Pest categorisation of *Acrobasis pirivorella*

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

Abstract

The European Commission requested EFSA to conduct a pest categorisation of *Acrobasis pirivorella* (Lepidoptera: Pyralidae), a monophagous moth whose larvae exclusively feed on developing buds, flowers, and fruits of cultivated and wild *Pyrus* spp. *A. pirivorella* is a species with reliable methods available for identification. *A. pirivorella* occurs in north-east Asia only, causing significant damage in cultivated pears. It is regulated in the EU by Council Directive 2000/29/EC where it is listed in Annex IIAI. Within this regulation, plants for planting of *Pyrus* spp. is a closed pathway. This species has never been reported by Europhyt. Fruits and cut branches of *Pyrus* spp. are open pathways. Biotic and abiotic conditions are conducive for establishment and spread of *A. pirivorella* in the EU. Were *A. pirivorella* to establish, impact on pear production is expected. Considering the criteria within the remit of EFSA to assess its regulatory plant health status, *A. pirivorella* meets the criteria for consideration as a potential Union quarantine pest (it is absent from the EU, potential pathways exist and its establishment would cause an economic impact). Given that *A. pirivorella* is not known to occur in the EU, it fails to meet some of the criteria required for regulated non-quarantine pest (RNQP) status.

© 2018 European Food Safety Authority. *EFSA Journal* published by John Wiley and Sons Ltd on behalf of European Food Safety Authority.

**Keywords:** European Union, pest risk, plant health, plant pest, quarantine, pear moth, Pyralidae

**Requestor:** European Commission

**Question number:** EFSA-Q-2018-00024

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

Suggested citation: EFSA Plant Health Panel, Bragard C, Dehnen-Schmutz K, Di Serio F, Gonthier P, Jacques M-A, Jaques Miret JA, Justesen AF, Magnusson CS, Milonas P, Navas-Cortes JA, Parnell S, Potting R, Reignault PL, Thulke H-H, Van der Werf W, Vicent Civera A, Yuen J, Zappalà L, Czwienczek E, Bali E and MacLeod A, 2018. Scientific Opinion on the pest categorisation of Acrobasis pirivorella. EFSA Journal 2018;16(10):5440, 20 pp. https://doi.org/10.2903/j.efsa.2018.5440

ISSN: 1831-4732

© 2018 European Food Safety Authority. EFSA Journal published by John Wiley and Sons Ltd on behalf of European Food Safety Authority.

This is an open access article under the terms of the Creative Commons Attribution-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited and no modifications or adaptations are made.

Reproduction of the images listed below is prohibited and permission must be sought directly from the copyright holder:

Figure 1: © EPPO

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

Abstract ........................................................................................................................................... 1
1. Introduction ................................................................................................................................. 4
1.1. Background and Terms of Reference as provided by the requestor ....................................... 4
1.1.1. Background .......................................................................................................................... 4
1.1.2. Terms of Reference .............................................................................................................. 4
1.1.2.1. Terms of Reference: Appendix 1 ..................................................................................... 5
1.1.2.2. Terms of Reference: Appendix 2 ................................................................................... 6
1.1.2.3. Terms of Reference: Appendix 3 ................................................................................... 7
1.1.2.3.1. Terms of Reference: Appendix 3 .............................................................................. 7
1.1.2.3.2. Terms of Reference: Appendix 3 .............................................................................. 7
1.2. Interpretation of the Terms of Reference ................................................................................ 8
2. Data and methodologies .............................................................................................................. 8
2.1. Data ........................................................................................................................................ 8
2.1.1. Literature search .................................................................................................................. 8
2.1.2. Database search .................................................................................................................. 8
2.2. Methodologies ........................................................................................................................ 8
3. Pest categorisation ....................................................................................................................... 10
3.1. Identity and biology of the pest ............................................................................................... 10
3.1.1. Identity and taxonomy ........................................................................................................ 10
3.1.2. Biology of the pest .............................................................................................................. 11
3.1.3. Intraspecific diversity ........................................................................................................ 11
3.1.4. Detection and identification of the pest ............................................................................. 11
3.2. Pest distribution ...................................................................................................................... 11
3.2.1. Pest distribution outside the EU ......................................................................................... 11
3.2.2. Pest distribution in the EU ............................................................................................... 12
3.3. Regulatory status .................................................................................................................... 13
3.3.1. Council Directive 2000/29/EC ............................................................................................ 13
3.3.2. Legislation addressing the hosts of Acrobasis pirivorella .................................................. 13
3.4. Entry, establishment and spread in the EU ............................................................................. 13
3.4.1. Host range .......................................................................................................................... 13
3.4.2. Entry .................................................................................................................................. 13
3.4.2.1. EU distribution of main host plants .............................................................................. 14
3.4.2.2. Climatic conditions affecting establishment ............................................................... 15
3.4.2.3. Spread .......................................................................................................................... 15
3.4.3. Establishment .................................................................................................................... 14
3.4.3.1. EU distribution of main host plants .............................................................................. 14
3.4.3.2. Climatic conditions affecting establishment ............................................................... 15
3.5. Impacts ................................................................................................................................... 15
3.6. Availability and limits of mitigation measures ......................................................................... 16
3.6.1. Identification of additional measures .................................................................................. 16
3.6.1.1. Additional control measures ....................................................................................... 16
3.6.1.2. Additional supporting measures .................................................................................. 17
3.6.1.3. Biological or technical factors limiting the feasibility and effectiveness of measures to prevent the entry, establishment and spread of the pest .................................................................. 18
3.7. Uncertainty ........................................................................................................................... 18
4. Conclusions ............................................................................................................................... 18
References ...................................................................................................................................... 19
Abbreviations ................................................................................................................................. 20
Glossary ......................................................................................................................................... 20
1. Introduction

