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**Strategies to develop effective, innovative and practical approaches to protect major European fruit crops from pests and pathogens**

# Work package 1. Pathways of introduction of fruit pests and pathogens

Deliverable 1.3.

# PART 7 - REPORT on Oranges and Mandarins – Fruit pathway and Alert List

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**DROPSA DELIVERABLE**
**REPORT on ORANGES AND MANDARINS – Fruit pathway and Alert List**

# 1. Introduction

Oranges and mandarins were selected to establish an Alert List of pests that may present a risk to cultivated species or varieties in the EU (see *Analysis of fruit production and imports in the EU to select species for pathway studies*[1] – thereafter *Selection of fruit*). It was also decided that other Citrus species would be kept in mind, to take account of the general importance of Citrus in the EU and the fact that pests often affect several Citrus species. Orange and mandarin are the Citrus species that are the most imported in the EU, and represent a large cropping area (>420.000 ha together). This section is not an exhaustive study of the pathway 'orange and mandarin fruit', but is intended to outline the different *Citrus* species concerned by trade and present in the EU, the countries from which oranges and mandarins are imported into the EU, and some characteristics of the pathway, for the purpose of better targeting searches and the screening of pests.

## 1.1 Background on oranges and mandarins

This section focuses on issues that are important to the present study. *Citrus* originate from Asia and have been naturalized in many parts of the world. There are also native species in various regions (e.g. Australia – Hele, 2006). *Citrus* are not new crops in Europe or other areas, although the cropping of some species or hybrids has started more recently than others. *Citrus* were introduced into Europe for cropping purposes already in the late 8th century (sour orange) and, in the Americas, first to the Caribbean in the late 15th century, later to continental Americas. In the 16th century, sweet oranges reached Europe. In the 17th century, oranges, lemons and pomelos reached South Africa, and at the end of the 18th century, oranges reached Australia. Mandarins were the latest introduction both in Europe and the Americas, at the end of the 19th century (Webber, 1967).

The majority of *Citrus* fruit mature during the local winter. In Europe, the main *Citrus* season is in November to March, and for some varieties as early as October and as late as May. *Citrus* in tropical climates may have several harvests a year, but this does not seem to be the case for oranges and mandarins (rather limes, pomelos and grapefruits).

The taxonomy of *Citrus* is complex, and there are many species and hybrids worldwide. *Citrus* spp. hybridize readily naturally and new hybrids are produced in breeding programmes. Literature searches intended to target all *Citrus* cultivars, with more attention to species of oranges and mandarins. However, which species and hybrids are regarded as 'oranges' or 'mandarins' is not always clear. It is also not clear under which trade category the different species or hybrids are allocated in production and trade data (see section 1.2). Mabberley (1997) divides *Citrus* in three major groups under a Linnean scheme: *C. medica* (includes lemons), *C. reticulata* (includes mandarins, clementines and similar) and *C. maxima* (includes species and hybrids belonging to oranges, grapefruits and limes).

The common names 'oranges' and 'mandarins' apply to a wide variety of species and hybrids, as detailed below. In some cases, common names may point to different categories for the same species or variety (e.g. *Citrus* × *aurantium* 'Sanbokan' is called Sanbokan sour orange/sweet lemon/grapefruit). Most information below is extracted from the review in the website by Koskinen (2015).

### Oranges relevant for this study

There are two main categories of oranges:

- **sweet oranges** (species, varieties and hybrids of ***C. sinensis***[2] (synonyms are sometimes used in the literature, such as *Citrus aurantium* var. *sinensis* or *Aurantium sinense*) are eaten fresh or used in juice or various preparations. Sweet oranges that are imported fresh would be intended for consumption or processing. There are many varieties of sweet oranges, such as Jaffa, Valencia and Navel. Variety names are sometimes used in publications in place of species names. Blood oranges are a type of sweet orange with red flesh. Hybrids of *C. sinensis* are for example Chironja orangelo (natural hybrid of sweet orange) or 'Poorman orange' **(**natural hybrid or orange with pomelo or tangelo).
- **sour oranges** (species, varieties and hybrids of ***C.* x *aurantium***) are usually not eaten fresh, although there are specific uses for some varieties or in certain parts of the world. Oil is extracted from the flowers, leaves, seeds and rind, and is used, for example, inperfumes. The fruit is also used processed (e.g. British orange marmelade, aroma for soft drinks). *C* x *aurantium* is also used as rootstock. Sour oranges that are imported fresh are likely to be used for processing. There are many hybrids of *C.* x

[1] Available at https://upload.eppo.int/download/102o0eec69a8b

[2] Although formally an hybrid, written *C. sinensis* from here onwards and in the Step 1 and Step 2 Lists (which is also common in the literature).

*aurantium* in Asia, where it originates. Some varieties or hybrids of *C.* x *aurantium* have other Latin names in different classifications, which are mentioned in some publications (see Table 1).

The processing of orange fruit was not studied, but it may have impact on the transfer of pests, in particular whether the pests are destroyed, or whether infested waste (especially peels) is discarded in large amounts in areas where oranges are also produced.

In addition, there are wild species of oranges, such as *C. indica* (Indian wild orange, possibly used as rootstock), *C. tachibana* ('tachibana orange'). No information was found on whether some fruit is collected and traded from the wild.

Finally the name 'trifoliate orange' often appears in publications, referring to *Citrus trifoliata* (syn. *Poncirus trifoliata, Citrus triptera, Citrus trifolia*), mostly used as rootstock or ornamental (e.g. *C. trifoliata* var. *monstrosa*). Fruits are generally not edible, although fruit of some hybrids are used in traditional medicine or processed for specific uses (juice for syrup, candied peel, source of pectin). Such fruits are not expected to be traded, and this species is therefore not considered as 'orange fruit' for the purpose of this study. Many hybrids of *trifoliata* are also commonly mentioned in the literature, such as: citrange (*C.* × *insitorum* Mabb. Citrange, *C. sinensis* × *C. trifoliata*), citrandarin (*C. reticulata* × *C. trifoliata*), citradia (*C. aurantium* × *C. trifoliata*), citremon (*C. limon* x *C. trifoliata),* citrumelo (*C. paradisi* × *C. trifoliata*).

Generic common names for sweet and sour oranges in Spanish and Portuguese (for the purpose of searches) are naranja (in Spanish) and laranja/laranjera (in Portuguese). Sour orange is also called bigarade in English, and bigaradier in French.

**Table 1. Some scientific and common names of *C.* x *aurantium* types and hybrids**

| Name | Synonyms Use | Other names |
|---|---|---|
| ***Citrus x aurantium* L.** | *Citrus aurantium* var. *amara* Engl.<br>Use incl. fruit (marmelade) | Common sour orange, Seville orange, Bitter orange |
| ***Citrus* × *aurantium* 'Sevillano'** | *Citrus* × *aurantium* 'Real'<br>*Citrus* × *aurantium* 'Agrio de España'<br>Use incl. fruit (marmelade) | Common sour orange, Seville orange, Bitter orange |
| ***Citrus* × *aurantium* 'Bittersweet group'** | *Citrus aurantium* var. *bigaradia* Hook<br>*Citrus bigaradia* Risso & Poit.<br>*Citrus bigarradia* Loisel.<br>Use incl. fruit (marmelade) | Bittersweet orange, Paraguayan Bigarade |
| **Citrus × aurantium 'Chinotto Group'** | Citrus bigaradia Risso & Poit. var. chinensis<br>Citrus myrtifolia Raf.<br>Citrus aurantium var. myrtifolia Ker-Gawl.<br>Use incl. soft drinks, beverages, candy | Myrtle-leaved orange |
| **Hybrids** | | |
| ***Citrus* × *aurantium* 'Bergamot Group'**<br>Hybrid of *C. x aurantium* and *C. limetta* | Citrus × aurantium ssp. bergamia (Risso et Poit.) Wight & Arn. ex Engl.<br>Citrus bergamia Risso<br>Citrus × aurantium var. bergamia Loisel.<br>Use incl. citrus soft drinks (juice), animal feed (pulp), essential oil for cosmetics, flavour (peel) | Bergamot, bergamot orange |
| ***Citrus* × *aurantium* 'Kikudaidai'** | *Citrus canaliculata* Y. Tanaka<br>*Citrus* × *aurantium* L. subf. *canaliculata* (Hort. ex Yu.Tanaka) M.Hiroe<br>Use incl. ornamental | Kikudaidai, Kiku-daidai, Kiku |
| ***Citrus* × *aurantium* 'Yama'** | *Citrus intermedia* Tanaka<br>*Citrus* × *aurantium* L. f. *intermedia* (Hort. ex Tanaka) M.Hiroe<br>Use incl. ornamental | Yama, Yama-mikan sour orange, mountain citrus |
| ***Citrus* × *aurantium* 'Karna'**<br>Possibly an hybrid of sour orange and lemon | *Citrus karna* Raf.<br>*Citrus* × *aurantium* L. var. *khatta* Bonavia<br>*Citrus dimorphocarpa* Lush.<br>Use incl. rootstock, fruit? | Karna, Khatta, Indian lemon |
| ***Citrus* × *aurantium* 'Kitchli'** | *Citrus maderaspatana* Tanaka<br>Use incl. fruit | Kitchli sour orange, Vadlapudi sour orange, Guntur sour orange |
| ***Citrus* × *aurantium* 'Miaray'** | *Citrus miaray* Wester<br>Ornamental | Miarai sour orange, Pomelo miaray |
| ***Citrus* × *aurantium* 'Natsudaidai'** | *Citrus natsudaidai* Hayata | Japanese summer orange, |

| Name | Synonyms Use | Other names |
|---|---|---|
| natural hybrid of pomelo and sour orange | *Citrus* × *aurantium* L. f. *natsudaidai* (Tanaka) M.Hiroe<br>*Citrus natsumikan*<br>Use incl. fruit (marmelade, beverages etc.) | Natsudaidai<br>Bigarade natsudaïdaï |
| *Citrus* × *aurantium* 'Tosu<br>Possibly sour orange x citron or mandarin | *Citrus neoaurantium* Tanaka<br>Use incl. fruit? | Japanese Tosu orange |
| *Citrus* × *aurantium* 'Zadaidai'<br>Possibly mandarin x sour orange | *Citrus rokugatsu* Yu. Tanaka<br>*Citrus* × *aurantium* L. var. *cyathifera* Yu. Tanaka<br>Use incl. fruit? | Zadaidai sour orange,<br>Rokugatsu-mikan sour orange |
| *Citrus* × *aurantium* 'Sanbokan' | *Citrus sulcata* Takahashi<br>*Citrus* × *aurantium* L. subf. *sulcata* (Ik.Takah.) M.Hiroe<br>Use incl. fruit (used as limes and lemons) | Sanbokan sour orange,<br>Sanbokan sweet Lemon,<br>Sanbokan grapefruit |
| *Citrus* × *aurantium* 'Nanshodaidai'<br>pomelo-mandarin hybrid, wild | *Citrus taiwanica* Tanaka & Y. Shimada<br>*Citrus nanshô-daidai*<br>Use incl. fruit? | Taiwan orange, Nansho Daidai sour orange |

**Mandarins relevant for this study**

Mandarins are *C. reticulata* and some of its hybrids, but various other Latin names are used in different classifications. Mandarins have sometimes been separated in four broad categories: *unshui* (satsuma), *nobilis* (king mandarin), *deliciosa* (Mediterranean mandarins) and *reticulata* (all others, including hybrids). However, the category *deliciosa* is a variety of *C. reticulata*. Table 2 illustrates categories of mandarins, and subcategories of *C. reticula* that have specific names used in the literature.

**Table 2. Some categories of mandarins**

| Categories of mandarins and hybrids | Latin names |
|---|---|
| Satsuma | *C. unshiu* Marcow. |
| common mandarin | *C. nobilis* Andrews, non Lour. |
| King mandarin | *C. nobilis* Loureiro<br>*C. nobilis* var. *typica* Loureiro |
| Mediterranean mandarin, willowleaf mandarin | *C. deliciosa* Tenore<br>*C. reticulata* var. *deliciosa* Blanco<br>*C. reticulata* var. *salicifolia* Blanco<br>*C. nobilis* var. *deliciosa* Loureiro<br>*C. salicifolia* Raf. |
| tangerine | *C. tangerina* Tanaka |
| Ponkan mandarin, Suntara mandarin/orange | *C. reticulata* var. *poonensis* (Hayata) H.H. Hu<br>*C. poonensis* Tanaka |
| Fuzhu mandarin | *C. reticulata* 'Fuzhu' ; *C. reticulata* 'Zhuju'<br>*C. erythrosa* Tanaka ; *C. reticulata* Blanco var. *erythrosa* H. H. Hu |
| clementine | *C. clementina* Tanaka<br>*C. reticulata* var. *chrysocarpa* Tanaka<br>*C. deliciosa* x *C. sinensis* |
| tangor | *C.* × *nobilis* Loureiro<br>*C.* × *tangor* Tanaka<br>*C. reticulata* × (*C.* × *sinensis*) |
| mandor | Some hybrids of mandarin × orange |
| tangelo | *C.* × *tangelo* J.W. Ingram & H.E. Moore<br>*C. reticulata* × (*C.* × *paradisi*) |
| tangelo Ugli | *Citrus* UGLI ® ; *C. reticulata* x *C. paradisi* 'Ugli' |
| tangelolo | Mandarin x tangelo |
| tangelo × clementine hybrids | *C. reticulata* 'Orlando' × *C. reticulata* 'Clementine' |
| King × Willowleaf mandarin hybrids | (*C.* × *nobilis*) × (*C.* × *deliciosa*) |
| tangerine x willowleaf x tangor hybrids | *C. reticulata* x *C. deliciosa* x tangor |
| **Others.** Some species originally classified as mandarins (16 out of 36) do not fit in other groups, and 7 are used commercially. | |
| Sour mandarin | *Citrus sunki* |
| Cleopatra mandarin | *Citrus reshni* |
| Shekwasha | *Citrus depressa* |
| Nasnaran | *Citrus amblycarpa* |
| Kinokuni | *Citrus kinokuni* |
| | *Citrus lycopersicaeformis* |
| | *Citrus oleocarpa* |

## 1.2 Data on production and trade of orange and mandarin fruit

Varieties and hybrids of *Citrus* in production are selected for the agronomic characteristics of the trees (e.g. vigour, ripening time, yield, tolerance to cold, heat or dry conditions) and of the fruit (e.g. size, shape, sugar versus acids, seedlessness, ease of peeling, thickness of the peel, colour of the fruit and of the juice, ripening period, conservation period of fruit on the trees etc.).

'Oranges' and 'mandarins' are categories in the production and trade data in Eurostat (see Table 3). The subcategory 'sweet oranges' would cover *C. sinensis*, and 'others' may cover major species such as *C. aurantium* (sour orange). Both *C. sinensis* and *C. aurantium* are also mentioned as traded species in additional data provided by some EPPO countries (see at the end of this section). Regarding mandarins and its subcategories in trade data, 'Monreal' is a variety of clementine, while 'satsumas' are *C. unshui*, and 'Wilkings' are an hybrid of *C. deliciosa* Willowleaf and *C. nobilis* King. For both oranges and mandarins, it is not clear in which category the various species or hybrids would fall, and if some are accounted for under 'other Citrus' instead of under oranges and mandarins.

**Table 3. Categories of oranges and mandarins in Eurostat (under category 0805 Citrus fresh or dried)**

| | |
|---|---|
| 0805 10 | *Oranges* |
| 0805 10 20 | Sweet oranges, fresh |
| 0805 10 80 | Other |

| | |
|---|---|
| 0805 20 | *Mandarins (including tangerines and satsumas); clementines, wilkings and similar citrus hybrids* |
| 0805 20 10 | Clementines |
| 0805 20 30 | Monreales and satsumas |
| 0805 20 50 | Mandarins and wilkings |
| 0805 20 70 | Tangerines |
| 0805 20 90 | Other |

General data on production and trade of *Citrus* (incl. oranges and mandarins) are given and analysed in the *Selection of fruit*. Oranges and mandarins are widely cultivated in the EU, at least *C. sinensis*, *C. aurantium*, *C. deliciosa and C. clementina*. It was not possible to analyse all species or hybrids grown in Europe, but many other species or hybrids may be grown for different purposes. In addition, some species may be used as ornamentals in gardens, parks or in other areas where they are not grown commercially. For example sour orange is used as a street and park tree in the Mediterranean area.

