarantine pests. FAO, Rome, 36 pp. Available online: https://www.ippc.int/sites/default/files/documents/20140512/ispm_11_2013_en_2014-04-30_201405121523-494.65%20KB.pdf

Grout TG, Morse JG and Brawner OL, 1986. Location of citrus thrips (Thysanoptera: Thripidae) pupation: tree or ground. Journal of Economic Entomology, 79, 59–61.

Haviland DR. 2014. *University of California Pest Management Guidelines*. Blueberry. Citrus thrips. Available online: http://ipm.ucanr.edu/PMG/r57300111.html [Accessed: 13 December 2017]

Haviland DR, Rill SM and Morse JG, 2009. Southern highbush blueberries are a new host for *Scirtothrips citri* (Thysanoptera: Thripidae) in California. Florida Entomologist, 92, 147–149.

Hoddle MS, Heraty JM, Rugman-Jones PF, Mound LA and Stouthamer R, 2008. Relationships among species of *Scirtothrips* (Thysanoptera: Thripidae, Thripinae) using molecular and morphological data. Annals of the Entomological Society of America, 101, 491–500.

Horton JR, 1918. The citrus thrips. USDA Technical Bulletin, 616, 1–42.

Johansen RM and Mojica-Guzman A, 1998. The genus *Scirtothrips* Shull, 1909 (Thysanoptera: Thripidae, Sericothripini), in Mexico. Folia Entomologica Mexicana, 104, 23–108.

Kerns D, Wright G and Loghry J, 2001. Citrus Thrips (*Scirtothrips citri*). The University of Arizona Citrus Insects Cooperative Extension. Available online: http://cals.arizona.edu/crops/citrus/insects/citrusinsect.html [Accessed: 13 December 2017]

Lewis T, 1973. Thrips - their biology, ecology and economic importance. Academic Press, London. 349 pp.

Moreno DS, Gregory WA and Tanigoshi LK, 1984. Flight response of *Aphytis melinus* (Hymenoptera: Aphelinidae) and *Scirtothrips citri* (Thysanoptera: Thripidae) to trap color, size, and shape. Environmental Entomology, 13, 935–940.
Morse JG, 1995. Prospects for IPM of citrus thrips in California. In: Parker BL, Skinner M and Lewis T (eds.). Thrips biology and management, Proceedings of the 1993 International Conference on Thysanoptera: Towards understanding thrips management. September 28–30 1993, Burlington, Vermont. pp. 371–379.
Moulton D, 1909. The orange thrips. US Department of Agriculture Technical Series Bulletin 12, 119–122.
Mound L and Hoddle M, 2016. *Scirtothrips* Species (Thysanoptera: Thripidae) described from *Mangifera indica* (Anacardiaceae) in Mexico. Florida Entomologist, 99, 759–764.
Mound LA and Kibby G, 1998. *Thysanoptera, an identification guide*, 2nd Edition. CABI, Wallingford.
Mound LA and Palmer JM, 1981. Identification, distribution and host-plants of the pest species *Scirtothrips* (Thysanoptera: Thripidae). Bulletin of Entomological Research, 71, 467–479.
Munger F, 1942. Notes on the biology of the citrus thrips. Journal of Economic Entomology, 35, 455.
Palmer JM, Mound LA and du Heaume GJ, 1989. *CIE Guides to Insects of Importance to Man. 2. Thysanoptera*. CAB International, Wallingford, UK.
Parker BL, Skinner M and Lewis T (eds.)., 1995. Thrips biology and management, Proceedings of the 1993 International Conference on Thysanoptera: towards understanding thrips management. September 28–30 1993, Burlington, Vermont. Plenum, London.
Peel MC, Finlayson BL and McMahon TA, 2007. Updated world map of the Koppen-Geiger climate classification. Hydrology and Earth System Sciences, 11, 1633–1644.
Rachana R and Varatharajan R, 2017. Checklist of terebrantian thrips (Insecta: Thysanoptera) recorded from India. Journal of Threatened Taxa, 9, 9748–9755.
Satyagopal K, Sushil SN, Jeyakumar P, Shankar G, Sharma OP, Sain SK, Boina DR, Lavanya N, Varshney R, Sunanda BS, Asre R, Kapoor KS, Arya S, Kumar S, Patni CS, Chattopadhyay C, Ray PK, Kadam UK, Bhatt J, Dhapure SR, Ekabote SK, Thakare AY, Halepyati AS, Patil MB, Sreenivas AG, Sathyanarayana N and Latha S, 2014. AESA based IPM package for Citrus. National Institute of Plant Health Management. 53 pp.
Sharma DR, 2007. Activity and control of citrus thrips, *Scirtothrips citri* (Moulton) on kinnow. Agricultural Research Journal, 44, 59–62.
Smith IM, McNamara DG, Scott PR and Holderness M, 1997. *Scirtothrips citri*. In: Quarantine Pests for Europe, 2nd Edition, CABI/EPPO, Wallingford, 1425 pp.
Tanigoshi LK and Nishio-Wong JY, 1982. Citrus thrips: biology, ecology, and control. US Department of Agriculture Technical Bulletin 1668, 17 pp.
Tyagi K and Kumar V, 2016. Thrips (Insecta: Thysanoptera) of India: an updated checklist. Halteres, 7, 64–98.
UC (University of California), 1991. Integrated Pest Management for Citrus. 2nd Edition. University of California. Statewide Integrated Pest Management Project. Division of Agriculture and Natural Resources. Publication 3303. Oakland, CA (USA), 144 pp.
Weeks JA, Hodges AC and Leppla NC, 2012. Citrus Pests. Citrus thrips. Available online: http://idtools.org/id/citrus/pests/factsheet.php?name=Citrus+thrips [Accessed: 12 December 2017]