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

1.1.1. Background

Council Directive 2000/29/EC\(^1\) 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\(^2\) 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 categorisations 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\(^3\), 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.

---

\(^1\) Council Directive 2000/29/EC of 8 May 2000 on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community. OJ L 169/1, 10.7.2000, p. 1–112.

\(^2\) Regulation (EU) 2016/2031 of the European Parliament of the Council of 26 October 2016 on protective measures against pests of plants. OJ L 317, 23.11.2016, p. 4–104.

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

- Aleurocanthus spp.
- Anthonomus bissignifer (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)

(b) Bacteria

- Citrus variegated chlorosis
- Erwinia stewartii (Smith) Dye

(c) Fungi

- Alternaria alternata (Fr.) Keissler (non-EU pathogenic isolates)
- Anisogramma anomala (Peck) E. Müller
- Apiosporina morbosa (Schwein.) v. Arx
- Ceratoxyis virescens (Davidson) Moreau
- Cercoseptoria pini-densiflorae (Hori and Nambu) Deighton
- Cercospora angolensis Carv. and Mendes

(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

**Annex IIB**

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

- Anthonomus grandis (Boh.)
- Cephalcia laiophila (Klug)
- Dendroctonus micans Kugelan
- Gilphina hercyniae (Hartig)
- Gonipterus scutellatus Gyll.
- Ips amitinus Eichhof

- Numonia pyrivorella (Matsumura)
- Oligonychus perditus Pritchard and Baker
- Pissodes spp. (non-EU)
- Scirtothrips citri (Moulteex)
- Scirtothrips aurantii Faure
- Scolytidae spp. (non-EU)
- Tachyterellus quadrigibbus Say
- Toxoptera citricida Kirk.

- Xanthomonas campestris pv. oryzae (Ishiyama)
- Dye and pv. oryzicola (Fang. et al.) Dye

- 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
(b) Bacteria

*Curtobacterium flaccumfaciens pv. flaccumfaciens* (Hedges) Collins and Jones

(c) Fungi

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

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  
3) *Graphocephala atropunctata* (Signoret)

2) *Draeculacephala minerva* Ball

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)

(b) 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.*, *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 IIAI**

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

| Insects and nematodes | Fungi | Viruses and virus-like organisms |
|-----------------------|-------|---------------------------------|
| Acleris spp. (non-EU) | Ceratocystis fagacearum (Bretz) Hunt | Tobacco ringspot virus |
| Amauromyza maculosa (Malloch) | Chrysomyxa arctostaphylI Dietel | Tomato ringspot virus |
| Anomala orientalis Waterhouse | Cronartium spp. (non-EU) | Bean golden mosaic virus |
| Arrhenodes minutus Drury | Endocronartium spp. (non-EU) | Cowpea mild mottle virus |
| Choristoneura spp. (non-EU) | Chrysomyxa arctostaphylI Dietel | Lettuce infectious yellows virus |
| Conotrachelus nenuphar (Herbst) | Dendrolimus sibiricus Tschetverikov | *Pepper mild tigré virus* |
| Diabrotica barberi Smith and Lawrence | Diabrotica virgifera zeae Krysan & Smith | *Squash leaf curl virus* |
| Diabrotica undecimpunctata howardi Barber | Diabrotica undecimpunctata undecimpunctata Mannerheim | *Euphorbia mosaic virus* |
| Diabrotica undecimpunctata undecimpunctata Mannerheim | Diabrotica virgifera zeae Krysan & Smith | *Florida tomato virus* |
| Hirschmanniella spp., other than *Hirschmanniella gracilis* (de Man) Luc and Goodey | Heliotrixis sea (Boddie) | *Mycosphaerella larici-leptolepis* Ito et al. |
| Liriomyza sativae Blanchard | Hirschmanniella spp., other than *Hirschmanniella gracilis* (de Man) Luc and Goodey | *Mycosphaerella populum* G. E. Thompson |
| (b) Fungi | (c) Viruses and virus-like organisms | |
| Ceratocystis fagacearum (Bretz) Hunt | Gymnosporangium spp. (non-EU) | Tobacco ringspot virus |
| Chrysomyxa arctostaphylI Dietel | Inonotus weirii (Murril) Kotlaba and Pouzar | Tomato ringspot virus |
| Cronartium spp. (non-EU) | Melampsora farlowii (Arthur) Davis | Bean golden mosaic virus |
| Endocronartium spp. (non-EU) | Guignardia laricina (Saw.) Yamamoto and Ito | Cowpea mild mottle virus |
| Guignardia laricina (Saw.) Yamamoto and Ito | Gymnosporangium spp. (non-EU) | Lettuce infectious yellows virus |
| Gymnosporangium spp. (non-EU) | Inonotus weirii (Murril) Kotlaba and Pouzar | Pepper mild tigré virus |
| Inonotus weirii (Murril) Kotlaba and Pouzar | Melampsora farlowii (Arthur) Davis | Squash leaf curl virus |
| Melampsora farlowii (Arthur) Davis | Trechispora brinkmannii (Bresad.) Rogers | Euphorbia mosaic virus |
| (c) Viruses and virus-like organisms | | Florida tomato virus |
(d) Parasitic plants