Due to the long history of *Citrus* cropping (see section 1.1.), there have been exchanges of plants and fruit, and therefore the opportunity for the movement of pests, for a long time. Some countries with a long history of cropping Citrus have only recently started to export to the EU. For example, trade data indicates a substantial increase of mandarin exports from Peru in recent years, which is due to the development of cropping and exports (Minagri, 2014). Trade is dominated by Africa and South America for oranges, and the same two plus the Near East for mandarins. It is worth noting that imports of oranges and mandarins from Asia, where the plants originate, are minor. Nevertheless China is a major producer and exporter of mandarins (but currently not to Europe). Modification of trade patters may create new risks for the movement of pests.

Imports from non-EU origins are detailed for oranges and mandarins respectively in Annexes 1 and 2 (data available referred to EU 27). The general category is 'citrus fresh and dried', but it is expected that oranges and mandarins are generally imported fresh. Oranges and mandarins become available in the winter period where they are grown. Consequently a large amount of oranges and mandarins are imported from the Southern hemisphere during the European summer-autumn, when fruit from the Mediterranean area are not available. Tables 4 and 5 indicate percentages of imports into the EU by region in 2002, 2008 and 2014. Table 6 outlines some trends for 2002-2014 (based on the trade data available - Annexes 1 and 2, Table 2).

**Table 4. Percentages of imports of oranges into the EU by region in 2002, 2008 and 2014**

| | 2002 | 2008 | 2011 | 2014 |
|---|---|---|---|---|
| *Africa + South America* | 87.0 | 94.5 | 95.2 | 96.4 |
| Africa | 70.1 | 73.8 | 72.8 | 81.6 |
| South America | 16.8 | 20.7 | 22.4 | 14.8 |
| Near East | 9.3 | 4.2 | 2.7 | 2.3 |
| North America | 0.1 | 0.6 | 0.7 | 0.6 |
| Caribbean | 2.5 | 0.3 | 1.0 | 0.4 |
| Central America | 0.8 | 0.1 | 0.3 | 0.3 |
| Asia | 0.0 | 0.0 | 0.0 | 0.0 |
| Oceania | 0.1 | 0.2 | 0.0 | 0.0 |
| Europe (non-EU) | 0.1 | 00 | 0.0 | 0.0 |

**Table 5. Percentages of imports of mandarins into the EU by region in 2002, 2008 and 2014**

| | 2002 | 2008 | 2011 | 2014 |
|---|---|---|---|---|
| *Africa+Near East + South America* | 99.1 | 97.4 | 97.1 | 97.2 |
| Africa | 41.9 | 43.0 | 43.3 | 50.5 |
| Near East | 36.5 | 25.4 | 24.1 | 25.3 |
| South America | 20.7 | 29.0 | 29.7 | 21.4 |
| North America | 0.0 | 0.7 | 1.4 | 1.4 |
| Asia | 0.4 | 1.5 | 1.1 | 0.9 |
| Oceania | 0.1 | 0.3 | 0.1 | 0.2 |
| Europe (non-EU) | 0.1 | 0.1 | 0.3 | 0.2 |
| Caribbean | 0.2 | 0.1 | 0.1 | 0.1 |
| Central America | 0.0 | 0.0 | 0.0 | 0.0 |

**Table 6. Trends of imports of oranges and mandarins into the EU**

| | Oranges | Mandarins |
|---|---|---|
| General | Imports from all regions of the world, for a total of over 730 000 t in 2014 (against over 2 millions t within the EU). Considering quantities over 100 kg, fruits were imported from 52 countries in 2002, 42 in 2008 and 2014. Imports were recorded every year (for the years considered in the period 2002-2014) from 26 countries. Historically, imports of citrus fruit by the major EU citrus-growing countries (Greece, Italy, Portugal, Spain) from the major exporting third countries were very limited until the mid-1990s. Indeed, Spain only started to import citrus fruit from third countries in the 1990. Structural change during the 1990s in the citrus fruit trade into EU Member States can be observed also in the increase in the number of exporting countries. | Imports from all regions of the world, for a total of over 176 000 t in 2014 (against over 1.6 million t within the EU). Considering quantities over 100 kg, fruits were imported from 39 countries in 2002, 33 in 2008, 34 in 2014. Imports were recorded every year from 17 countries (for the years considered in the period 2002 - 2014). |
| Main exporters to the EU | In 2014, over 80% of oranges imported from non-EU countries came from Africa. Africa and South America represent the large majority of imports, and their common share increased continuously in 2002-2014 i.e 87% of imports from non-EU countries in 2002 and 96.4% in 2014. (Table 4). | In 2014, over 97% of the mandarins imported from non-EU countries came from Africa, Near East or South America together, with over 50% from Africa alone (Table 5). The main exporters to the EU remained broadly the same, i.e. Morocco and South Africa for Africa, Argentina and Uruguay for South America, and Israel and Turkey for the Near East. One notable increase was Peru, which has become the 4th exporter to the EU worldwide. |
| Africa | South Africa, Egypt, Zimbabwe, Morocco and Tunisia were the major exporters in the same period. Over 50% of oranges from Africa came from South Africa (increase of 30% in 2008-2014 to 380 209 t). Egypt became the 2nd exporter (6-fold increase, to reach 181 960 t). Zimbabwe the 3rd exporter with 31 920 t. Imports from Tunisia (to 15 175 t), Morocco (divided by 2 to 66 850 t) and Swaziland (2 493 t) have dropped considerably during the same period. Imports from other countries were minor and irregular. A few countries show minor but seemingly increasing exports to the EU, such as Ghana and Algeria. | Morocco and South Africa dominated exports (about 100 000 t and 85 300 t respectively), both with an increase, most notably South Africa (x 1.7). Egypt has comparatively small exports (1600 t in 2014), but which have increased 3 times over the period. |
| South America | The main countries exporting oranges to the EU remained the same over the period, i.e. Argentina, Brazil and Uruguay (in 2014 48400 t from Uruguay, 44700 t from Argentina and 18690 t from Brazil). Uruguay has become the first exporter, while exports from Argentina and Brazil decreased. Exports also increased from Peru and Colombia (to 8670 t and 1348 t in 2014). Imports from Chile were irregular. | Peru has become the largest exporter of mandarins to the EU, before Argentina and Uruguay. Exports from Peru have increased over 5 times since 2002, to reach over 48730 t in 2014. Exports from Argentina and Uruguay have decreased in the same period, to reach respectively 12000 t and 17030 t in 2014. |
| Caribbean | Imports were about 19125 t in 2002 but dropped to 5872 t in 2014, due to considerable drops in exports from Cuba (from 15770 t to 450 t in 2002-2014) and Jamaica. | Only Jamaica is a significant exporter (but only 4100 t in 2014, and imports decreased since 2002). |
| Near East | Imports from Israel and Turkey (both EPPO countries) decreased by 5- and 3-fold respectively in 2008-2014, to | Imports from Israel increased 3-fold and from Turkey were divided by 2 over 2002-2014, to reach 42060 t and |

| | Oranges | Mandarins |
|---|---|---|
| | 5900 t and 13300 t. | 51700 t. In recent years, there has been nearly no imports from other countries in the Near East. |
| Central America | Only Belize and Honduras had substantial exports to the EU in 2008-2014. Exports from Belize collapsed during that period, while imports from Honduras were first recorded in 2006 and increased by 10 fold since, reaching 2720 t in 2014. | Only small quantities are exported (11 t in 2014). The data does not show imports from this region every year, and the highest imported quantity is 214 t from Belize in 2006. |
| North America | Imports mostly from Mexico (4594 t in 2014) and only minor quantities from the USA (21 t in 2014). | The only mandarin exporter was the USA, with about 5100 t in 2014 (about 120 t in 2002, and 1000 t in 2010). |
| Oceania | Imports from Australia have decreased from 1046 t in 2002 to 318 t in 2014. No exports were recorded from New Zealand or other countries. | Imports from Australia seem irregular (2200 t in 2010, 665 t in 2014, 1900 t in 2013, 460 t in 2012 etc.). Imports from New Zealand are also irregular and minor (2-130 t depending on years). No exports were recorded from other countries. |
| Asia | Very minor (39 t in 2013, 68 t in 2014, and peaked at 430 t in 2009). The only subsequent quantities were imported in 2009 from China (330 t). Imports from Iran and Pakistan are regular (15 and 50 t in 2014). | Minor, with over 1300 t from the Korea Rep and 1600 t from Pakistan. Imports from the Korea Rep. started around 2010, and have increased since. China exports small quantities to the EU (about 320 t), which seems to have increased in recent years. |
| European non-EU countries | Irregular and difficult to interpret (imports recorded from non-producing countries). Imports from the Russian Federation peaked at over 40 t in 2014. | Difficult to interpret (imports recorded from non-producing countries). |

Additional data on fruit trade provided by some EPPO countries mentioned the following species of oranges and mandarins: *C. aurantium, C. sinensis* (oranges), *Citrus clementina, Citrus reticulata, C. nobilis,* C. *unshui, C. reticulata* var. *unshiu, C. reticulata x C. paradisi, C. tangerina, C.* × *tangelo* (mandarins). The list is possibly incomplete (only few countries provided data; most data is recorded in broad categories). In addition, the following *Citrus* are mentioned and were kept in mind when carrying out this study:

- Grapefruit: *C. maxima* (*C. grandis*), *C.* x *paradisi*
- Lemons: *C. limon* (*C. limonum*)
- Limes: *C. aurantifolia* (*C. limonellus*), *C. latifolia,*
- Others: *C. hystrix* (kaffir lime), '*C. japonica*' (=*Fortunella japonica*), *C. junos, C. limetta, C. x limonia, C. medica*. (It should be noted that some of these may be types of limes or lemons, but the Customs codes names limit these categories to the species above).

### 1.3 Characteristics of the pathway 'orange and mandarin fruit'

The following characteristics of the pathway have an importance for the presence of the pest on the fruit:

- *Citrus fruit imported from outside the EU should be free from leaves and peduncles.* The EU Directive 2000/29 (Annex IV.A.I. 16.1) provides that fruits of *Citrus, Fortunella, Poncirus* and their hybrids, 'originating in third countries shall be free from peduncles and leaves and the packaging shall bear an appropriate origin mark'. Consequently, only the calyx may be associated to such fruit. It is not known if fruit consignments may be contaminated by some peduncles or leaves as debris in the fruit.

- *Varieties traded*. There are many varieties and hybrids of oranges and mandarins, and various parameters influencing which are produced and traded (see 1.2). These parameters are too detailed for the present study, and differences between species, varieties and hybrids were not taken into account when screening the pests.

- *Trading period*. The trading period depends on the characteristics of the varieties (early, middle and late ripening varieties), but oranges and mandarins mature in winter where they grow. Oranges and mandarins from the Southern hemisphere would reach the EU in June-November, while oranges from the Northern hemisphere would be available from November to June, which is also the period where *Citrus* fruit from the EU and Mediterranean countries are available.

- *Sorting of Citrus fruit at harvest, post-harvest treatments, packing*. Peel injuries may easily become infected by molds and rots, which impact the general aspect of fruits and their taste, and spread readily from fruit to fruit in a consignment. Harvest and handling processes therefore aim at avoiding damage and removing damaged fruit. One damaged fruit may spoil many others and consequently it is likely that fruit is carefully sorted prior to export in most situations.

Oranges and mandarins may be stored for several months (see below), but the preparation of fruit before shipping is important for proper conservation of the fruit. This includes post-ripening of green or unsatisfactorily colored fruit; removal of dirt, sooty mold, spraying residues and scale insects in washers;

finishing of oranges colour in dye baths (subsequently marked as coloured); wax-coating or treatment with preservatives; grading by size, color and other external features. Waxing is required to prevent loss of aroma and weight because the washing process removes the natural wax layer (GDV, 2016a oranges, 2016b mandarins; 2016c clementines). It is likely that most oranges and mandarins imported to the EU have been handled in such a manner to ensure conservation of fruit.
Both washing and sorting of fruit may have an impact on the presence of pests. However, it is not clear if the measures above are applied to all types of oranges and mandarins, intended uses and from all origins. Arguments used in some publications that surface feeders are not expected to survive post-harvest cleaning, chemical dips and waxing (for example in USDA PRAs) was not retained here as a mean to screen pests, because it is not known if all citrus fruit entering the EU are subject to these processes.
All *Citrus* fruits are sensitive to pressure and impact, and are tranport conditions are adapted appropriately. Oranges are transported in refrigerated containers, packed in crates, and cartons, and sometimes in net bags (GDV, 2016a). Crates and cartons are mentioned for mandarins and clementines (GDV, 2016 b & c).

- *Duration of storage and conditions of transport.* Mandarins spoil more quickly than other *Citrus* fruit. Storage in controlled atmosphere may be used to extend the life of oranges, but not for mandarins and clementines. Species and varieties vary in their sensitivity to chilling damage. Generally, the quality of oranges and mandarins is impaired below 4°C and above 25°C (GDV, 2016a, b & c). GDV (2016a, b & c) mention ranges of transport temperatures as follows: 5-10°C for oranges; 0-8°C for mandarins (noting considerable variation depending on variety and country of origin); 6-9°C for clementines. The maximum durations of storage and transport are indicated below (GDV, 2016a, b, with references). Arpaia and Kader (1999a) indicate that oranges can be stored for up to 3 months at 3-8°C, depending on cultivar, maturity-ripeness stage at harvest and production area (some cultivars can be kept at 0-1°C, others at high temperatures, e.g. 9°C). Arpaia and Kader (1999b) indicate that mandarines and tangerines can be stored at 5-8°C for 2 to 6 weeks, depending on cultivar, maturity-ripeness stage at harvest, and decay control treatments used.

| **Temperature (RH) Duration** | | |
|---|---|---|
| **Oranges** | **Mandarins** | **Clementines** |
| 16 weeks at 6-10°C (85-90% RH) | 8 weeks at 4-6°C (85-90% RH) | 12 weeks at 6-9°C (85% RH) |
| 8-10 weeks at 3°C (85-90% RH) (Navel oranges from Spain) | 6 weeks at 6-8°C (ca. 90% RH) 5-8°C (85-90% RH) | 2-4 weeks at 4.4°C |
| 4-8 weeks at 7.2°C (85-90% RH) | 2-4 weeks at 4.4°C (85-90% RH) | |
| Extended duration if controlled atmosphere (10% O2, 5% CO2) 1.1-7.2°C depending on variety | | |

The time of storage and transport may be several weeks to months, at temperatures that are lower than the temperatures in the field at origin, and this may affect the survival of pests in consignments.

- *EU Marketing Standard.* EU (2011) makes requirements for *C. limon*, *C. reticulata* Blanco (including satsumas *C. unshiu*, clementines *C. clementina*, common mandarin *C. deliciosa*, and tangerines *C. tangerina*) and hybrids, and oranges *C. sinensis*. This includes provisions for quality (e.g. ripeness, size), packing and marking, verified through conformity checks at import. Specific requirements are that fruit should be: clean, practically free of any visible foreign matter; practically free from pests; free from damage caused by pests affecting the flesh. It allows for a short (not wooden) twig with some green leaves adhering to the fruit (but this is forbidden from non-EU countries in EU Directive 2000/29). The use of any substance tending to modify the natural characteristics of the citrus fruit, especially its taste or smell, is prohibited (but use of preservatives are allowed provided they meet EU provisions).
- *Existing EU phytosanitary requirements influencing association of the pests with the pathway, and EU regulated pests in broad categories.* The fruit should be free from peduncles and leaves, and practically free from pests (see above). In addition, the following broad categories are regulated in EU Directive 2000/29 (Annex I/A1), and any species under them were considered as already regulated in the EU: 'Tephritidae (non-European)', 'Cicadellidae (non-European) known to be vector of Pierce's disease (caused by *Xylella fastidiosa*)'). Vectors of *X. fastidiosa* are also addressed under emergency measures in Commission Implementing Decision (EU) 2015/789 of 18 May 2015. Other general categories of regulated pests in the EU Directive do not apply to *Citrus* fruit. Note: plants of Citrus, Fortunella, Poncirus, and their hybrids (other than fruit and seeds) are prohibited (Annex III).