Abbreviations

EPPO	European and Mediterranean Plant Protection Organization
FAO	Food and Agriculture Organization
IPM	Integrated pest management
IPPC	International Plant Protection Convention
MS	Member State
PFA	pest free area
PFPP	pest free place of production
PFS	pest free site
PLH	EFSA Panel on Plant Health
PZ	protected zone
QP	quarantine pest
RNQP	regulated non-quarantine pest
TFEU	Treaty on the Functioning of the European Union
ToR	Terms of Reference

Appendix A – Reported host plants of *Scirtothrips citri*

Family	Host (common name)	Reference
Amaranthaceae	*Amaranthus* sp. (tumbleweed)	Morse (1995)
Anacardiaceae	*Pistacia vera* (pistachio)	Morse (1995)
	Rhus sp.	EPPO (2017)
	Rhus laurina (California sumac)	Tanigoshi and Nishio-Wong (1982)
	Schinus molle (California pepper tree)	Morse (1995)
	Mangifera indica	Mound and Hoddle (2016)
Arecaceae	*Phoenix dactylifera* (date palm)	Morse (1995)
Asteraceae	*Dahlia imperialis* (tree dahlia)	Morse (1995)
Bignoniaceae	*Campsis radicans* (trumpet vine)	Morse (1995)
Boraginaceae	*Amsinckia* sp. (yellow fiddleneck)	Morse (1995)
Convolvulaceae	*Convolvulus* sp. (wild morning-glory)	Morse (1995)
Ebenaceae	*Diospyros texana* (Texas persimmon)	Morse (1995)
Ericaceae	*Vaccinium corymbosum* (highbush blueberries)	Haviland et al. (2009)
Euphorbiaceae	*Ricinus communis* (castor bean)	Morse (1995)
Fabaceae	*Erythrina* sp. (coral tree)	Morse (1995)
	Medicago sativa (lucerne)	EPPO (2017)
	Prosopis sp. (mesquite)	Morse (1995)
Fagaceae	*Quercus* sp. (liveoak)	Tanigoshi and Nishio-Wong (1982)
	Quercus grisea (Mexican blue oak)	Morse (1995)
Juglandaceae	*Carya illinoinensis* (pecan)	EPPO (2017)
Lauraceae	*Laurus* sp. (laurel)	Weeks et al. (2012)
	Persea americana (avocado)	Morse (1995)
	Umbellularia californica (California laurel)	Morse (1995)
Lythraceae	*Punica granatum* (pomegranate)	Morse (1995)
Magnoliaceae	*Magnolia* sp.	EPPO (2017)
Malvaceae	*Gossypium hirsutum* (cotton)	EPPO (2017)
Myrtaceae	*Myrtus communis* (common myrtle)	Morse (1995)
Oleaceae	*Ligustrum* (privet)	Morse (1995)
	Olea europaea (olive)	Morse (1995)
Onagraceae	*Oenothera* sp. (evening primrose)	Morse (1995)
Palmae	*Phoenix dactylifera* (date palm)	EPPO (2017)
Pinaceae	*Abies* sp. (fir)	Weeks et al. (2012)
Polygonaceae	*Eriogonum* sp. (buckwheat)	Morse (1995)
	Rheum rhaponticum (rhubarb)	Morse (1995)
	Rumex sp. (dock)	Morse (1995)
Portulacaceae	*Portulaca oleracea* (purslane)	Morse (1995)
Rhizophoraceae	*Rhizophora mangle* (mangrove)	Morse (1995)
Rosaceae	*Adenostoma fasciculatum* (chamise)	Morse (1995)
	Prunus spp.	Morse (1995)
	Pyrus communis (pear)	Morse (1995)
	Rosa sp.	EPPO (2017)
	Rubus (raspberry)	Morse (1995)

Family	Host (common name)	Reference
Rutaceae	*Citrus limon* (lemon)	EPPO (2017)
	Citrus paradisi (grapefruit)	EPPO (2017)
	Citrus reticulata (mandarin)	EPPO (2017)
	Citrus sinensis (orange)	EPPO (2017)
	Citroncirus sp.	EPPO (2017)
	Citrus sp.	EPPO (2017)
	Fortunella sp.	EPPO (2017)
	Poncirus trifoliata	EPPO (2017)
	x *Citrofortunella microcarpa*	EPPO (2017)
Salicaceae	*Salix sp.* (willow)	Morse (1995)
Sapindaceae	*Dodonaea viscoa* (hopbush)	Morse (1995)
Simmondsiaceae	*Simmondsia chinensis* (jojoba)	Morse (1995)
Solanaceae	*Solanum* sp. (nightshade)	Morse (1995)
Vitaceae	*Vitis* sp. (grapevine)	EPPO (2017)
Zygophyllacaea	*Larrea tridentata* (creosote bush)	Morse (1995)