*Arceuthobium* spp. (non-EU)

**Annex IIAI**

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

*Meloidogyne fallax* Karssen *Rhizoeus hibisci* Kawai and Takagi

*Popillia japonica* Newman

(b) Bacteria

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

*Acrobasis pirivorella* (Matsamura) (1900) is the current valid name for the species listed as *Numonia pyrivorella* (Matsumura) in Annex IIAI (see Section 3.1.1). Therefore, the species under scrutiny in this opinion will be referred to using its currently valid name. *A. pirivorella* 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 or those of a regulated non-quarantine pest (RNQP) for the area of the EU excluding Ceuta, Melilla and the outermost regions of Member States (MS) referred to in Article 355(1) of the Treaty on the Functioning of the European Union (TFEU), other than Madeira and the Azores.

2. Data and methodologies

2.1. Data

2.1.1. Literature search

A literature search on *A. pirivorella* was conducted at the beginning of the categorisation in the ISI Web of Science bibliographic database, using scientific current and past names of the pest as search terms. Relevant papers were reviewed and further references and information were obtained from experts, as well as from citations within the references and grey literature.

2.1.2. Database search

Pest information, on host(s) and distribution, was retrieved from the European and Mediterranean Plant Protection Organization (EPPO) Global Database (EPPO Global Database, 2018) and relevant publications.

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

The Europhyt database was consulted for pest-specific notifications on interceptions and outbreaks. Europhyt is a web-based network run by the Directorate General for Health and Food Safety (DG...
SANTÉ) of the European Commission, 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 MS and the phytosanitary measures taken to eradicate or avoid their spread.

2.2. Methodologies

The Panel performed the pest categorisation for *A. pirivorella*, following guiding principles and steps in the International Standard for Phytosanitary Measures No 11 (FAO, 2013) and No 21 (FAO, 2004) and EFSA PLH Panel (2018).

This work was initiated following an evaluation of the EU 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 quarantine pest and for a Union RNQP in accordance with Regulation (EU) 2016/2031 on protective measures against pests of plants, and includes additional information required in accordance with 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 potentially qualify either as a quarantine pest or as a RNQP. If one of the criteria is not met, the pest will not qualify. A pest that does not qualify as a quarantine pest may still qualify as a RNQP that needs to be addressed in the opinion. For the pests regulated in the protected zones only, the scope of the categorisation is the territory of the protected zone; thus, the criteria refer to the protected zone instead of the EU territory.

It should be noted that the Panel’s conclusions are formulated respecting its remit and particularly with regard to the principle of separation between risk assessment and risk management (EFSA founding regulation (EU) No 178/2002); therefore, instead of determining whether the pest is likely to have an unacceptable impact, 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, whereas addressing social impacts is outside the remit of the Panel.

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 protected zone quarantine pest (articles 32–35) | Criterion in Regulation (EU) 2016/2031 regarding Union regulated non-quarantine pest |
|---------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 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 protected zone quarantine organism | 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) |
| 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 | The protected zone system aligns with the pest free area system under the International Plant Protection Convention (IPPC) | 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 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, the identity of *A. pirivorella* is well established.
Nephopteryx pirivorella from specimens collected in pears in Japan. Synonyms for this insect include Nephopterix pirivorella Matsumura, Nephopteryx pauperculella (Wileman), Acrobasis pyrivorella (Matsumura), Ectomyelois pyrivorella (Matsumura), Eurhodope pirivorella (Matsumura), Numonia pirivora (Gerasimov), Numonia pyrivorella (Matsumura) and Rhodophaea pirivorella (Matsumura) (Nuss et al., 2003–2017; Walker, 2011).