## 2. Methods as used for *Citrus*

### 2.1 Step 1

The *Methods for the preparation of alert lists of pests for individual fruit species*[3] ('Methods' thereafter) were used, with the following adjustments:

- For pathogens, USDA (2015) provides a global list of *Citrus* pathogens and was used to establish a first list of pathogens. Relevant species were further studied. Only species assessed as being pathogens of *Citrus* in USDA (2015) were retained (i.e. not saprophytes, wood decaying fungi, weak host-pathogen association, or not plant pathogens). However, many sooty moulds fungi considered non-actionable in USDA (2015) were nevertheless listed.
- Pests of all *Citrus* were recorded, with a focus on oranges and mandarins. Many pests attack several *Citrus* species.
- Because of the EU requirement forbidding the presence of peduncles and leaves for *Citrus* fruit from third countries, the screening focused on pests that are on the fruit itself. When information supported that a pest was associated only with leaves or peduncles, the assessment stopped and no further information was sought.

### 2.2 Step 2

The *Methods* were used, with the following adjustments:

- A questionnaire was sent to the NPPOs of EPPO countries to identify pests not yet present and considered to be important by experts in countries. The suggestions received are given in Annex 3 and were taken into account at Step 2. More attention was given to these pests during the screening.
- Pests present only indoors in the EU (where such information was available) were retained for further consideration.
- It was decided to not use the level of polyphagy (C) and the climatic similarity (D) for selecting pests for the Alert List, and these were not rated. Regarding climatic similarity, one reason was that some pests of tropical areas are known to have established in the EU, such as *Penthimiola bella* (Cicadellidae) (Zina et al., 2013). In addition, there was no time left to carry out the rating for all pests on the Step 2 List.
- Several pests were associated with *Citrus* fruit in trade, being intercepted on this commodity, but were not pests of *Citrus*. The sub-rating 'c' (contaminants) was used (criterion A).
- A subrating (fp) was used for fruit-piercing moths of the family Noctuidae attacking *Citrus* fruit. For these species, only adults attack *Citrus* and there was evidence that *Citrus* spp. are not larval hosts. These species fulfilled the criterion for association of a life stage with fruit (A2t), but adults are unlikely to remain associated with *Citrus* fruit at harvest (see section 3.2.6). The association with fruit was rated as 'A2tu (fp)'. These species were subsequently quickly studied to identify those with a major economic impact. All were eventually rated NO2 (not associated with fruit). Details are given in section 3.2.6.

As explained in the *Methods*, the search for information stopped as soon as a pest did not meet basic criteria, or a rating was attributed that would exclude the pest from the Alert List (e.g. A3 – associated with green parts; B2 – present in the EU). Consequently, the data gathered for pests other than those retained for the Alert List is still preliminary and partial (in particular the distribution data or host list may be incomplete or erroneous). There may be inconsistencies between pests as to in which column the data is mentioned. This is especially the case for pests not rated A1/A2 (not associated with the fruit itself), but also those rated A1/A2 that would not be retained for the Alert List (e.g. E3 – low economic impact). Finally, editing and consistency adjustments were done only for the pests retained for the Alert List.

Ratings in the Step 2 List may sometimes seem inconsistent between species, but they were based on the information available. It was not always possible to judge whether there is a real difference between species or whether the relevant the information was not found. Different sources of information may lead to different ratings, so pests may have been rated differently depending on the information available to each assessor. Only for the pests retained in several Alert Lists was all information cross-checked for consistency.

### 2.3 Step 3

The selection system described in the *Methods* was applied to select pests for the Alert List, with the following adjustments:

- Once a draft Alert List was compiled containing pests from relevant categories, the climatic similarity was rated in order to identify pests with a low climatic similarity (0), and consider whether they should be maintained on the Alert List. The pests concerned were eventually retained.

[3] Available at https://upload.eppo.int/download/103o7b00f8216

- No pests were 'handpicked' from categories other than those agreed in the *Methods*.
- All pests selected for the Alert List had as host species of mandarin and orange, or *Citrus* spp.

The combinations of criteria used to build the *Citrus* Alert List are presented in Annex 4. It corresponds to that described in the *Methods*.

## 3. Results and their discussion

### 3.1 Considerations on pests listed at Step 1 and Step 2, and selected for the Alert List

#### 3.1.1 Step 1 List

**1545** pests were listed at Step 1.

The following were excluded from further consideration (some for several reasons, but only one is mentioned below):

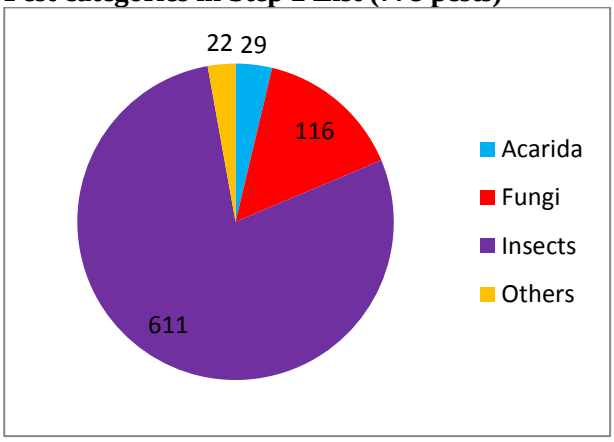
124 already regulated in the EU (category NO1)
333 no possibility of association with the fruit pathway (category NO2)
286 present in the EU (category NO3)
22 not pests of *Vaccinium* (category NO4)
76 other reasons (e.g. natural enemy, not a pest of any crop, or pests mentioned at genus level in interceptions, or cases impossible to analyze) (category NO5)

➡ Consequently, **704** pests remained for consideration at Step 2.

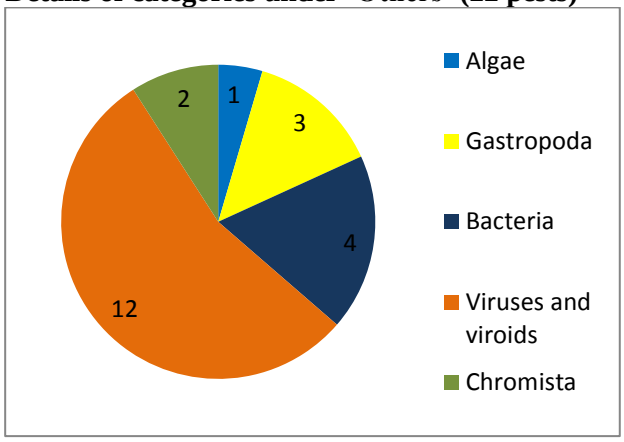
#### 3.1.2 Step 2 List

At Step 2, several of the 704 pests retained were identified as being synonymous, and additional pests were found in the literature. Eventually, **778** pests were rated at Step 2, belonging to the following pest groups:

**Pest categories in Step 2 List (778 pests)**




**Details of categories under 'Others' (22 pests)**



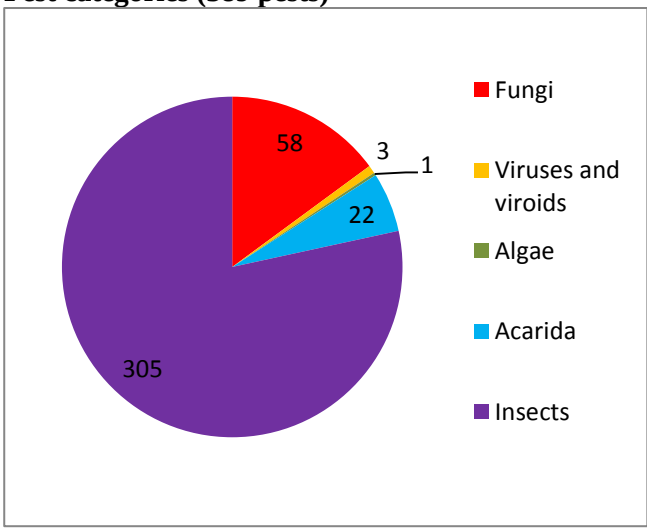

The following pests were excluded from consideration for the Alert List:

2 already regulated in the EU (NO1). These were one fungus and one Cicadellidae vector of *Xyllella fastidiosa*, covered under the EU Directive 2000/29 as 'Cicadellidae (non-European) known to be vector of Pierce's disease (caused by *Xylella fastidiosa*)'.
274 no possibility of transport on the fruit pathway (category NO2). Many of these were associated to leaves or stems. At Step 1, these had not been excluded because the association with fruit often requires more check than the 1-2 publications available. At Step 2, association with fruit was further checked.
70 present in the EU (category NO3) (see also section 3.2.3).
12 not pests of *Citrus* (category NO4)
21 other reasons (especially synonyms of pests already listed and cases impossible to analyze) (category NO5)
10 contaminants (marked A'c') (but associated to *Citrus* fruit in trade, and therefore briefly discussed in section 3.2.6).

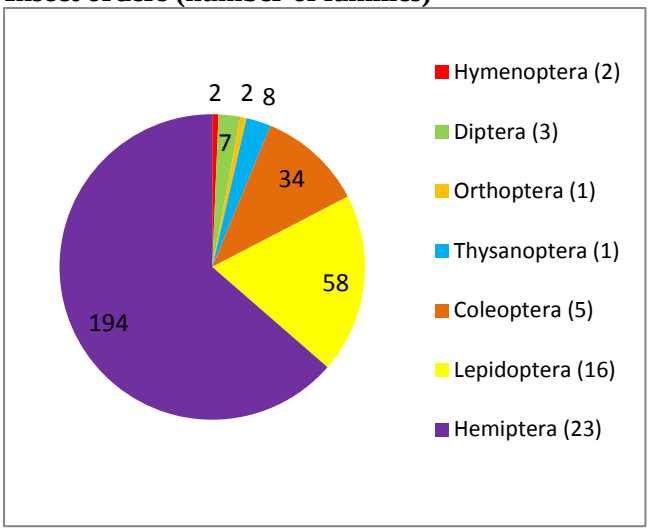
➡ Consequently, **389** pests remained for consideration for the Alert List, all having some likelihood of association with *Citrus* fruit (see list in Annex 5 and Citrus deliverable xls file).

The 389 pests belonged to the categories and insect orders (the most numerous class) below.

**Pest categories (389 pests)**




**Insect orders (number of families)**




Among the 389 pests remaining for consideration for the Alert List, 'special' categories were:

111 pests of unknown impact (rated EU). Of those, 14 have either been intercepted or are known to be invasive, but the low mobility of life stages associated with fruit excluded them from the Alert List, or the association with fruit was unknown.

27 pests of low impact (rated E3).

17 that had a higher economic importance in the past (marked 'h').

6 that are known vectors of pathogens (marked 'v').

All pests excluded from further consideration at Step 1 or Step 2 are listed in Annex 6. This includes all 'NO' categories and contaminants. This list is also given in the Citrus deliverable xls file.

### 3.1.3 Alert List

The selection system in section 2.3 was applied in order to select pests for the Alert List.

➡ Consequently, **36** pests were selected on the Alert List (given as Annex 7).

It is worth noting that no pathogen was selected for the Alert List.

The 36 pests are divided as follows:

8 Part 1 - Pests with high economic importance and more likely to transfer

28 Part 2 - Pests with lesser economic importance and more likely to transfer, or high economic importance but less likely to transfer

### 3.1.4 Possible gaps in data and pests missing from the lists

A large number of organisms were identified at Step 1 and additional organisms were identified at Step 2. However, the study is not a complete list of pests of *Citrus* that do not occur in the EU, and it is certain that some pests have not been found. In particular, the searches relied extensively on the Internet to find information, and some earlier publications, or publications from some areas may be less accessible.

Among the pest categories considered, there was a good coverage of all groups in terms of compiling a list of pests, but it was difficult to find basic information for some species. 82 of 111 pests with an unknown impact were fungi or Hemiptera.

The world coverage, in terms of identifying pests of *Citrus* was clearly more complete for North America, Oceania, Argentina and Chile. An indication of the overall geographical coverage of sources is indicated in Table 7 (apart from CABI CPC and EPPO GD, which cover most regions). The type of sources only refer to those specific to countries; in all cases pests may also have been be covered across regions in global databases (e.g. fruit flies, fungi, thrips, tortricids, etc.).

**Table 7. Coverage of the lists of pests**

| Region | Coverage | Type of sources |
|---|---|---|
| North America | Good. | Numerous scientific publication, cropping advice, pest management advice, books, databases |
| South America | Good for Argentina, Chile, Brazil, probably also Uruguay. Partial for the rest of South America (where some exports are mentioned from Colombia, Peru). | Scientific publications, inventories of pests, cropping advice, pest management advice, PRAs from other regions |
| Central America | Probably incomplete | Scientific publications and some mentions in publications from other regions |
| Caribbean | Probably incomplete | Mostly publications about other regions |
| Africa | Probably good for South Africa. Partial for others. Few pests were identified from Morocco, Tunisia and Algeria that are not already in the EU (<5), but about 20 for Egypt. | Scientific publications, information on other crops for polyphagous pests. |
| Asia | Partial. Data probably lacking for Iran and Pakistan (which export to the EU), for China and Korea (because many publications were in Chinese/Korean and could not be used by the assessor), and the rest of Asia (not major exporters to the EU). Japan is well covered, but does not export to the EU. | Scientific publications, publications on other regions, PRAs from other regions |
| Near East | Probably good. Amongst the pest considered for the Alert List, only few were present in Turkey or Israel (major exporters) and not yet in the EU. 3 of them (present in Israel) are on the Alert List | Scientific publications, publications on other regions, EPPO information |
| Oceania | Good for Australia and New Zealand, incomplete for others. | Scientific publications, cropping/pest management advice, PRA from other regions |
| Europe | Few non-EU European countries export to the EU. Pests were assumed to be similar to those in the EU and no specific searches were conducted. Data is possibly lacking for Russia. | - |

## 3.2 Other findings of interest during the preparation of Alert Lists

The following elements arose in the framework of the study.

### 3.2.1 Pest already regulated in the EU

Many pests regulated in the EU were identified at Step 1. The EU Directive 2000/29 makes specific requirements for *Citrus* fruit in relation to: *Xanthomonas campestris* (all strains pathogenic to *Citrus*), *Cercospora angolensis*, *Guignardia (Phyllosticta) citricarpa* and *Tephritidae* (non-European). *Citrus* fruit are also subject to a requirement for inspection prior to export, and for absence of peduncles and leaves when originating from third countries.

58 species of non-European Tephritidae were identified, including many that are not mentioned by name in the EU Directive 2000/29. Many species belonged to the genera *Anastrepha*, *Bactrocera*, *Ceratitis* and *Dacus*, and a few to other genera (*Celidodacus*, *Dirioxa*, *Perilampsis*, *Tetreuaresta*, *Tomoplagia*, *Trirhithrum*). Tephritidae were excluded at Step 1 as already regulated in the EU, and the possible association of each species with *Citrus* fruit was not studied, nor their economic importance.

### 3.2.2 Pests recommended for regulation by EPPO

Only two species of the Step 2 List are on the EPPO A1 or A2 Lists of pests recommended for regulation. *Maconellicoccus hirsutus* (EPPO A2 List) is present in Cyprus and was therefore not retained for the Alert List. *Thaumatotibia leucotreta* (EPPO A1 List) was added to the Alert List; it is in the process of being regulated in the EU, but this had not happened to date (September 2016).

### 3.2.3 Pests present in the EU, or present only indoors in the EU

285 pests were identified as already present in the EU at Step 1 and another 70 at Step 2. This included major *Citrus* pests already introduced into the EU. The assessment of presence in the EU, and whether a pest was established, was not always straightforward. A level of uncertainty is attached to the assessment in case of taxonomic difficulties (especially for fungi or scale insects). Many sources had to be consulted to ascertain the presence in the EU. For insects, the assessment of presence relied heavily on Fauna Europeae (which does not indicate sources), and for fungi on Farr and Rossman (2015). In both cases, additional searches were made in case of ambiguity (i.e. when only few countries were indicated).

An attempt was also made to differentiate pests that are present only indoors in the EU, in order to not exclude them and identify possible risks for *Citrus* production, should such pests move to outdoors crops or be newly introduced outdoors. There are known examples of pests that were first introduced indoors, and later reached *Citrus* orchards. For example, *Chrysomphalus aonidum* was initially known as a pest of ornamentals indoors; it was first recorded on *Citrus* trees outdoors in 1999, and is currently established in *Citrus* orchards in several European countries (Pellizzari and Porcelli, 2014). Many *Citrus* pests identified as found only indoors in the EU were scale insects introduced with/on ornamentals (especially to botanical gardens). No such pests eventually qualified for the Alert List. It is noted that the risk of their reaching *Citrus* or other crops in the field is possibly higher from their current distribution indoors, than through introduction via fruit consignments. It was sometimes difficult from the data available to determine whether a pest had been detected only indoors, and a complete assessment would have required more time than available for this screening. For example, *Ceroplastes cirripediformis*, a serious pest of various fruit crops and ornamentals in other parts of the world, is recorded from Greece and Italy, and was excluded from further consideration; it was not possible to determine from the few references available if it was present only indoors or also outdoors. *Aspidiotus destructor*, a major pest of coconut and mango, is reported in six EU countries, presumably only indoors on ornamentals; however, no details were available for some of these records. Similarly, *Pseudococcus cryptus*, introduced in the 1930s into Israel where it is a pest of *Citrus*, is reported from Cyprus and Spain; however, it was not clear if it was present outdoors and on *Citrus* in these countries.

A few pests of interest with a restricted distribution in the EU are indicated in Table 8.

**Table 8. *Citrus* pests with a very limited distribution in the EU (no damage have been reported to date in the EU countries where these pests are present)**
* indicates pests proposed in answer to the EPPO questionnaire on pests of concern for *Citrus* (see 3.2.4)

| Pest (taxonomic group) | Distribution | Basic information | Hosts other than *Citrus* |
|---|---|---|---|
| **Pathogens** | | | |
| **Mycosphaerella aurantia* (Ascomycota) | Australia, Uruguay, worldwide distribution not searched.<br>In the EU: Spain (recorded on eucalyptus). | Not well described regarding its phytosanitary impact. Intercepted in the EU on *Citrus* fruits. Some authors consider it as a synonym of *Amycosphaerella africana*, only reported on eucalyptus (on leaves). | *Eucalyptus* |
| **Insects** | | | |
| *Araecerus fasciculatus* (Coleoptera: Anthribidae) | Asia, Africa, Caribbean, Americas, Oceania.<br>In the EU: 4 countries in CABI CPC (France, Germany, Italy, UK), but the reference relates to stored products. Several other records in the literature appear to refer to findings on stored products. However, it is reported as being present in Northern and peninsular Italy in one publication, and in Malta in another. | In the early 1900s, considered primarily a pest of stored products; from the 1920s onward, reported to attack living plants and fruits (e.g. soft tropical fruits, coffee berries, sugarcane). Reported as a citrus pest in orchards from the 1980s-90s in the USA, South Africa, Swaziland and Japan. Larvae feed inside maturing fruits, and also infest flowers and buds. On citrus, eggs may be in fruit that has been slightly damaged, and occasionally in unmarked fruit. The pest can complete its life cycle in the fruit. Considered tropical and subtropical, and not surviving well in cooler climates outside storage facilities. | Polyphagous, incl. *Carica papaya*, *Mangifera indica*, *Saccharum officinarum*, *Coffea*, *Helianthus annuus*, *Capsicum*, *Oryza sativa*. Also dried food (incl. fruits, nuts, mushrooms, herbs and spices), preserved plant material. |
| *Aspidiotus destructor* (Hemiptera : Diaspididae) | Worldwide in tropical and subtropical areas. Present in nearly all coconut growing countries; in more northern regions, found only in protected conditions. For Europe, records for France, Italy, Germany, | Feeds on sap from leaves, petioles, peduncles and fruits causing discoloration, depressions, and tissue distortions on leaves. Infestation on fruit reduces quality. Major pest of coconut, and an economic pest of mango in Asia, Africa, and South America. | Over 100 hosts in 60 families, incl. Cocos nucifera, Mangifera indica. |

| Pest (taxonomic group) | Distribution | Basic information | Hosts other than *Citrus* |
|---|---|---|---|
| | Hungary, Slovenia, UK. | | |
| *Atherigona orientalis* (Diptera: Muscidae) | Asia (incl. Israel), Oceania, Africa, USA, Central and South America, Canary Islands. In the EU: Cyprus. | Possibly mostly a saprophagous pest, and not clear if phytophagous in some cases. Considered as a phytosanitary risk in some references. | Polyphagous, incl. *Solanum lycopersicum*, *Capsicum*, *Oriza sativa*, *Helianthus annuum*, *Prunus persica*, *Triticum* |
| *Aulacaspis tubercularis* (Hemiptera: Diaspididae) | Africa, Asia, Caribbean, South America, Oceania, Canary Islands, Madeira. In the EU: Italy ('introduced and acclimatized'). One outbreak on mango in Spain | Significant pest of mango, feeds on leaves and fruits. Known interceptions on mango fruit. | Polyphagous, incl. *Mangifera indica*, *Carica papaya*, *Cucurbita*, *Persea americana*, *Cinnamomum*. |
| *Ceroplastes cirripediformis* (Hemiptera: Coccidae) | Americas and Caribbean, Egypt, Indonesia, Philippines, Marshall Isl., Wake Isl. In the EU: Greece,Italy. | Reported as a pest of *Psidium guava*, *Citrus*, ornamentals, avocado in various parts of the world. No data found on hosts and pest status in Italy and Greece. | Polyphagous incl. *Vaccinium*, *Coffea arabica*, *Ipomoea batatas*, *Manihot esculenta*, *Tamarindus indica*, *Psidium guava*, *Diospyros kaki*, many ornamentals, *Vitis vinifera*, *Pinus caribaea* var. *bahamensis* |
| *Penthimiola bella* (Hemiptera: Cicadellidae) | Africa, Asia (incl. Israel), Argentina, Portugal. Introduced into several countries (incl. Cape Verde, Madagascar, Israel, Lebanon, Argentina, Portugal). | On leaves and fruits. Causes feeding damage. Oviposits on fruits and eggs can survive transport over long distances and time (suspected mode of introduction into Portugal). Economically important pest of *Citrus* in South Africa. Up to 40% damaged fruit on avocado, 19-57% on *Citrus*. | *Persea americana* |
| **Pseudococcus cryptus* (Hemiptera: Pseudococcidae) | Asia (and Near East), Africa, Oceania, Central and South America, Caribbean. In the EU : Cyprus (indirect record), Spain (one record, on Viburnum) | Heavy infestations cause leaf and fruit drop and the entire tree can become covered in sooty mold. In Israel, introduced in 1937, now under biological control in *Citrus*. | Highly polyphagous, 72 genera in 42 families, incl. *Mangifera indica*, *Annona muricata*, *Cocos nucifera*, *Phoenix dactylifera*, *Dahlia*, *Glycine max*, Fagaceae, *Persea americana*, *Punica granatum*, *Morus*, *Musa*, *Psidium guajava*, *Jasminum*, Orchidaceae, Bambusa, *Litchi chinensis*, *Vitis vinifera* |

### 3.2.4 Pests proposed in answer to the EPPO questionnaire on pests of concern for *Citrus*

All specific proposals made in answer to the EPPO questionnaire on pests of concern for *Citrus* are listed in Annex 3. Two other countries had no proposal other than pests already regulated in the EU. One non-EU country sent its list of regulated pests, which could not be used as there was no time available to perform the review of all listed pests to identify those associated with *Citrus*.

Many pests proposed were eventually not retained for the Alert List because they were not associated with *Citrus* fruit or were present in the EU, in countries other than the one proposing them. Ten of the pests proposed met all the criteria and are on the Alert List.

The general categories of non-European Aleyrodidae and non-European Coccoidea were outlined in the answers, and they were kept in mind when assessing individual species. Many species in these groups were identified at Step 1 and 2, and several had been proposed in answer to the questionnaire. At Step 2, there were:

- 76 Aleyrodidae of *Citrus* not present in the EU. For many of them, data were lacking on their biology, distribution and damage. There was also often a lack of evidence of association to *Citrus* fruits. Of the species proposed in answer to the questionnaire, *Orchamoplatus citri* causes heavy losses due to downgrading of fruit (for the presence of sooty moulds) in some countries where it occurs, but there was no evidence of the presence of life stages on fruits. Similarly *Paraleyrodes citri* was not retained because

the information pointed to a minor impact where it occurs. Many species were rated as possiby associated with *Citrus* fruit but had a moderate impact (on citrus or other hosts) and non-mobile life stages (lower likelihood of transfer), and consequently were not retained on the Alert List: *Aleurocanthus citriperdus*, *Aleurocanthus husaini*, *Aleuroclava citrifoli*, *Aleuroclava psidii*, *Aleurodicus dispersus*, *Aleurodicus dugesii*, *Aleurodicus floccissimus*, *Aleuronudus manni*, *Aleurothrixus porteri*, *Bemisia giffardi*, *Dialeurolonga elongata*, *Orchamoplatus caledonicus*, *Orchamoplatus mammaeferus*, *Paraleyrodes bondari*, *Paraleyrodes citricolus*, *Paraleyrodes singularis*, *Trialeurodes variabilis* (see also 3.2.5).

- 76 Coccoidae of *Citrus* not present in the EU, belonging to the families Cerococcidae, Coccidae, Diaspididae, Kerriidae, Margarodidae, Monophlebidae, Ortheziidae, Pseudococcidae, Putoidae. Four species were eventually retained for the Alert List. Many other species had an association with *Citrus* fruit, but they had a moderate impact (on citrus or other hosts) and non-mobile life stages, and were not retained: *Aonidiella comperei*, *Aonidiella orientalis*, *Aulacaspis citri*, *Aulacaspis crawii*, *Cerococcus muratae*, *Ceroplastes rubens*, *Chloropulvinaria aurantii*, *Chloropulvinaria polygonata*, *Coccus viridis*, *Drosicha corpulenta*, *Drosicha mangiferae*, *Fiorinia proboscidaria*, *Ischnaspis longirostris*, *Morganella longispina*, *Mycetaspis personata*, *Phenacoccus pergandei*, *Pinnaspis theae*, *Planococcus kenyae*, *Planococcus kraunhiae*, *Planococcus lilacinus*, *Planococcus minor*, *Pseudaonidia duplex*, *Pulvinaria psidii*, *Puto barberi*, *Rastrococcus iceryoides*, *Selenaspidus articulatus* (see also 3.2.5).

### 3.2.5 Pests of moderate impact but without mobile life stages

A number of *Citrus* pests were assessed at Step 2 as having a moderate impact, and they did not have mobile life stages (lower likelihood of transfer); consequently they were not retained. This included many pests that are intercepted on fruit in trade. The large majority were whiteflies or scale insects, with a few acari and fungi, 1 virus and 1 algae. A few pests are shown in Table 9.

**Table 9. Pests of *Citrus* assessed to have a moderate impact, and not retained for the Alert List because they do not have mobile life stages (lower likelihood of transfer from fruit commodities)**

* indicates pests proposed in answer to the EPPO questionnaire on pests of concern for *Citrus* (see 3.2.4)

| Pest (taxonomic group) | Distribution | Basic information | Hosts other than *Citrus* |
|---|---|---|---|
| *Colletotrichum siamense* (Ascomycota) | Australia, China, Nigeria, South Africa, Thailand, USA, Vietnam | On Citrus, causes leaf and fruit spot. Yield losses of 15% reported on C. reticulata in China. | Polyphagous incl. *Persea americana* (fruit rot), *Pistacia vera, Carica papaya, Coffea arabica, Capsicum annuum, Vitis vinifera* (leaves), *Fragaria* × *ananassa* (crown), *Malus domestica* (fruit), *Jasminium sambac* |
| **Oidium tingitaninum* (Ascomycota) | Asia, Uganda, Mexico, USA, Central America, Caribbean, Argentina, Brazil | On leaves, twigs and young fruit. In India in severe attacks defoliation leads to decline and death of plants. Severe on young emerging shoots in nurseries and orchards. Minor in California. Distribution is not well known due to confusion with *O. citri* | Not searched |
| **Acarida** | | | |
| *Eutetranychus africanus* (Acarida: Tetranychidae) | Africa, Asia, Papua New Guinea, Australia | Economically important *Citrus* pest, also attacking a wide variety of other crops. | Highly polyphagous incl. *Solanum melongena*, *Vitis labrusca*, *Eriobotrya japonica*, *Malus domestica*, *Prunus domestica*, *Prunus persica*, *Rosa*, *Plumeria*, *Cordia*, *Ficus carica, Eucalyptus globulus* |
| **Insects** | | | |
| *Aleurodicus dugesii* (Hemiptera: Aleyrodidae) | Central America, Mexico, USA (introduced, and has spread), Venezuela, Indonesia, Pakistan | Feeds mostly on leaves. However, fruit is a pathway for many other whiteflies. Feeding damage leads to defoliation, stunting and plant death. Causes serious damage to ornamental plants. Mostly a pest of ornamentals, but also affects some varieties of *Citrus* and avocado. Known interceptions on many plant genera. | Highly polyphagous with over 200 plants in 35 families, incl. *Annona*, *Bauhinia*, *Begonia*, *Coleus*, Cucurbitaceae, *Euphorbia pulcherrima*, *Gossypium hirsutum*, *Hibiscus*, *Morus*, *Musa*, *Persea americana*, *Strelitzia nicolai* |
| *Aleurodicus floccissimus* (Hemiptera: Aleyrodidae) | Mexico, South America, Canary Islands (Spain) | Causes direct feeding damage to plants and produces large amounts of white waxy secretions and honeydew, on which sooty | Polyphagous, incl. Arecaceae (incl. coconut), Musaceae (incl. *Musa*, *Strelitzia*), *Carica papaya*, *Euphorbia* |

| | | | |
|---|---|---|---|
| | | moulds can develop. Present in the Canary Islands since 1965, where it abruptly increased in numbers to become a major problem on bananas at the end of the 1990s. | *pulcherrima*, *Ficus*, *Hibiscus rosa-sinensis*, *Mangifera indica*, *Psidium guajava*, *Nerium oleander* |
| *Aleurocanthus citriperdus* (Hemiptera: Aleyrodidae) | Asia | Pest of *Citrus* in China. No specific information found on the parts of plants infested, but the related species *A. spiniferus* spreads through the movement of nursery stock and infested fruits. Known interceptions. | *Coffea* |
| **Aonidiella orientalis* (Hemiptera: Diaspididae) | Most continents. | Feeds mostly on leaves. Occasional cosmetic damage on fruit. Heavy infestations may result in yellowing and defoliation, dieback of small twigs and premature fruit drop. Serious pest of *Citrus* (Omani lime, sweet lime and grapefruit) in Iran and Asia, also pest on coconut, areca nut, papaya, tamarind, mango. Intercepted in Europe. | Highly polyphagous, incl. *Annona*, *Carica*, *Prunus*, *Mangifera indica*, *Vitis vinifera*, *Tamarindus indicus*, *Camellia sinensis*, Arecaceae incl. *Areca*, *Cocos nucifera*. |
| *Ceroplastes rubens* (Hemiptera: Coccidae) | Africa, Caribbean, USA, Asia, Oceania. | Generally feeds on leaves and twigs, reported feeding on citrus fruit. A pest of forestry and fruit crops, incl. *Citrus*, in some countries. Intercepted in the EU, and found in Budapest botanical garden. Not considered present outdoors in the EU. | Highly polyphagous, incl. *Camellia*, *Chrysanthemum*, *Ficus*, *F. carica*, *Helianthus*, *Malus*, *Mangifera indica*, *Morus alba*, *Olea*, *Persea*, *Pinus*, *Prunus*, *Pyrus* |
| *Drosicha corpulenta* (Hemiptera: Monophlebidae) | China, Korea Rep., Korea Dem. Rep., Japan, Russia (Khabarovsk, Primor'ye) | On fruit and leaves. Reported as a serious pest of willow and apple in China (references from 1950s and 1990s), but no additional information found. | Polyphagous, including *Cupressus*, *Diopyros*, *Juglans*, *Ulmus*, *Cornus officinalis*, *Castanea vulgaris*, *Quercus*, *Ficus carica*, *Malus*, *Prunus persica*, *Pyrus sinensis*, *Sorbaria sorbifolia* |

### 3.2.6 Fruit-piercing Noctuidae for which only adults are associated with *Citrus* fruit

75 species of fruit-piercing Noctuidae for which only adults are associated with *Citrus* fruit were identified. For all these species, eggs and larvae are on the leaves of their host plants (which do not include *Citrus* and, for the most part, are wild plants that do not occur naturally in the EU). There is no evidence that eggs may contaminate fruits of non-hosts. Adults feed on fruit of *Citrus* (and other fruit species), but are highly mobile. In addition adults of most species are nocturnal and are large. Finally, evidence of international movement, other than by natural spread, are scarce and not linked to fruit. The only example found was *Othreis (Oraesia) excavata*, recently found in Hawaii, probably introduced on its larval hosts.