3.1.2. Biology of the pest

First-instar larvae or, more commonly, second-instar larvae of A. pirivorella overwinter in the flower buds of pears in a thin white cocoon (Shutova, 1970; Gibanov and Sanin, 1971). Although these buds die, they do not fall. In spring, these larvae infest developing buds, flowers and fruitlets. A single larva can destroy up to three of each of these plant organs during its development (Shutova, 1977) before reaching the third larval instar and boring into the core of the young fruit (Makaji, 1965). Upon completion of development, larvae spin a silk attachment to hold the fruit onto the tree, which together with the presence of black shrivelled fruitlets persisting on the trees are the typical symptom of attack by this species. The larva makes a prominent hole in each fruit near the calyx end with an overhanging lip of silk and excreta (EPPO Global database, 2018). In Russia, larvae pupate in the fruit, usually at the end of May and first adults emerge by mid-July when the fruit is about the size of a hazelnut. However, peak adult emergence occurs between late July and mid-August (Komarova, 1984). These moths, which are not good flyers, mate and lay about 120 eggs per female both on the flower buds and on the fruit. Eggs deposited on flower buds hatch in 8–10 days. Larvae penetrate flower buds and fruits to form the overwintering cocoons (Anonymous). However, larvae from eggs deposited on fruit complete development and may produce a new generation in September. These adults then lay eggs on flower buds and the resulting larvae overwinter. There is one generation per year in Russia and 2–3 in Japan (Shutova, 1977). Infested fruit remain black and shrivelled on the tree.

3.1.3. Intraspecific diversity

No intraspecific diversity has been described for this species.

3.1.4. Detection and identification of the pest

Are detection and identification methods available for the pest?

Yes, detection and identification methods for A. pirivorella are available.

Pheromone trapping: (Z)-9-pentadecenyl acetate (Z9-15:OAc) and pentadecenyl acetate (15:OAc) were identified in the pheromone gland of female A. pyrivorella. In a field experiment, traps baited with a lure containing Z9-15:OAc (300 µg) and 15:OAc (21 µg) caught more males than ones baited with two virgin females (Tabata et al., 2009). Therefore, this lure could be used for monitoring and detection purposes.

Symptoms: infested fruits are normally retarded in growth and turn black and shrivelled. Moreover, these fruits remain on the tree even until the following year (Shutova, 1977). During summer conspicuous webbings on exit holes and masses of excreta on the exterior of the fruit are indicative of infestation by A. pirivorella (Shutova, 1977).

Morphology: the different developmental stages of A. pirivorella are described at EPPO Global database (2018). Adults are 9–13 mm long and have a 23–30 mm wingspan (Matsumura, 1900). The forewings have two transverse stripes and a crescent-shaped dark apical spot between them. The hindwings are yellowish-grey. The head, thorax and dorsum are covered with ashen-violet-brown bands. The species was originally described by Matsumura (1900).

3.2. Pest distribution

3.2.1. Pest distribution outside the EU

According to EPPO Global Database (2018), A. pirivorella occurs in a few countries in Asia Far East, including Japan, Taiwan, the two Korea’s and some areas of China and Russia (Table 2, Figure 1).
3.2.2. Pest distribution in the EU

According to EPPO Global Database (accessed on 31 July 2018), the current distribution of A. pirivorella does not include any of the 28 EU MS.

Table 2: Current distribution of Acrobasis pirivorella worldwide (EPPO Global Database accessed 16 July 2018)

| Continent        | Country                  | State            | Status                         |
|------------------|--------------------------|------------------|--------------------------------|
| Asia             | China                    |                  | Present, restricted distribution|
|                  | [Guangdong]              |                  | Absent, unreliable record      |
|                  | Heilongjiang             |                  | Present, no details            |
|                  | Jilin                    |                  | Present, no details            |
|                  | Liaoning                 |                  | Present, no details            |
|                  | Neimenggu                |                  | Present, no details            |
|                  | Shaanxi                  |                  | Present, no details            |
| Japan            |                          |                  | Present, widespread            |
|                  | Hokkaido                 |                  | Present, widespread            |
|                  | Honshu                   |                  | Present, widespread            |
|                  | Kyushu                   |                  | Present, widespread            |
|                  | Shikoku                  |                  | Present, widespread            |
| Korea Dem. People’s Republic |                  |                  | Present, no details |
| Korea, Republic |                          |                  | Present, no details            |
| Taiwan           |                          |                  | Present, no details            |
| Russia           |                          | Far East         | Present, restricted distribution|
| Russia           |                          |                  | Present, no details            |

Figure 1: Global distribution map for Acrobasis pirivorella (extracted from EPPO Global Database, 2018; accessed 13 July 2018). There are no reports of transient populations for this species.

Is the pest present in the EU territory? If present, is the pest widely distributed within the EU? 

No, A. pirivorella is not known to occur in the EU; it has never been reported from the EU.
3.3. Regulatory status

3.3.1. Council Directive 2000/29/EC

*Acrobasis pirivorella* is listed in Council Directive 2000/29/EC. Details are presented in Tables 3 and 4.