Given the above, adults were considered unlikely to be associated with fruit at harvest, and these species were not retained for the Alert List (rated as NO2). Their impact was nevertheless studied at Step 2 (based on the CABI CPC only) to identify economically important species. Only two species would have met the criteria for the Alert List: *Oraesia excavata*, with a moderate impact but introduced into Hawaii, and *Eudocima phalonia*, which has a high impact and is regulated in many countries worldwide. In the literature, figures of damage for fruit-piercing moths are generally combined. However, specific figures on impact are available for *E. phalonia* (e.g. primary damage of 50-70% on *Citrus* and 70-90% on longan in Thailand; 95% of *Citrus* fruit and 100% of tomatoes damaged in New Caledonia in outbreak years (although it is minor in regular years); entire crops of Navel oranges damaged during outbreaks in Queensland, Australia; 40-60% of citrus fruits damaged in China). Most other species were either minor or not mentioned in the CABI CPC, i.e. rated with unknown importance.

Two Noctuidae species whose larvae may attack *Citrus* were identified at Step 2. *Egira curialis* was selected for the Alert List, and *Tiracola plagiata* was not (association of larvae with *Citrus* fruit was uncertain and it is mainly a pest of *Lablab purpureus*).

### 3.2.7 Other pathways for *Citrus* pests

Plants for planting are a potential pathway for virtually all pests on the Alert List and Step 2 List. The EU Directive 2000/29 prohibits the import of plants of *Citrus*, *Fortunella*, *Poncirus*, and their hybrids (other than fruit and seeds) from third countries, which partly prevents the introduction of these pests. However, they may be introduced on plants for planting of hosts that are not regulated in the EU. The current general requirements for these other hosts (such as in relation to soil, growing media, trees and shrubs) would not cover all life stages of these pests and any inspections would also not target specific pests.

A few major *Citrus* pests likely to be transported mostly on pathways other than fruit (in particular on plants for planting) are highlighted in Table 10 (althoughit is not excluded that some of the pests may occasionally become associated to fruit consignments)
Several other pests appeared to be important in relation to other crops or for other reasons, and the risk of introduction is higher on their other hosts. Some of these pests are presented in the document *Other pests of interest identified during the study of selected crops*.

**Table 10. *Citrus* pests that may be transported on pathways other than *Citrus* fruit**

* indicates pests proposed in answer to the EPPO questionnaire on pests of concern for *Citrus* (see 3.2.4)

| Pest (taxonomic group) | Distribution | Basic information | Hosts other than *Citrus* |
|---|---|---|---|
| **Pathogens** | | | |
| Citrus chlorotic dwarf-associated virus | China, Turkey (Eastern Mediterranean region) | Most serious disease of citrus in the Eastern Mediterranean region of Turkey (losses estimated to 50% on grapefruit - decrease number and size of fruits). In China, since the first finding in 2008, the disease has spread fast and widely in Dehong area (Yunnan). Vectored by *Parabemisia myricae*, and *Dialeurodes citri* may also be a vector. Also spread by grafting and splash dispersal. | None found in the literature |
| *Cryptosporiopsis citricarpa* (Ascomycota) | China | On branches, trunk. Considered as a destructive new disease. Hosts are *Citrus unshiu*, *Fortunella margarita*. | None found in the literature |
| *Indian citrus ringspot virus (Alphaflexiviridae: mandarivirus) | India | A pest of *C. sinensis*, recognized distinct from citrus ringpost virus in the 2000s. 10-100% incidence in India. On Kinnow mandarin (*Citrus nobilis* x *Citrus deliciosa*), reduced number and weight of fruits by 45 and 55% respectively graft- and mechanically transmissible, no known vector. | None found in the literature |
| **Mycosphaerella citri* (Ascomycota) | Asia, Americas and Caribbean, Egypt, Australia, Samoa | On leaves and twigs. Fruit alone is not a pathway (*M. citri* may be present on fruit, but does not sporulate on fruit). Not seedborne or budwood transmitted and not transmitted by vectors. Yield reduction of 25% for oranges and 45% for grapefruit have been documented in Florida. | *Acacia mangium*, *Musa*, *Aeglopsis*, *Fortunella*, *Murraya*, *Poncirus* |
| **Insects** | | | |
| **Ceroplastes destructor* (Hemiptera: Coccidae) | Africa, introduced to Oceania | On leaves, branches, stems. Honeydew and sooty mould on fruit. A major pest of citrus in Australia in the 1950s-70s, now minor. Became important on *C. reticulata* in Africa in the 1990s. Introduced to Oceania. | *Coffea arabica*, *Persea americana*, *Acacia*, *Actinidia deliciosa*, *Hibiscus*, *Prunus armeniaca*, *Psidium guajava*, *Pyrus*, *Solanum*, |

| | | | |
|---|---|---|---|
| | | Regulated by many countries. | *Syzygium* |
| *Hypomeces squamosus* (Coleoptera: Curculionidae) | Asia | Larvae feed on roots (incl. of citrus); adults on foliage of various plants. Most injurious leaf feeding insect on citrus in Malaysia (1989 reference). | Larval hosts incl. rice, maize, sugarcane, tobacco, cotton; adults feed on more hosts. |
| *Naupactus versatilis* (Coleoptera : Curculionidae) | Argentina, Brazil, Paraguay | Eggs beneath the fruit calyx or in the soil, adults feed on green parts and larvae on roots. Larvae cause direct damage to root, and indirect damage by favouring entry of soil-borne pathogens. Citrus root weevils were previously considered as secondary pests, but have become primary in some areas of Minas Gerais and São Paulo, Brazil. *N. versatilis* is one of the most frequent and abundant citrus root weevils in São Paulo. There is no indication of damage so far, but one publication considers a major threat for *Citrus* that such species migrate from native plants in natural forests to *Citrus* | No other hosts found in the literature (but mentioned on "native plants" in Brazil) |
| *Orchamoplatus citri* (Hemiptera: Aleyrodidae) | Australia, New Zealand, Malawi, Kenya, Tanzania | On leaves, and produces sooty moulds on leaves and fruits. Minor pest in Australia. In New Zealand, first detected in 2000, and has spread, causing significant downgrading of fruit (up to 90% of mandarin and orange) | None found |
| *Platynota stultana* (Lepidoptera: Tortricidae) | Mexico USA. In the EU: Spain (restricted distribution, few occurrences) | On citrus, leaves and fruits. Occasional pest of citrus and serious pest of grapevine in California, where it also causes damage to apple, pear, kiwi, peach, capsicum, cotton. A recent PRA carried out in Spain (where the pest has a limited distribution) establishes the risk of entry on Citrus fruit as low, but high for grapes. Plants for planting are also a possible pathway. | Hosts in over 25 families, incl. *Zea mays*, *Capsicum annuum*, *Medicago sativa*, *Prunus persica*, *Punica granatum*, *Pyrus*, *Vitis vinifera* |
| *Saissetia neglecta* (Hemiptera: Coccidae) | Americas, Caribbean, HongKong | On foliage and stems. Introduced into some countries. Main scale species on citrus in Florida | Highly polyphagous. Hosts in 35 families. |
| *Thrips flavidulus* (Thysanoptera: Thripidae) | Asia | Feed on and damages citrus petals and young fruits. Females lay eggs on flower, young fruit and other parts. *T. flavidulus* is becoming a major pest in many citrus orchards during and after flowering. Fruit scars affect the appearance and quality of citrus fruits. | Polyphagous, incl. *Prunus persica*, *Diospyros kaki*, *Musa*, *Eriobotrya japonica*. |

### 3.2.8 Pests for which there was insufficient information

For many pests, it was not possible to find information on impact, and there did not fall under categories retained on the Alert List. It may nevertheless be interesting to monitor the situation of some of these pests in the future. A few examples are given in Table 11.

**Table 11. *Citrus* pests for which there was insufficient information**
* indicates pests proposed in answer to the EPPO questionnaire on pests of concern for *Citrus* (see 3.2.4)

| Pest (taxonomic group) | Distribution | Comments | Hosts other than *Citrus* |
|---|---|---|---|
| **Pathogens** | | | |
| 7 newly described *Diaporthe* spp. *D. biconispora*, *D. biguttulata*, *D. discoidispora*, *D. multigutullata*, *D. ovalispora*, *D. subclavata*, *D. unshiuensis* | China | Described on *Citrus* in China by Huang et al. (2015). No other publications or records found for these species. No indication found of parts of plants attacked (but some other *Diaporthe* species cause stem-end rot of fruit), biology, distribution and impact. | None found in the literature. |
| **Passalora loranthi* (Ascomycota) | China, Mozambique, Cameroon | Intercepted on *Citrus* fruit in the EU. Lack of information on impact. | *Musa* and others. |
| **Insects** | | | |
| *Udinia catori and U. farquharsoni* (Hemiptera: Coccidae) | Africa | No details found on the biology. Both species intercepted on *Mangifera indica* fruits, and various other genera and commodities. Mentioned as potentially important, but no information found on their current impact. | *Mangifera indica*, *Ficus*, *Theobroma cacao*, etc. |

### 3.2.9 Contaminants

Ten pests at Step 2 were contaminants of *Citrus* fruit in trade (i.e. not pests of *Citrus* but intercepted in consignments of *Citrus* fruit). Among these, Table 12 lists four pests, as well as four ants that attack plants and may also cause social damage.

**Table 12. Contaminants of *Citrus* fruit**
* indicates pests proposed in answer to the EPPO questionnaire on pests of concern for *Citrus* (see 3.2.4)

| Pest (taxonomic group) | Distribution | Basic information |
|---|---|---|
| *Anopolepis gracilipes* (Hymenoptera: Formicidae) | Asia, East Africa, Brazil, Chile, Mexico, some Caribbean isl., Australia, most Pacific isl. | Broad range of habitats. Has colonized agricultural systems such as *Citrus*, cinnamon, coffee, coconut. Possible nuisance in horticulture. Can be destructive by removing roots around plants. Where abundant, known to prey upon newborn animals. May be a serious nuisance in buildings at high densities. The species has established outside its native range. Worker ants shown to be associated to *Citrus* fruit while tending honeydew-excreting insects. However they cannot begin a colony/lead to establishment. |
| *Caliothrips fasciatus* (Thysanoptera: Thripidae) | China, USA, Mexico. | Reproduces on Fabaceae, adults feed on many other plants. In California, adults overwinter in cavities of navel oranges. Considered a quarantine problem in navel oranges imported into Australia. |
| *Macchiademus diplopterus* (Hemiptera: Lygaeidae) | South Africa | Hosts are Poaceae, serious pest of cereals (wheat, oats, barley). Adults aggregate on fruit trees to aestivate (become quiescent to survive hot dry summer). They shelter at the stalk and calyx ends, and sometimes enter apples and pears at the calyx end and sheltering deeper inside the fruit. Numerous interceptions on apple, citrus, nectarine, peach, pear and plum fruits. |
| **Naupactus xanthographus* (Coleoptera: Curculionidae) | South America | A polyphagous pest of *Vitis vinifera* (major host) and various others (e.g. *Citrus*, *Malus domestica*, *Prunus*, *Pyrus communis*, *Solanum lycopersicum*, *Solanum tuberosum*). Larvae feed on roots of hosts. Serious pest of grapevine and some other fruit crops in Chile and Argentina, and of soyabean in Brazil and Chile. Adults are reported attacking fruit on several species, but this seems to relate more to grapes. Numerous interceptions on fruit of various species in the USA. |
| *Orthorhinus cylindrirostris* (Coleoptera: Curculionidae) | Australia | Polyphagous, incl. *Vaccinium*, *Citrus*, *Vitis*, *Acacia falcata*, *Angophora floribunda*, *Eucalyptus*. Larvae tunnel in stems, crowns and roots. On grapevine, adults feed on buds, may ring the bark, and also attack fruit. Considered as a pest of blueberry and grapevine. No evidence found of association with *Citrus* fruit (apart from one interception in a container of oranges). |
| *Paratrechina longicornis* | Not fully searched. | Omnivorous, on live and dead animals, honeydew, fruits, seeds and |

| | | |
|---|---|---|
| (Hymenoptera: Formicidae) | Pacific Isl., Brazil. | household foods. Worker ants shown to be associated to *Citrus* fruit while tending honeydew-excreting insects. However they cannot begin a colony/lead to establishment.<br>Intercepted on fresh products, empty containers, timber. Known pest in urban areas in Brazil where it can become abundant indoors. Known to act as a carrier of pathogenic bacteria in hospitals. The species has established outside its native range. |
| *Solenopsis geminata* (Hymenoptera: Formicidae) | Asia, Gabon, Liberia, Mauritius, Reunion, Americas, Caribbean, Oceania | Mostly seed feeding, builds nest at the base of citrus trees. Intercepted on fruit and vegetables. |
| *Solenopsis invicta* (Hymenoptera: Formicidae) | Asia, North America, Caribbean, South America, Australia. Introduced at least to the USA and Australia, eradicated in New Zealand. | Generalist feeder and forager, also feeds on plants. May tunnel through roots and tubers, feed on above-ground plant parts, fruit and seeds. Can girdle and kill young trees. On *Citrus*, feeds on flowers, fruit, bark and cambium of young trees, new growth, seeds. Can occur at high densities in citrus orchards and other agricultural systems, and in various habitats such as disturbed and forested area, parks and lawns etc.<br>Worker ants may be associated with fruit consignments. This would not lead to new colonies, but *S. invicta* is a serious fire ant (stings animals and humans). Successful introduction would be through mated queen ants and colonies, with soil, ballast, plants for planting with soil, hay, colonies on various materials.<br>Since its introduction, has become a major agricultural and urban pest throughout southeastern USA (in particular, major pest of soyabean, also attacking Citrus and other plants). |

### 3.2.10 Were major pests identified?

Many pests of Citrus that are currently not regulated and not present in the EU were identified during the preparation of the Alert List. The process followed was time-consuming, but did allow identifying a large number of pests from various origins, including major pests. As a conservative approach was taken, it may appear that some pests listed on the Alert List are not associated to fruit in trade for reasons that would become clear only if a pest risk analysis was conducted.

## 4. Conclusion

- Although there are already many pests of *Citrus* in the EU, including introduced pests, many others were identified as being potentially associated with *Citrus* and *Citrus* fruit.
- Pests associated to leaves were all excluded because *Citrus* fruit imported into the EU should be free from peduncles and leaves. However, there is no such requirement within the EU, and such fruit with leaves may constitute a pathway once such pests are introduced into the EU.
- Only 36 pests were retained for the Alert List, but a larger number were potentially associated with *Citrus* fruit. Many were not retained mainly because they did not have mobile life stages. The likelihood of transfer of pests to hosts at destination from the infested fruit consignments would require a more complete assessment, and it is not excluded that some of these many pests may have the capacity to transfer to *Citrus* crops.
- It would be useful that countries record intercepted non-regulated pests on *Citrus* fruit, so that PRAs/specific requirements may be considered for some pests. Such data was already provided for some of the pests proposed in answer to the EPPO questionnaire on pests of concern for *Citrus* (see Annex 3).
- The likelihood of transfer from *Citrus* fruit consignments to hosts are higher if infested fruit consignments are imported into facilities close to where plants are grown. The analysis was not made of whether this is a common practice in the EU. As in the case of the EPPO tomato study, this emphasizes the need to separate import and packing facilities from facilities where plants are produced.
- The Alert List may be used in the framework of EPPO to raise awareness of pests that may be associated with fruit consignments. Relevant information will be presented to EPPO Panels and included in EPPO Global Database.
- Many Tephritidae were identified. They are currently regulated in the EU under general categories. It could be envisaged whether additional major species should be listed by name in the Directive.