Table 3: *Acrobasis pirivorella* 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                                                                   |
| 5.               | *Numonia pyrivorella*                                                                                                               |
|                  | Plants of Pyrus L., other than seeds, originating in non-European countries                                                        |

3.3.2. Legislation addressing the hosts of *Acrobasis pirivorella*

Table 4: Regulated hosts and commodities that may involve *Acrobasis pirivorella* in Annexes III 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                                                                                                                                                     |
|                   | Plants of Pyrus L. and their hybrids, intended for planting, other than seeds.                                                                                       |
|                   | Without prejudice to the prohibitions applicable to the plants listed in Annex III A (9), where appropriate, non-European countries, other than Mediterranean countries, Australia, New Zealand, Canada, the continental states of the USA |

3.4. Entry, establishment and spread in the EU

3.4.1. Host range

According to EPPO Global database and CABI Invasive species compendium, *A. pirivorella* is a monophagous species, feeding on *Pyrus communis*, and *Pyrus* spp., which are the major and the only one listed hosts. It attacks wild and cultivated pear plants.

3.4.2. Entry

Is the pest able to enter into the EU territory?

Yes, fruits, cut branches and plants for planting (excluding seeds) are the main pathways. The latter is nowadays closed.

Although so far (18 July 2018) no records of interception of *A. pirivorella* exist in the Europhyt database, larvae and pupae of *A. pirivorella* could be present in fruit at harvest time. Therefore,

1) fruit imported from infested areas may constitute a pathway for this moth into the EU.

Moreover, as larvae overwinter in pear flower buds,

2) plants for planting (excluding seeds) are another pathway,

Finally, as oviposition may take place on flower buds and fruit

3) Cut branches containing either flower buds or fruit would be a third pathway.
The plants for planting pathway can be considered as closed because present regulations ban the import of plants of *Pyrus* L. and their hybrids, intended for planting, other than seeds from the infested countries (see Section 3.3.2). However, the fruit (Table 5) and the cut branches pathways remain open.

Table 5: EU-28 import of fresh pears (in 100 kg) from countries with reported presence of *Acrobasis pirivorella* (2013–2017; Source: EUROSTAT Code: 080830) accessed on 16 July 2018

| Country of origin/year                      | 2013  | 2014  | 2015  | 2016  | 2017  |
|--------------------------------------------|-------|-------|-------|-------|-------|
| China, People’s Republic of                | 103,518 | 63,020 | 94,541 | 113,845 | 112,007 |
| Japan                                      | 1     | 0     | 6     | 2     | 57    |
| Korea, Democratic People’s Republic of (North Korea) | 0     | 0     | 0     | 0     | 0     |
| Korea, Republic of (South Korea)           | 450   | 1,156 | 815   | 909   | 1,227 |
| Russian Federation (Russia)                | 471   | 1,871 | 721   | 52    | 12    |
| Taiwan                                     | 0     | 0     | 0     | 0     | 35    |

3.4.3. Establishment

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

*Yes*, biotic and abiotic conditions are conducive for establishment of *A. pirivorella* in the EU

3.4.3.1. EU distribution of main host plants

All the known hosts of *A. pirivorella* are in the genus *Pyrus*, and pear orchards are common in the EU (Table 6)

Table 6: Area of cultivation/production of pears (1,000 ha) in EU MS (Source: EUROSTAT accessed on 16 July 2018 and 21 September 2018)

| Country/Year                               | 2013  | 2014  | 2015  | 2016  | 2017  |
|--------------------------------------------|-------|-------|-------|-------|-------|
| European Union (current composition)       | 120.40| 117.01| 117.80| 117.26| 116.24|
| Belgium                                    | 8.92  | 9.08  | 9.34  | 9.69  | 10.02 |
| Bulgaria                                   | 0.45  | 0.34  | 0.53  | 0.41  | 0.45  |
| Czech Republic                             | 0.90  | 0.88  | 0.79  | 0.74  | 0.71  |
| Denmark                                    | 0.35  | 0.36  | 0.34  | 0.30  | 0.30  |
| Germany (until 1990 former territory of the FRG) | 1.93  | 1.93  | 1.93  | 1.93  | 2.14  |
| Estonia                                    | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Ireland                                    | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Greece                                     | 4.82  | 4.97  | 4.95  | 4.08  | 3.78  |
| Spain                                      | 24.24 | 23.64 | 22.88 | 22.55 | 21.89 |
| France                                     | 5.35  | 5.36  | 5.37  | 5.30  | 5.25  |
| Croatia                                    | 0.80  | 1.04  | 0.90  | 0.93  | 0.90  |
| Italy                                      | 31.53 | 30.15 | 30.86 | 32.29 | 31.73 |
| Cyprus                                     | 0.09  | 0.08  | 0.07  | 0.07  | 0.07  |
| Latvia                                     | 0.20  | 0.20  | 0.20  | 0.20  | 0.20  |
| Lithuania                                  | 0.86  | 0.90  | 0.87  | 0.80  | 0.82  |
| Luxembourg                                 | 0.02  | 0.02  | 0.02  | 0.02  | 0.02  |
| Hungary                                    | 3.00  | 2.89  | 2.88  | 2.88  | 2.87  |
| Malta                                      | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Netherlands                                | 8.51  | 8.60  | 9.23  | 9.40  | 9.70  |
| Austria                                    | 0.48  | 0.44  | 0.45  | 0.46  | 0.46  |
| Poland                                     | 9.50  | 9.20  | 9.20  | 7.49  | 7.49  |
| Portugal                                   | 12.01 | 12.01 | 12.12 | 12.62 | 12.56 |
3.4.3.2. Climatic conditions affecting establishment