## 5. References (All URLs were accessed in September 2016)

Note: Each Alert List record has its own reference list (see Annex 7).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## ANNEX 1. Oranges: detailed data on trade (Source: Eurostat)

0 represent quantities below 100 kg

**Table 1. Imports to the EU27 by broad origins (100 kg). 'fresh or dried oranges'**

| | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| Eu28_Intra | 20.509.041 | 22.464.283 | 19.129.303 | 18.959.047 | 20.326.987 | 19.958.607 | 19.868.259 | 20.777.178 | 23.303.640 | 20.463.877 |
| EPPO non-EU | 2.297.391 | 2.233.297 | 2.357.737 | 2.113.932 | 1.655.611 | 1.503.477 | 1.403.202 | 1.218.383 | 911.285 | 1.016.774 |
| non-EPPO | 5.313.496 | 5.833.835 | 6.643.319 | 8.318.564 | 6.880.496 | 8.030.447 | 6.655.137 | 6.938.696 | 7.953.678 | 7.311.913 |
| **Total** | 28.119.928 | 30.531.415 | 28.130.359 | 29.391.543 | 28.863.094 | 29.492.531 | 27.926.598 | 28.934.257 | 32.168.603 | 28.792.564 |

**Table 2 Imports to the EU-27 of 'fresh or dried oranges' (in 100 kg).** * EPPO countries

| | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| **North America** | **10394** | **23550** | **22064** | **67248** | **58892** | **69244** | **59206** | **46046** | **19973** | **46147** |
| Canada | 78 | : | : | : | : | : | : | : | | |
| Mexico | 756 | 9 | 13 786 | 30 130 | 41 129 | 59 629 | 51 358 | 41 186 | 17 822 | 45 937 |
| United States | 9 560 | 23 541 | 8 278 | 37 118 | 17 763 | 9 615 | 7 848 | 4 860 | 2 151 | 210 |
| **South America** | **1 280 304** | **1 873 295** | **2 078 049** | **2 154 517** | **1 709 708** | **2 039 695** | **1 805 787** | **1 108 635** | **1 346 313** | **1 234 158** |
| Argentina | 616 424 | 797 899 | 823 658 | 965 364 | 822 086 | 843 039 | 809 577 | 479 707 | 496 354 | 447 365 |
| Brazil | 251 787 | 504 186 | 479 370 | 260 971 | 169 820 | 339 030 | 268 789 | 132 755 | 212 478 | 186 896 |
| Chile | 7 391 | 40 272 | 101 048 | 214 111 | 86 095 | 68 994 | 47 157 | 57 296 | 22 082 | 15 569 |
| Colombia | 1 107 | 10 408 | 19 337 | 11 944 | 11 382 | 15 728 | 4 000 | 6 213 | 7 312 | 13 482 |
| Ecuador | 210 | : | 105 | : | 13 | : | : | : | | |
| Peru | 0 | 805 | 4 535 | 123 615 | 26 775 | 61 919 | 98 924 | 72 539 | 105 653 | 86 715 |
| Suriname | : | 228 | 85 | 12 | : | 69 | 29 | 1 | 0 | : |
| Uruguay | 399 336 | 518 814 | 649 758 | 578 500 | 593 537 | 710 916 | 577 311 | 360 124 | 502 434 | 484 131 |
| Venezuela | 4 049 | 683 | 153 | : | : | : | : | : | | |
| **Central America** | **59 696** | **74 702** | **70 743** | **11 786** | **13 697** | **28 272** | **20 876** | **22 176** | **28 489** | **27289** |
| Belize | 57 820 | 74 347 | 68 142 | 3 283 | 8 731 | 11 469 | 9 211 | 3 312 | 2 795 | 5 |
| Costa Rica | 1 650 | 299 | 74 | : | : | : | : | : | : | 84 |
| El Salvador | : | : | : | 240 | : | : | : | : | | |
| Guatemala | : | 56 | 0 | : | : | : | : | : | | |
| Honduras | : | : | 2 527 | 6 111 | 4 966 | 16 174 | 11 443 | 18 864 | 25 694 | 27 200 |
| Panama | 226 | : | : | 2 152 | : | 629 | 222 | : | | |
| **Caribbean** | **191256** | **182639** | **62725** | **36257** | **59148** | **74264** | **81064** | **49033** | **40996** | **31529** |
| Antigua & Barbuda | 383 | : | : | 3 508 | : | : | : | : | | |
| Cayman Islands | 220 | : | : | : | : | : | : | : | | |
| Cuba | 157 692 | 171 576 | 49 933 | 17 121 | 14 338 | 13 738 | 13 754 | 8 924 | 8 251 | 4 497 |
| Dominica | 1 551 | 476 | 739 | 1 039 | 2 241 | 1 480 | 638 | 433 | 229 | 233 |
| Dominican Rep. | 6 088 | 2 491 | 7 991 | 8 373 | 16 209 | 7 070 | 14 511 | 13 038 | 4 937 | 7 575 |
| Haiti | : | : | 113 | : | : | : | 736 | : | 158 | |
| Jamaica | 25 278 | 8 096 | 3 949 | 6 216 | 26 360 | 51 976 | 51 425 | 26 638 | 27 421 | 19 224 |
| St Lucia | 12 | : | : | : | : | : | : | : | | |
| St Vincent & Grenadines | 32 | : | : | : | : | : | : | : | | |
| **Africa** | **5338756** | **5280206** | **6000982** | **7701130** | **6127457** | **6979328** | **5868879** | **6697871** | **7195053** | **6792280** |
| Algeria* | 15 | : | 22 | : | 415 | 4 | : | 454 | 616 | 3 113 |
| Congo | : | 11 | : | : | : | : | : | : | | |
| Congo, Dem. Rep. | 281 | : | : | : | 39 | : | : | : | | |
| Cote D'ivoire | 9 | : | : | : | : | : | : | : | | |
| Egypt | 298 218 | 748 552 | 1 170 945 | 1 137 513 | 1 377 536 | 1 304 113 | 1 035 278 | 1 423 952 | 1 789 331 | 1 819 604 |
| Ghana | 73 | : | 202 | 12 319 | 20 640 | 6 720 | 3 120 | 2 649 | 705 | 3 006 |
| Guinea-Bissau | : | : | 43 | : | : | : | : | : | 158 | : |
| Kenya | | | | | | | | | 97 | 69 |
| Mali | : | 0 | : | : | : | : | : | : | | |
| Madagascar | 37 | : | : | : | : | 42 | : | 240 | : | : |
| Mauritania | : | 8 | : | : | : | : | : | : | | |
| Mauritius | : | : | 30 | 153 | : | : | 24 | 21 | : | : |
| Morocco* | 1 361 254 | 1 429 450 | 1 416 311 | 1 415 968 | 909 401 | 948 150 | 981 183 | 823 945 | 486 858 | 668 491 |
| Mozambique | : | 1 302 | : | : | 456 | 3 192 | 5 710 | 6 262 | 474 | : |
| Nigeria | : | : | : | 1 | : | 3 | : | : | | |
| South Africa | 2 987 815 | 2 615 936 | 2 955 691 | 4 560 886 | 3 353 095 | 4 159 330 | 3 404 933 | 3 960 149 | 4 339 321 | 3 802 096 |
| Sudan | : | : | : | : | 232 | 132 | : | : | | |
| Swaziland | 145 350 | 136 446 | 136 534 | 148 832 | 129 825 | 95 731 | 118 791 | 120 047 | 98 012 | 24 935 |
| Tanzania | 6 | : | : | : | : | : | : | : | : | 28 |
| Togo | : | : | : | : | : | 0 | : | : | | |
| Tunisia* | 218 572 | 185 520 | 188 672 | 257 817 | 199 450 | 223 373 | 203 103 | 167 586 | 194 774 | 151 759 |

| | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| Zambia | 0 | 173 | : | 223 | 12 | : | 118 | : | | |
| Zimbabwe | 327 126 | 162 808 | 132 532 | 167 418 | 136 356 | 238 538 | 116 619 | 192 566 | 284 707 | 319 179 |
| **Asia** | **969** | **2593** | **2524** | **356** | **4300** | **366** | **996** | **1134** | **387** | **680** |
| Azerbaijan* | 346 | : | : | : | : | : | : | : | 2 | : |
| China | 17 | 40 | 10 | 33 | 3 292 | 11 | 3 | 34 | 242 | 18 |
| Georgia | : | : | : | : | 16 | : | : | : | | |
| India | 3 | : | : | : | 405 | 3 | 2 | : | | 5 |
| Indonesia | 115 | : | : | : | : | : | : | : | | |
| Iran, Isl. Rep. | 47 | 21 | 30 | 39 | 156 | 97 | 168 | 197 | 110 | 151 |
| Japan | : | : | : | : | 4 | 15 | : | : | | |
| Macao | : | 66 | : | : | : | : | : | : | | |
| Pakistan | 176 | 2 454 | 2 482 | 72 | 210 | 240 | 772 | 765 | : | 501 |
| Philippines | : | : | : | : | : | : | : | 2 | 22 | 2 |
| Taiwan | : | : | : | : | 5 | : | : | : | | |
| Tajikistan | : | : | : | : | : | : | : | : | | |
| Thailand | 6 | 12 | 2 | 212 | 210 | : | 50 | 135 | 11 | 3 |
| Turkmenistan | 39 | : | : | : | : | : | : | : | | |
| Vietnam | 220 | : | : | : | 2 | : | 1 | 1 | : | : |
| **Near East** | **711531** | **608137** | **755210** | **442022** | **545529** | **329868** | **217726** | **226032** | **227361** | **192699** |
| Israel* | 311 728 | 247 538 | 192 708 | 201 404 | 228 582 | 176 532 | 110 532 | 115 636 | 64 072 | 59 032 |
| Jordan* | : | 9 | : | : | : | : | : | : | | |
| Lebanon | 0 | 6 | 219 | 243 | 96 | 14 | 190 | 2 | 1 | 10 |
| Saudi Arabia | 218 | 462 | 286 | : | 49 | 11 | : | 250 | : | : |
| Syrian Arab Rep. | 757 | 225 | 326 | 3 497 | 5 | 330 | : | : | | |
| Turkey* | 398 605 | 357 422 | 559 159 | 236 767 | 316 431 | 152 644 | 106 064 | 109 182 | 163 178 | 133 005 |
| **Oceania** | **11 333** | **11 127** | **10 406** | **17 298** | **16 410** | **10 450** | **2 425** | **5 534** | **4 874** | **3 182** |
| Australia | 10 461 | 11 127 | 10 406 | 17 298 | 16 410 | 10 450 | 2 425 | 5 534 | 4 874 | 3 182 |
| New Zealand | 872 | : | : | : | : | : | : | : | | |
| **Europe (non-EU)** | **6871** | **13358** | **865** | **1976** | **1332** | **2774** | **2320** | **1580** | **1785** | **1374** |
| Albania* | : | : | : | 0 | 0 | 12 | : | : | | |
| Belarus* | : | 935 | : | : | : | 188 | : | 116 | 136 | 215 |
| Bosnia & Herzeg.* | : | : | : | : | : | : | 205 | : | 16 | : |
| FYR Macedonia* | 191 | 917 | : | 769 | : | 1 200 | 317 | : | 766 | 325 |
| Norway* | 966 | 211 | 522 | 404 | 857 | 903 | 1 242 | 864 | : | 97 |
| Russian Fed.* | : | 99 | : | 120 | 71 | 173 | 236 | : | : | 406 |
| Serbia* | : | : | 206 | 382 | 208 | : | : | 576 | 765 | 17 |
| Switzerland* | 385 | 313 | 137 | 301 | 196 | 298 | 320 | 24 | 102 | 254 |
| Ukraine* | 5 329 | 10 883 | : | : | : | : | : | : | : | 60 |

## ANNEX 2. Mandarins: Detailed data on trade (Source: Eurostat)

0 represent quantities below 100 kg.

**Table 1. Imports to the EU27 by broad origins (100 kg). 'fresh or dried mandarins (incl. tangerines and satsumas, clementines, wilkings and similar citrus hybrids)'.**

| | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| Eu28_Intra | 13.563.270 | 14.900.147 | 16.318.703 | 15.463.509 | 15.525.845 | 15.747.692 | 16.311.223 | 17.146.273 | 16.200.683 | 16.541.938 |
| EPPO nonEU | 2.104.453 | 1.924.499 | 1.899.026 | 1.717.593 | 1.865.896 | 2.006.728 | 1.685.608 | 1.440.367 | 1.584.435 | 1.939.882 |
| non-EPPO | 1.209.553 | 1.474.796 | 1.733.969 | 1.862.443 | 1.826.253 | 1.876.489 | 1.681.128 | 1.731.490 | 1.692.882 | 1.761.293 |
| **Total** | 16.877.276 | 18.299.442 | 19.951.698 | 19.043.545 | 19.217.994 | 19.630.909 | 19.677.959 | 20.318.130 | 19.478.000 | 20.243.113 |

**Table 2 Imports to the EU-27 of 'fresh or dried mandarins (incl. tangerines and satsumas, clementines, wilkings and similar citrus hybrids)'** * EPPO countries

| | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| **North America** | **1195** | **4538** | **7319** | **23419** | **7604** | **19966** | **48134** | **36999** | **47910** | **50965** |
| Canada | : | : | : | : | : | 244 | : | : | | |
| Mexico | 1 | : | : | : | 187 | : | : | : | | |
| USA | 1 194 | 4 538 | 7 319 | 23 419 | 7 417 | 19 722 | 48 134 | 36 999 | 47 910 | 50 965 |
| **South America** | **686 079** | **870 109** | **1 104 332** | **1 036 546** | **1 070 232** | **1 117 806** | **999 120** | **936 167** | **766 069** | **792 500** |
| Argentina | 293 893 | 333 023 | 388 377 | 362 525 | 470 272 | 397 705 | 321 608 | 240 248 | 158 743 | 119 980 |
| Brazil | 25 520 | 25 903 | 20 588 | 4 414 | 3 783 | 2 392 | 1 024 | 3 098 | 1 120 | : |
| Chile | 74 260 | 109 264 | 75 275 | 48 864 | 22 485 | 13 523 | 15 603 | 13 144 | 10 124 | 14 812 |
| Colombia | 0 | : | 578 | 436 | : | : | : | : | 1 | 97 |
| Ecuador | 65 | 28 | : | : | : | : | : | : | | |
| Paraguay | 878 | : | : | : | : | : | : | : | | |
| Peru | 87 626 | 166 111 | 257 278 | 309 835 | 234 141 | 332 228 | 419 253 | 485 360 | 441 388 | 487 334 |
| Suriname | : | 149 | 12 | : | 0 | 24 | 9 | 3 | 1 | 1 |
| Uruguay | 203 837 | 235 631 | 362 224 | 310 472 | 339 551 | 371 934 | 241 623 | 194 314 | 154 692 | 170 276 |
| **Central America** | **74** | **0** | **2144** | **0** | **0** | **457** | **0** | **74** | **1208** | **108** |
| Belize | 0 | : | 2 144 | : | : | : | : | : | | |
| Costa Rica | 18 | : | : | : | : | 457 | : | 74 | : | 108 |
| Honduras | 56 | : | : | : | : | : | : | : | 553 | : |
| Panama | | | | | | | | | 655 | : |
| **Caribbean** | **6795** | **6085** | **3954** | **2956** | **5416** | **1403** | **2689** | **1803** | **414** | **4128** |
| Antigua & Barbuda | : | : | : | 179 | : | : | : | : | | |
| Dominica | : | : | : | : | : | 7 | : | : | | |
| Dominican Rep. | 24 | : | 259 | 294 | 105 | 174 | 14 | 146 | 56 | 30 |
| Grenada | 16 | : | : | : | : | : | : | : | | |
| Jamaica | 6 755 | 6 085 | 3 695 | 2 483 | 5 311 | 1 222 | 2 675 | 1 433 | 358 | 4 098 |
| Montserrat | : | : | : | : | : | : | : | 224 | : | : |
| **Africa** | **1389088** | **1626550** | **1431185** | **1538663** | **1549202** | **1713898** | **1458123** | **1384493** | **1561430** | **1868534** |
| Cote d'Ivoire | : | : | : | : | : | : | : | 211 | : | : |
| Egypt | 5 560 | 20 620 | 24 364 | 18 526 | 14 492 | 22 228 | 11 654 | 12 231 | 3 423 | 16 079 |
| Ghana | : | : | : | : | 1 | : | : | : | | |
| Madagascar | 15 | : | : | : | : | : | : | : | | |
| Mali | : | 0 | : | : | : | : | : | : | : | 400 |
| Mauritania | 19 | 30 | : | : | : | : | : | : | | |
| Mauritius | : | : | : | : | : | : | 10 | 117 | : | : |
| Morocco* | 890 045 | 1 053 686 | 866 550 | 806 171 | 876 558 | 1 036 031 | 865 511 | 664 101 | 742 758 | 995 217 |
| Namibia | 39 | : | : | : | : | : | : | : | | |
| South Africa | 478 257 | 533 956 | 535 027 | 703 891 | 652 619 | 650 646 | 577 919 | 700 300 | 809 476 | 853 060 |
| Sudan | : | : | : | : | : | 0 | 1 | : | | |
| Swaziland | 6 086 | 8 663 | 4 392 | 8 312 | 5 510 | 4 993 | 3 015 | 7 533 | 5 760 | 420 |
| Tunisia* | : | 6 | 231 | 723 | 15 | : | 13 | : | 13 | : |
| Uganda | 221 | : | : | : | : | : | : | : | | |
| Zambia | : | : | : | : | 7 | : | : | : | | |
| Zimbabwe | 8 846 | 9 589 | 621 | 1 040 | : | : | : | : | : | 3 358 |
| **Asia** | **13277** | **12887** | **41610** | **53521** | **46142** | **54370** | **36244** | **31390** | **39550** | **33562** |
| China | 40 | 733 | 3 047 | 3 256 | 2 157 | 1 434 | 1 652 | 1 472 | 3 304 | 3 198 |
| Georgia | : | : | : | : | 133 | : | : | 306 | : | 199 |
| India | : | 15 | 203 | 803 | : | : | : | : | : | 11 |
| Japan | 100 | : | : | : | : | 20 | 53 | 124 | 32 | 25 |
| Korea, Rep. | : | : | : | 25 | : | 381 | 1 366 | 4 257 | 13 791 | 13 385 |
| Macao | : | 10 | : | : | : | : | : | : | | |
| Pakistan | 12 905 | 12 129 | 38 360 | 49 437 | 43 852 | 52 535 | 33 163 | 25 231 | 22 423 | 16 744 |
| Thailand | 1 | : | : | : | : | : | 10 | : | | |

| | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| Turkmenistan | 231 | : | : | : | : | : | : | : | | |
| Vietnam | : | : | 0 | 0 | 0 | : | : | : | | |
| **Near East** | **1210976** | **867371** | **1029297** | **911001** | **986259** | **966178** | **811126** | **766415** | **839112** | **937621** |
| Iran, Isl. Rep. | 30 | 77 | 1 | : | : | 9 | : | : | | |
| Israel* | 146 377 | 173 810 | 205 191 | 240 327 | 242 483 | 348 891 | 297 246 | 413 616 | 415 525 | 420 601 |
| Jordan* | : | 92 | 10 | : | : | : | 20 | : | | |
| Lebanon | : | : | 1 462 | 3 387 | 408 | : | 35 | : | 2 | 0 |
| Oman | : | : | : | : | 227 | : | : | : | | |
| Saudi Arabia | 8 | : | : | 208 | 211 | : | : | : | | |
| Syrian Arab Rep. | 453 | 480 | 313 | 555 | 20 | 70 | : | : | | |
| Turkey* | 1 064 108 | 692 720 | 822 320 | 666 524 | 742 910 | 617 208 | 513 825 | 352 799 | 423 585 | 517 020 |
| UAE | : | 192 | : | : | : | : | : | : | | |
| **Oceania** | **2 599** | **7 564** | **8 400** | **10 082** | **23 364** | **4 541** | **2 307** | **4 665** | **19 070** | **6 713** |
| Australia | 2 236 | 7 564 | 7 100 | 9 264 | 22 143 | 4 519 | 2 200 | 4 629 | 19 033 | 6 652 |
| New Zealand | 363 | : | 1 300 | 818 | 1 221 | 22 | 107 | 36 | 37 | 61 |
| **Europe (non-EU)** | **3923** | **4191** | **4754** | **3848** | **3930** | **4598** | **8757** | **9851** | **2397** | **6663** |
| Andorra | : | : | 30 | : | : | : | : | : | | |
| Belarus* | : | 497 | : | 586 | 975 | 1 325 | 566 | 474 | 762 | 3 059 |
| Bosnia & Herzeg.* | : | : | : | : | : | : | : | 760 | : | : |
| FYR Macedonia* | 12 | 484 | : | 59 | : | 223 | : | 16 | 58 | 83 |
| Iceland | : | 6 | : | : | : | : | : | : | | |
| Moldova* | | | | | | | | | 195 | : |
| Montenegro* | | | | | | | | | 205 | 323 |
| Norway* | 353 | 2 194 | 2 285 | 525 | 986 | 978 | 3 174 | 966 | : | 378 |
| Russian Fed.* | : | 148 | 198 | : | 604 | 569 | 3 464 | 2 889 | 37 | 47 |
| Serbia* | : | : | : | 203 | 768 | 143 | 949 | 4 541 | 627 | 1 204 |
| Switzerland* | 1 047 | 727 | 2 241 | 2 295 | 597 | 1 360 | 604 | 205 | 292 | 1 271 |
| Ukraine* | 2 511 | 135 | : | 180 | : | : | : | : | 221 | 298 |

## ANNEX 3. Pests proposed in answer to the EPPO questionnaire on pests of concern for *Citrus* (2016-04)

| Pest Latin name (family) | Why should it be considered / Why is it important? | Source indicated | Outcome in the study |
|---|---|---|---|
| *Aleurocanthus citricola* (*A. spiniferus*) (Hemiptera: Aleyrodidae) | Reported in Italy and Montenegro (both in restricted distribution). Important pest because of the trade of citrus fruits from Italy. | Department of agriculture, Cyprus | Excluded at Step 1 (regulated in the EU) |
| *Aleurocanthus woglumi* (Hemiptera: Aleyrodidae) | Wide host range, not regulated on *Citrus* fruits, high probability of entry and establishment, high reduction of fruit set | Plant Health Laboratory LSV, ANSES, France | Excluded at Step 1 (regulated in the EU) |
| | Can be a severe pest without biological control | CIRAD | |
| *Amblypelta cocophaga* (Hemiptera, Coreidae) | Polyphagous external feeder in fruits and leaves; the eggs are USUALLY not laid in the fruits. Quarantine pest in the CPPC and OIRSA regions [rated 9/9 proposals of pests associated with fruit] | Spanish NPPO | Step 2 (considered) |
| *Amyelois transitella* (Lepidoptera: Pyralidae) | Polyphagous. Minor risk for citrus crops. [rated 6/6 proposals] | Institute for Plant Protection, CCAFRA, Croatia | Step 2 & Alert List |
| *Anastrepha ludens/striata/fraterculus/serpentina* (Diptera: Tephritidae) | Damages on fruits | CIRAD | Excluded at Step 1 (regulated in the EU) |
| *Aonidiella orientalis* (Hemiptera: Diaspididae) | Associated to fruit, widely distributed throughout the world but not in the EPPO region, polyphagous (*Acacia, Vitis, Guajava, Magnolia, Mangifera, Morus, Olea, Phoenix, Carica, Ligustrum)*, it depreciates the fruit and reduces the plant vigour and harvest.In the Caribbean it is regarded as an economic plant pest of quarantine importance.<br>[rated 7/9 proposals of pests associated with fruit] | Spanish NPPO | Step 2 (considered) |
| *Bactrocera dorsalis* (Diptera: Tephritidae) | Many host plants (highly polyphagous) rapid reproduction. Not in EU | Department of agriculture, Cyprus | Excluded at Step 1 (regulated in the EU) |
| | Fruit fly from Asia that will attack many fruits produced in Mediterranean countries | Vicente Navarro (Universitat Politècnica de València, Spain) | |
| *Bactrocera invadens* (Diptera: Tephritidae) | Many host plants (highly polyphagous) rapid reproduction. Not in EU | Department of agriculture, Cyprus | Excluded at Step 1 (regulated in the EU) |
| | Fruit fly that will attack many fruits produced in Mediterranean countries | Vicente Navarro (Universitat Politècnica de València, Spain) | |
| *Bactrocera invadens/dorsalis/zonata/tryoni* (Diptera: Tephritidae) | Damages on fruits | CIRAD | Excluded at Step 1 (regulated in the EU) |
| *Bactrocera minax* (Diptera: Tephritidae) | Not mentioned explicitly among the Tephritidae in EU directive Annex I/A1, low risk of entry, few efficient management measures available | Plant Health Laboratory LSV, ANSES, France | Excluded at Step 1 (regulated in the EU) |
| *Bactrocera zonata* (Diptera: Tephritidae) | Many host plants (highly polyphagous) rapid reproduction, reported in Israel. Not in EU | Department of agriculture, Cyprus | Excluded at Step 1 (regulated in the EU) |
| | Fruit fly present in north Africa that will attack mainly prunnus sp. | Vicente Navarro (Universitat | |

| Pest Latin name (family) | Why should it be considered / Why is it important? | Source indicated | Outcome in the study |
|---|---|---|---|
| | | Politècnica de València, Spain) | |
| *Brevipalpus chilensis* (Acarida: Tenuipalpidae) | It is a polyphagous pest of hosts like ***Citrus***, *Vitis, Actinidia deliciosa, Annona cherimola, Ficus benghalensis, and Ligustrum sinense*. It is a quarantine pest in USA which implies important trade restrictions and fruit rejections (Methyl Bromide required). It is considered a specially important mite for vineyards, affecting leaves and spreading to the grape bunches. As far as it is known is only present in Chile.<br>[rated 4/9 proposals of pests associated with fruit] | Spanish NPPO | Step 2 & Alert List |
| Candidatus Liberibacter spp. | Huanglongbing disease, tree and fruit losses, insect vectors [rated 1 / 2 proposals] | University of Girona, Spain | africanus, americanus, asiaticus: excluded at Step 1 (regulated in the EU)<br>*Candidatus* Liberibacter spp. considered at Step 2 |
| *Ceratitis rosa/cosyra* (Diptera: Tephritidae) | Damages on fruits | CIRAD | Excluded at Step 1 (regulated in the EU) |
| *Ceroplastes* (=*Gascardia*) *destructor* (Hemiptera: Coccidae) | Highly polyphagous of important hosts although it does not attack the fruits directly, the excreted honeydew leads to the growth of molds. Many countries list it as a Quarantine pest, including Argentina, Brasil, Israel and South Africa<br>[mentioned as not associated with fruit] | Spanish NPPO | Step 2 (excluded, not associated with fruit) |
| *Citripestis sagittiferella* (Lepidoptera: Pyralidae) | UK 1-page assessment (2013) | UK Plant Health Service | Step 2 & Alert List |
| | Important pest of citrus. [rated 2/6 proposals] | Institute for Plant Protection, CCAFRA, Croatia | |
| | A difficult to control fruit-borne internal feeder. There was one confirmed interception (UK) in 2011, when adults were reared from *Citrus aurantifolia* fruit (lime) from Malaysia. (https://secure.fera.defra.gov.uk/phiw/riskRegister/plant-health/documents/citripestisSagittiferella.pdf). This pest may, however, be of concern to Citrus-growing southern EU states, as the potential impacts could be higher in these regions. Trade is supposed to be similar to the above mentioned case<br>[rated 3/9 proposals of pests associated with fruit] | Spanish NPPO | |
| *Citrus leprosis virus* (Rhabdoviridae, virus) | Not regulated on *Citrus* fruits; CiLV-C, CiLV-C2 and CiLV-N are different at the molecular level but cause similar symptoms on *Citrus*. Since these viruses are not systemic, the probability of introduction *via* imported fruits relies on the presence of vectors of the *Brevipalpus* genus in the import consignment or in the PRA zone (which is the case for *Brevipalpus californicus, Brevipalpus obovatus* and *Brevipalpus phoenicis*). The risk is thus considered as low | Plant Health Laboratory LSV, ANSES, France | Excluded at Step 1 (regulated in the EU) |
| *Coccus perlatus* (Hemiptera: Coccidae) | Pest monophagous of *Citrus* and not fruit-borne. Its entry should be difficult, for its pathway (leaves) is forbidden, and its symptoms (folded leaves) are conspicuous [mentioned as not associated with fruit] | Spanish NPPO | Step 2 (as *Parthenolecanium perlatum*) (excluded, not associated with fruit) |

| Pest Latin name (family) | Why should it be considered / Why is it important? | Source indicated | Outcome in the study |
|---|---|---|---|
| *Colletotrichum cliviae* | This fungal species causes anthracnose diseases on Amaryllidaceae (e.g. *Clivia miniata*), Orchids (*Arundina graminifolia*, *Cymbidium hookerianum*) (Yang et al. 2009, 2011), *Cattleya*, *Calamus thwaitesii*, *Phaseolus* and *Saccharum* (Sharma et al. 2013) and Mango (Vieira et al, 2014). Isolated *C. cliviae* on citrus leaves and pathogenecity test indicated it is able to cause anthracnose on citrus fruits (publication in preparation). | Clovis Douanla-Meli, Julius Kühn Institute, Germany | Step 2 (excluded not associated with fruit) |
| *Diaphorina citri* (Hemiptera: Psyllidae) | Transmit greening (HLB), a severe disease | CIRAD | Excluded at Step 1 (regulated in the EU) |
| | Huanglongbing vector | Vicente Navarro (Universitat Politècnica de València, Spain) | |
| *Diploschema rotundicolle* (Coleoptera: Cerambycidae) | Although not fruit-borne and, to current knowledge, virtually monophagous (*Citrus* and *Melia*), as a borer it could be introduced in ornamental plants or in hosts yet unknown. Quoted as potentially dangerous for *Citrus* (Josep Anton Jaques, Aurelio Gómez, Plagas potenciales para la citricultura española: Diploschema rotundicolle y Ceratitis rosa, LEVANTE AGRICOLA, 369, pp: 70-71, 2004) [mentioned as not associated with fruit] | Spanish NPPO | Not added to the lists (Cerambycidae) |
| *Ecdytolopha aurantianum* (Lepidoptera: Tortricidae) | Very difficult to control on account of its condition of internal feeder and being borne in the fruits. Polyghagous feeder of *Citrus*, *Annona*, *Psidium* and others, and a potential risk for *Musa*. Spain has intercepted it in three occasions, in oranges from Brazil in spite of it is not a regulated pest. Trade from Brazil and other South America countries is very important [rated 1/9 proposals of pests associated with fruit] | Spanish NPPO | Step 2 & Alert List |
| *Elsinoe australis* and *Elsinoe fawcettii* (Elsinoaceae, fungi) | Regulated only on *Citrus reticulata* and *Citrus sinensis* fruits coming from South America, low risk of introduction *via Citrus* fruits which present quick early symptoms | Plant Health Laboratory LSV, ANSES, France | Excluded at Step 1 (regulated in the EU) |
| *Eotetranychus sexmaculatus* (Acarida: Tetranychidae) | It is not associated to the fruit but it is very polyphagous over important hosts such as *Citrus, Vitis, Avocado, Diospyros, Lycopersicum*... In addition, it is a quarantine pest in Israel. [mentioned as not associated with fruit] | Spanish NPPO | Step 2 & Alert List |
| *Eudocima phalonia* (=*Othreis fullonia*) (Lepidoptera: Noctuidae) | Quarantine pest in Argentina, Brazil, Uruguay and South Africa. The adults are polyphagous of economically important hosts and feed externally on the fruits (it sucks the juices), rendering them unedible. The larvae feed mainly on plants of the *Menispermaceae* family. [mentioned as not associated with fruit] | Spanish NPPO | Step 2 (excluded, not associated with fruit) |
| *Homalodisca vitripennis* (Hemiptera: Cicadellidae) | No direct impact on *Citrus* but vector of *Xylella fastidiosa*, high capacity of expanding its ovipositional and feeding host lists, primarily within ornamental plant species. It can become abundant in Mediterranean climates if plants receive adequate irrigation and winter temperature is not severe. High dissemination capacity especially as a hitchhiker | Plant Health Laboratory LSV, ANSES, France | Excluded at Step 1 (regulated in the EU as Cicadellidae vector of *X. fastidiosa*) |
| | Vector of a serious citrus disease called *Xylella fastidiosa*. Reported in Netherland not present in Cyprus | Department of agriculture, Cyprus | |
| *Indian citrus ringspot* | It affects *Citrus*. The virus is transmitted by | Spanish | Step 2 (excluded, not |