Optimal climatic conditions for survival and development of *A. pirivorella* are moderate rainfall and high humidity (MAF BioSecurity New Zealand, 2009). In fact, this species occurs in the Asian Far East (see Figure 1) in areas with humid climate types occurring in the EU as well (i.e., Köppen-Geiger Cfa, Dfa, Dfb climate types). Because in the areas of eastern Russia where *A. pirivorella* occurs, it can be found wherever pears are grown (CABI, 2018), and *Pyrus* spp. occurs across the EU, biotic and abiotic conditions are conducive for establishment of this moth in the EU.

3.4.4. Spread

*Is the pest able to spread within the EU territory following establishment? How?
Yes. Although adult moths can fly over relatively short distances, movement of infested material (either fruit, plants, or branches) would be the main means of spread.*

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

*Yes, spread is mainly via plants for planting.*

The natural spread of *A. pirivorella* by adult flight is over relatively short distances. The main means of spread would be trade of planting material with infested buds (Shutova, 1977). Infested fruits may also carry the pest, however, its presence in fruits is relatively conspicuous; therefore, they could be easily detected and removed from the pathway.

In Far East Russia, *A. pirivorella* reportedly occurs wherever pears are grown. The natural spread by adult flight is over relatively short distances and the main means of spread is likely to be trade of planting material and unchecked infested fruits (Shutova, 1977).

3.5. Impacts

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

*Yes, the introduction of *A. pirivorella* would most probably have an economic impact 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?*

*Yes, the presence of the pest on plants for planting has an economic impact on its intended use.*

In the Far Eastern territories of Russia, it is considered as the most serious pest of cultivated pears. It is also of economic importance in Japan (EPPO Global database, 2018). The percentage infestation of fruit is 60–70% (Shutova, 1977).
3.6. Availability and limits of mitigation measures

As a pest listed in Annex IIAI of 2000/29 EC, *Acrobasis pirivorella* is prohibited from entry into the EU only on *Pyrus* plants for planting. Therefore, the same measures could be applied to the remaining pathways (fruit and cut branches).

Additional control measures (i.e. those having a direct effect on pest abundance):
- Production of plants for planting in isolation (i.e., greenhouse)
- Conservation biological control
- Bagging fruit/bait-fruit
- Proper disposal of infested material.

Supporting measures (i.e. those of organisational nature supporting the choice of appropriate risk reduction options that do not directly affect pest abundance):
- Inspection
- Laboratory testing
- Sampling
- Plant health inspection
- Certified and approved premises for export
- Establishment of demarcated areas and buffer zones
- Surveillance.

3.6.1. Identification of additional measures

As a pest listed in Annex IIAI of 2000/29 EC, *A. pirivorella* is prohibited from entry into the EU only on *Pyrus* plants for planting. Therefore, the same measures could be applied to the remaining pathways (fruit and cut branches).

Additional control measures (i.e. those having a direct effect on pest abundance):
- Production of plants for planting in isolation (i.e., greenhouse)
- Conservation biological control
- Bagging fruit/bait-fruit
- Proper disposal of infested material.

Supporting measures (i.e. those of organisational nature supporting the choice of appropriate risk reduction options that do not directly affect pest abundance):
- Inspection
- Laboratory testing
- Sampling
- Plant health inspection
- Certified and approved premises for export
- Establishment of demarcated areas and buffer zones
- Surveillance.

3.6.1.1. Additional control measures

Potential control measures for the mitigation of risk from *A. pirivorella* are listed in Table 7.

Table 7: Selected options for official control of hosts and pathways currently unregulated (a full list is available in EFSA PLH Panel, 2018). Official control is the effective enforcement of mandatory phytosanitary procedures with the objective of eradication or containment of quarantine pests or for the management of regulated non-quarantine pests

| Information sheet (with hyperlink to information sheet if available) | Control measure summary                                                                 | Risk component (entry/establishment/spread/impact) |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------|
| **Growing plants in isolation**                                      | As a pest that is a poor flyer and which does not disperse widely, growing plants in isolation is a measure to consider. Non-orchard hosts (i.e. nurseries) could be grown within physical protection, e.g. a dedicated structure such as glass or plastic greenhouse | Entry                                               |
| **Waste management**                                                 | Consignments intercepted with *A. pirivorella* spp. should be disposed of appropriately | Establishment                                        |

---

4 See Section 2.1 on what falls outside EFSA’s remit.
3.6.1.2. Additional supporting measures

Supporting measures are organisational measures or procedures supporting the choice of appropriate risk reduction options that do not directly affect pest abundance. Potential supporting measures relevant to \textit{A. pirivorella} are listed in Table 8.

Table 8: Selected supporting measures (a full list is available in EFSA PLH Panel, 2018) in relation to currently unregulated hosts and pathways. Supporting measures are organisational measures or procedures supporting the choice of appropriate risk reduction options that do not directly affect pest abundance.

| Information sheet (with hyperlink to information sheet if available) | Supporting measure summary | Risk component (entry/establishment/spread/impact) |
|---|---|---|
| **Biological control and behavioural manipulation (Work in progress, not yet available)** | The parasitic wasp \textit{Meteorus colon} has been reported to parasitize \textit{A. pirivorella} up to 57\% (Komarova, 1984) | Entry |
| | The practice of bagging individual fruit is likely to prevent adult females from laying eggs on the fruit surface or the calyx. However, there is a period of up to four weeks from fruit set before fruit are bagged, during which eggs could be laid. \textit{Pyrus sp. nr. communis} are not bagged (MAF Biosecurity New Zealand, 2009). In addition, fruits in certain trees remain unbagged and serve as bait-fruits which are destroyed after infestation (Shutova, 1977) | Entry |
| **Inspection and trapping** | Imported host plants for planting, fruit and cut branches could be inspected for compliance from freedom of \textit{A. pirivorella} | Entry, establishment, spread (within containment zones) |
| **Laboratory testing** | Examination, other than visual, to determine if pests are present using official diagnostic protocols | Entry |
| **Sampling (Work in progress, not yet available)** | According to ISPM 31, it is usually not feasible to inspect entire consignments, so phytosanitary inspection is performed mainly on samples obtained from a consignment | Entry, establishment, spread |
| **Phytosanitary certificate and plant passport (Work in progress, not yet available)** | An official paper document or its official electronic equivalent, consistent with the model certificates of the IPPC, attesting that a consignment meets phytosanitary import requirements (ISPM 5) | Entry, establishment, spread |
| **Certified and approved premises** | Mandatory/voluntary certification/approval of premises is a process including a set of procedures and of actions implemented by producers, conditioners and traders contributing to ensure the phytosanitary compliance of consignments. It can be a part of a larger system maintained by a National Plant Protection Organization in order to guarantee the fulfilment of plant health requirements of plants and plant products intended for trade | Entry, establishment, spread |
| **Certification of reproductive material (voluntary/official) (Work in progress, not yet available)** | Reproductive material could be examined and certified free from \textit{A. pirivorella} | Entry, establishment, spread |
| **Delimitation of Buffer zones** | Sourcing plants from a pest free place of production, site or area, surrounded by a buffer zone, would minimize the probability of spread into the pest free zone | Entry |
3.6.1.3. Biological or technical factors limiting the feasibility and effectiveness of measures to prevent the entry, establishment and spread of the pest

- The difficulty of identifying infested organs (buds, fruits) is considered low.

3.7. Uncertainty

By its very nature of being a rapid process, uncertainty is high in a categorisation. However, the uncertainties in this case are insufficient to affect the conclusions of the categorisation.

4. Conclusions

Considering the criteria within the remit of EFSA to assess its regulatory plant health status, A. pirivorella meets the criteria for consideration as a potential Union quarantine pest (it is absent from the EU, potential pathways exist and its establishment would cause an economic impact). Given that A. pirivorella is not known to occur in the EU, it fails to meet some of the criteria required for RNQP status. Table 9 provides a summary of the conclusions of each part of this pest categorisation.

Table 9: 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)
Acrobasis pirivorella: Pest categorisation

| 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 assessed by EFSA above for consideration as a potential quarantine pest are met with no uncertainties | The criterion of the pest being present in the EU territory, which is a prerequisite for consideration as a potential regulated non-quarantine, is not met | NA |

Aspects of assessment to focus on/ scenarios to address in future if appropriate

References

Anonymous. Pear fruit moth. CRC 10010. Enhanced Risk Analysis Tools. Available online http://www.padil.gov.au/viewpestdiagnosticimages.aspx?id=512

CABI, 2018. Invasive Species Compendium. CAB International, Wallingford, UK. Available online: http://www.cabi.org/isc

EFSA PLH Panel (EFSA Panel on Plant Health), Jeger M, Bragard C, Caffier D, Candresse T, Chatzivassiliou E, Dehnen-Schmutz K, Grègoire J-C, Jaques Miret JA, MacLeod A, Navajas Navarro M, Niere B, Parnell S, Potting R, Rafoss T, Rossi V, Urek G, Van Bruggen A, Van Der Werf W, West J, Winter S, Hart A, Schans J, Schrader G, Suffert M, Kertész V, Koselka S, Mannino MR, Mosbach-Schulz O, Pautasso M, Stancanelli G, Tramontini S, Voss S, and Gilioli G, 2018. Guidance on quantitative pest risk assessment. EFSA Journal 2018;16(8):5350, 86 pp. https://doi.org/10.2903/j.efsa.2018.5350

EPPO Global Database (European and Mediterranean Plant Protection Organization Global Database), 2018. Available online: https://gd.eppo.int/taxon/NUMOPI/photos [accessed: 16 July 2018]

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

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_20140512121523-494.65%20KB.pdf

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

Gibanov PK and Sanin YV, 1971. Lepidoptera - pests of fruits in the Maritime Province. Zashchita Rastenii, 16, 41–43 (in Russian).

Komarova GF, 1984. The pear pyralid. Zashchita Rastenii No. 7, 36 (in Russian).

MAF Biosecurity New Zealand, 2009. Import Risk Analysis: Pears (Pyrus bretschneideri, Pyrus pyrifolia, and Pyrus sp. nr. communis) fresh fruit from China Final. Wellington, New Zealand. 545 pp.

Matsumura S, 1900. Neue japanische Microlepidopteren. Entomologische Nachrichten, Berlin, 26, 193–199 (in German).

Matsumura S, 1901. Lepidoptera. Zool. Mag. Tokyo, 7, 799–821 (in Japanese).

Matsumura S, 1900. Neue japanische Microlepidopteren. Entomologische Nachrichten. Berlin, 26, 193–199 (in German).

Nuss M, Landry B, Mally R, Vegliante F, Trankner A, Bauer F, Hayden J, Segerer A, Schouten R, Li H, Trofinova T, Solis MA, De Prins J and Speidel J, 2003-2017. Global Information System on Pyraloidea. (Globales Informationsystem Zünsfer). Available online: http://www.pyraloidea.org/ [Accessed: 4 September 2018].

Shutova NN, 1970. The pear moth Numonia pirievorella Mats. In: Shutova NN (ed.). Guide to quarantine pests, diseases and weeds. Kolos, Moscow, USSR (in Russian).

Shutova NN, 1977. The pear pyralid. Zashchita Rastenii, 9, 38 (in Russian).

Tabata J, Minamishima M, Sugie H, Fukimoto T, Mochizuki F and Yoshiyasu Y, 2009. Sex Pheromone Components of the Pear Fruit Moth, Acrobasis pyrivorella (Matsumura). Journal of Chemical Ecology, 35, 243–249. https://doi.org/10.1007/s10886-009-9597-5

Walker K, 2011. Pear fruit moth (Acrobasis pyrivorella). Pest and Diseases Image Library (updated: December, 2006). Available online: http://www.padil.gov.au/ (Accessed: 31 July 2018).
Abbreviations

DG SANTÉ   Directorate General for Health and Food Safety
EPPO       European and Mediterranean Plant Protection Organization
FAO        Food and Agriculture Organization
IPPC       International Plant Protection Convention
ISPM       International Standards for Phytosanitary Measures
MS         Member State
PFA        Pest Free Areas
PLH        EFSA Panel on Plant Health
PZ         protected zone
RNQP       regulated non-quarantine pest
TFEU       Treaty on the Functioning of the European Union
ToR        Terms of Reference

Glossary

Containment (of a pest) Application of phytosanitary measures in and around an infested area to prevent spread of a pest (FAO, 1995, 2017)
Control (of a pest) Suppression, containment or eradication of a pest population (FAO, 1995, 2017)
Entry (of a pest) Movement of a pest into an area where it is not yet present, or present but not widely distributed and being officially controlled (FAO, 2017)
Eradication (of a pest) Application of phytosanitary measures to eliminate a pest from an area (FAO, 2017)
Establishment (of a pest) Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO, 2017)
Impact (of a pest) The impact of the pest on the crop output and quality and on the environment in the occupied spatial units
Introduction (of a pest) The entry of a pest resulting in its establishment (FAO, 2017)
Measures
Control (of a pest) is defined in ISPM 5 (FAO 2017) as “Suppression, containment or eradication of a pest population” (FAO, 1995). Control measures are measures that have a direct effect on pest abundance. Supporting measures are organisational measures or procedures supporting the choice of appropriate Risk Reduction Options that do not directly affect pest abundance
Pathway Any means that allows the entry or spread of a pest (FAO, 2017)
Phytosanitary measures Any legislation, regulation or official procedure having the purpose to prevent the introduction or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests (FAO, 2017)
Protected zones (PZ) A Protected zone is an area recognised at EU level to be free from a harmful organism, which is established in one or more other parts of the Union.
Quarantine pest A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled (FAO, 2017)
Regulated non-quarantine pest A non-quarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact and which is therefore regulated within the territory of the importing contracting party (FAO, 2017)
Risk reduction option (RRO) A measure acting on pest introduction and/or pest spread and/or the magnitude of the biological impact of the pest should the pest be present. A RRO may become a phytosanitary measure, action or procedure according to the decision of the risk manager
Spread (of a pest) Expansion of the geographical distribution of a pest within an area (FAO, 2017)