| Pest Latin name (family) | Why should it be considered / Why is it important? | Source indicated | Outcome in the study |
|---|---|---|---|
| (Alphaflexiviridae) | grafting, but is not seedborne or soilborne and has no known vector. Affects productivity reducing size and number of fruits. Widespread in India. [mentioned as not associated with fruit] | NPPO | associated with fruit) |
| *Marmara gulosa* (Lepidoptera: Gracillariidae) | Fruit borne, but peelminer rather than internal feeder. Highly polyphagous of *Citrus* and many economically important hosts, including grapevine and plum, and some ornamentals. Quoted as potentially dangerous for *Citrus* (Josep Anton Jaques, Aurelio Gómez, Plagas potenciales para la citricultura española: Scirtothrips aurantii y Marmara gulosa, LEVANTE AGRICOLA, 371, pp: 250-251, 2004) [rated 5/9 proposals of pests associated with fruit] | Spanish NPPO | Step 2 & Alert List |
| *Milviscutulus mangiferae* (Hemiptera: Coccidae) | UK PRA (2008). Highly polyphagous; *Citrus* spp. listed as hosts. | UK Plant Health Service | Step 2 (excluded, not associated with fruit) |
| *Mycosphaerella aurantia* (Ascomycota) | Intercepted by LSV on *Citrus* fruits, not well described regarding its phytosanitary impact | Plant Health Laboratory LSV, ANSES, France | Step 2 (excluded, limited distribution in the EU) |
| *Mycosphaerella citri* (Ascomycota) | Fungus, internally affects fruits and leaves, but according to CABI only the leaves can transmit it. Only affects ***Citrus*** and *Rutaceae*. Quarantine pest in Israel and Jordan [mentioned as not associated with fruit] | Spanish NPPO | Step 2 (excluded, not transmitted by fruit) |
| *Naupactus xanthographus* (=*Pantomorus xanthographus*) (Coleoptera, Curculionidae) | It is a very polyphagous pest over important hosts. In addition, it is a quarantine pest in USA, Canada and Jordan with distribution in Argentina and Chile which are citrus exporters to the EU. The adult feeds on leaves and larvae on roots. In *Vitis*, recently formed bunches can be also damaged by this pest. It is associated to a wide range of ornamental plants. [mentioned as not associated with fruit] | Spanish NPPO | Step 2 (excluded, contaminant) |
| Non-European scale insects (Hemiptera: Coccoidea, e.g. *Ceroplastes sinensis*) | Relatively many species, some of them potentially damaging to citrus. [rated 4/6 proposals] | Institute for Plant Protection, CCAFRA, Croatia | Taken into account at Step 2 for individual species |
| Non-European whiteflies (Hemiptera: Aleyrodidae, e.g. *Orchamoplatus citri*) | Relatively many species, some of them potentially damaging to citrus. [rated 3/6 proposals] | Institute for Plant Protection, CCAFRA, Croatia | Taken into account at Step 2 for individual species |
| *Oidium tingitaninum* (Ascomycota) | Only minor risk associated with possible introduction with citrus fruits. [rated 5/6 proposals] | Institute for Plant Protection, CCAFRA, Croatia | Step 2 (considered) |
| *Orchamoplatus mammaeferus* (Hemiptera: Aleyrodidae) | Currently, *Orchamoplatus mammaeferus* has a tropical and sub-tropical distribution and is not likely to establish in the UK. *O. mammaeferus* is on the US quarantine pest list and *Citrus* growing regions of the southern EU may be concerned about this pest. The PRA was initiated after 25+ vacated pupae were intercepted on *Codiaeum* cuttings from Costa Rica. Extract from UK PRA (1997). A very early form of PRA, only 3 pages. Could be supplied on request. | UK Plant Health Service | Step 2 (considered) |
| *Praelongorthezia praelonga* (*Orthezia praelonga*) (Hemiptera: Ortheziidae) | Highly polyphagous, very frequently intercepted in the USA on different hosts, including many ornamental species. Argentina reports that it also | Spanish NPPO | Step 2 & Alert List |

| Pest Latin name (family) | Why should it be considered / Why is it important? | Source indicated | Outcome in the study |
|---|---|---|---|
| | affects fruits. [rated 8/9 proposals of pests associated with fruit] | | |
| *Pachnaeus litus* (Coleoptera: Curculionidae) | Not fruit-borne (the adult feeds on leaves and the larva on roots), highly polyphagous . India has established requirements for mangoes from Cuba. Maybe a pest to consider in other plants for planting species [mentioned as not associated with fruit] | Spanish NPPO | Step 2 (considered) |
| *Paracoccus burnerae* (Hemiptera: Pseudococcidae) | Intercepted by LSV on *Citrus* fruits | Plant Health Laboratory LSV, ANSES, France | Step 2 & Alert List |
| *Paraleyrodes citri* (Hemiptera: Aleyrodidae) | Another white fly, not fruit-borne (it feeds on the leaves, produces waxy excretions that complicate treatment) [mentioned as not associated with fruit] | Spanish NPPO | Step 2 (considered) |
| *Passalora loranthi* (Mycosphaerellaceae) | Intercepted by LSV on *Citrus* fruits, not well described regarding its phytosanitary impact, wide host range | Plant Health Laboratory LSV, ANSES, France | Step 2 (considered) |
| *Phyllocnistis citrella* (Lepidoptera: Gracillariidae) | Severe pest on young trees | CIRAD | Excluded at Step 1 (present in the EU) |
| *Phyllosticta citriasiana* (Phyllostictaceae) | Intercepted by LSV only on *Citrus maxima* fruits, similar symptoms to those of *Phyllosticta citricarpa*, can develop post-harvest, during transport and storage | Plant Health Laboratory LSV, ANSES, France | Step 2 (considered) |
| *Prays endocarpa* (Lepidoptera: Yponomeutidae) | *Prays endocarpa* is a minor pest of citrus in SE Asia. Larvae feed exclusively on the rind of citrus fruit. If this pest were to be introduced into the EC, Citrus growing regions of southern member states would be at most risk. | UK Plant Health Service | Step 2 & Alert List |
| | As a fruit-borne internal feeder, it is difficult to control. Pest of ***Citrus*** and *Aegle marmelos*, which is not regulated for this pest in fruits. EFSA acknowledges there exists risk. It is a quarantine pest in USA and Jordan. Nonetheless, it prefers high humidity, so there is no complete certainty as to the risk it poses in Europe. The trade of citrus and other susceptible hosts from the countries in Asia where it is supposed to be established is probably very low and in any case lower than the one from South America [rated 2/9 proposals of pests associated with fruit] | Spanish NPPO | |
| *Pseudococcus cryptus* (Hemiptera: Pseudococcidae) | Intercepted by LSV on *Citrus* fruits | Plant Health Laboratory LSV, ANSES, France | Step 2 (excluded, limited distribution in the EU) |
| *Selenaspidus articulatus* (Hemiptera: Diaspididae) | Associated to fruit where damage is caused by sap-depletion, and through injection of toxic saliva, discolouring the area of penetration. A polyphagous pest, of hosts of importance to UE including *Olea, Vitis, Ficus* and ornamentals. Widely distributed through central America and sub-Saharan Africa and quarantine in South Africa, this pest has been intercepted three times in Spain over Citrus sinensis from Peru and once in UK over Arecas from the Netherlands. Quoted as potentially dangerous for Citrus (Josep Anton Jaques, Aurelio Gómez, Selenaspidus articulatus (Morgan), Homoptera: Diaspididae, LEVANTE AGRICOLA, 362, pp: 306-307, 2002) [rated 6/9 proposals of pests associated with fruit] | Spanish NPPO | Step 2 (considered) |
| *Singhiella (=Dialeurodes)* | Not fruit-borne in *Citrus,* but its other hosts are | Spanish | Step 2 (excluded, not |

| Pest Latin name (family) | Why should it be considered / Why is it important? | Source indicated | Outcome in the study |
|---|---|---|---|
| *citrifolii* (Hemiptera: Aleyrodidae) | the ornamental *Gardenia* sp. and *Ficus nitida*, it is easily detected in inspection, though. Honeydew secretion causes sooty mold. It has been i**ntercepted** by the UK In Florida *Dialeurodes citri* is taking its place [mentioned as not associated with fruit] | NPPO | associated with fruit) |
| *Thaumatotibia leucotreta* (Lepidoptera: Tortricidae) | Main host plants are citrus and capsicum. Present in Africa and Israel where large number of commodities are imported in Cyprus. Not in EU. | Department of agriculture, Cyprus | Step 2 & Alert List |
| | Extremely polyphagous. Important pest of citrus. [rated 1/6 proposals] | Institute for Plant Protection, CCAFRA, Croatia | |
| | Frequently intercepted by LSV on *Citrus* fruits, yield losses up to 20% on *Citrus*, larvae are capable of developing in hard green fruit before control measures can be started. | Plant Health Laboratory LSV, ANSES, France | |
| *Toxoptera citricidus* (Hemiptera: Aphididae) | Transmit tristeza virus | CIRAD | Excluded at Step 1 (regulated in the EU) |
| *Trioza erythreae* (Hemiptera: Psyllidae) | Transmit greening | CIRAD | Excluded at Step 1 (regulated in the EU) |
| *Xylella fastidiosa* sbsps. | Pierce disease, tree and fruit losses, insect vectors [rated 1 / 2 proposals] | University of Girona, Spain | Excluded at Step 1 (regulated in the EU) |
| *Zonocerus elegans* (Orthoptera: Pyrgomorphidae) | A polyphagous locust that also feeds on fruit. South-Saharian distribution, lays its eggs in the ground. Long hatching period leads to months of continuous damage to crops [mentioned as not associated with fruit] | Spanish NPPO | Step 2 (considered) |
| *Zonocerus variegatus* (Orthoptera: Pyrgomorphidae) | A polyphagous locust that also feeds on fruit. South-Saharian distribution, lays its eggs in the ground [mentioned as not associated with fruit] | Spanish NPPO | Step 2 (considered) |

## ANNEX 4. Categories of pests retained on the Alert List

A detailed description of categories and ratings can be found in the *Methods*.

**Ratings retained on the Alert List (all pests are absent from the EU, i.e. B1a)**

Subratings are covered in the ratings below (e.g. E1 covers E1u, E1h, E1d) except if explicitely excluded.

| Place on Alert List | Combination of ratings covered in each part | Description. All pests below may be associated with fruit (A1 or A2) (applies to each description) |
|---|---|---|
| Part 1 - Pests with high economic importance and more likely to transfer | • A1t/A2t + E1 (but not E1u, E1h) + any other | • pests able to transfer, with a high economic impact currently (not uncertain high impact or high impact in the past) |
| Part 2 - Pests with lesser economic importance and more likely to transfer, or with high economic importance but less likely to transfer | • A1/A2 or A1ut/A2ut + E1 + any other | • pests less able to transfer (or with an uncertainty on transfer), with a high economic impact currently |
| | • A1t/A2t or A1ut/A2ut + E1u or E1h + any other | • pests able to transfer (or with an uncertainty on transfer), with a high economic impact (but either with an uncertainty, or in the past), and not newly recorded on the crop |
| | • A1t/A2t + E2+ (F1 or G1) | • pests able to transfer, with a moderate economic impact currently, but intercepted, spreading/invasive (and not newly recorded on the crop). |
| | • A1t + E2 (but not E2d)+ any other | • non-mobile life stage associated with the fruit, pest able to transfer, with a moderate recorded impact currently |
| | • A1t/A2t + E3v or EUv + (F1 or G1) | • pests able to transfer, known vector, with a low or unknown recorded impact currently, and intercepted, spreading/invasive (and not newly recorded on the crop) |
| | • A1t/A2t + EU+ (F1 or G1) | • pests able to transfer, with an unknown recorded impact currently, but intercepted, spreading/invasive (and not newly recorded on the crop) |

**Not retained on the Alert List**

- Ac (contaminant)
- NO categories
- Combinations of ratings not fulfilling any of the combinations above

## ANNEX 5. List of pests remaining for consideration for the Alert List at Step 2

This list includes all pests retained for consideration, i.e. except 'contaminant' and all NO categories.
Alert List pests are in bold
Type of pests: A = arachnida; I = insecta, F = fungi, V = viruses and viroids

| Species | Type | Taxonomy |
|---|---|---|
| Acaudaleyrodes rachipora | I | Hemiptera: Aleyrodidae |
| Acutaspis albopicta | I | Hemiptera: Diaspididae |
| **Adoxophyes cyrtosema** | **I** | **Lepidoptera: Tortricidae** |
| Adoxophyes honmai | I | Lepidoptera: Tortricidae |
| Adoxophyes templana | I | Lepidoptera: Tortricidae |
| Africaleurodes citri | I | Hemiptera: Aleyrodidae |
| Aithaloderma citri | F | Ascomycota |
| Albonectria rigidiuscula | F | Ascomycota |
| Alcides trifidus | I | Coleoptera: Curculionidae |
| Aleurocanthus citriperdus | I | Hemiptera: Aleyrodidae |
| Aleurocanthus cocois | I | Hemiptera: Aleyrodidae |
| Aleurocanthus delottoi | I | Hemiptera: Aleyrodidae |
| Aleurocanthus hansfordi | I | Hemiptera: Aleyrodidae |
| Aleurocanthus husaini | I | Hemiptera: Aleyrodidae |
| Aleurocanthus inceratus | I | Hemiptera: Aleyrodidae |
| Aleurocanthus mackenzie | I | Hemiptera: Aleyrodidae |
| Aleurocanthus mvoutiensis | I | Hemiptera: Aleyrodidae |
| Aleurocanthus spinosus | I | Hemiptera: Aleyrodidae |
| Aleurocanthus valenciae | I | Hemiptera: Aleyrodidae |
| Aleuroclava citri | I | Hemiptera: Aleyrodidae |
| Aleuroclava citrifoli | I | Hemiptera: Aleyrodidae |
| Aleuroclava psidii | I | Hemiptera: Aleyrodidae |
| Aleurodicus coccolobae | I | Hemiptera: Aleyrodidae |
| Aleurodicus dispersus | I | Hemiptera: Aleyrodidae |
| Aleurodicus dugesii | I | Hemiptera: Aleyrodidae |
| Aleurodicus floccissimus | I | Hemiptera: Aleyrodidae |
| Aleurodicus magnificus | I | Hemiptera: Aleyrodidae |
| Aleurolobus confusus | I | Hemiptera: Aleyrodidae |
| Aleurolobus moundi | I | Hemiptera: Aleyrodidae |
| Aleurolobus selangorensis | I | Hemiptera: Aleyrodidae |
| Aleurolobus setigerus | I | Hemiptera: Aleyrodidae |
| Aleurolobus subrotondus | I | Hemiptera: Aleyrodidae |
| Aleurolobus szechwanensis | I | Hemiptera: Aleyrodidae |
| Aleuronudus acapulcensis | I | Hemiptera: Aleyrodidae |
| Aleuronudus bondari | I | Hemiptera: Aleyrodidae |
| Aleuronudus jaciae | I | Hemiptera: Aleyrodidae |
| Aleuronudus manni | I | Hemiptera: Aleyrodidae |
| Aleuroplatus translucidus | I | Hemiptera: Aleyrodidae |
| Aleurothrixus aepim | I | Hemiptera: Aleyrodidae |
| Aleurothrixus porteri | I | Hemiptera: Aleyrodidae |
| Alternaria gossypina | F | Ascomycota |
| Alternaria interna | F | Ascomycota |
| Alternaria undulata | F | Ascomycota |
| Amata germana | I | Lepidoptera: Arctiidae |
| Amblypelta cocophaga | I | Hemiptera: Coreidae |
| Amorbia cuneana | I | Lepidoptera: Tortricidae |
| **Amyelois transitella** | **I** | **Lepidoptera: Pyralidae** |
| Anacanthocoris striicornis | I | Hemiptera: Coreidae |
| Anatrachyntis rileyi | I | Lepidoptera: Cosmopterigidae |
| Antias lucidus | I | Hemiptera: Miridae |
| Aonidiella comperei | I | Hemiptera: Diaspididae |
| Aonidiella inornata | I | Hemiptera: Diaspididae |
| Aonidiella orientalis | I | Hemiptera: Diaspididae |
| Apion collare | I | Coleoptera: Apionidae |
| **Archips argyrospilus** | **I** | **Lepidoptera: Tortricidae** |
| Archips asiaticus | I | Lepidoptera: Tortricidae |
| Archips breviplicanus | I | Lepidoptera: Tortricidae |
| Archips micaceana | I | Lepidoptera: Tortricidae |
| Archips tabescens | I | Lepidoptera: Tortricidae |
| **Argyrotaenia sphaleropa** | **I** | **Lepidoptera: Tortricidae** |
| Arvelius acutispinus | I | Hemiptera: Pentatomidae |
| Asura strigipennis | I | Lepidoptera: Arctiidae |
| Athaumastus haematicus | I | Hemiptera: Coreidae |

| Species | Type | Taxonomy |
|---|---|---|
| Atichia lopesii | F | Ascomycota |
| Aulacaspis citri | I | Hemiptera: Diaspididae |
| Aulacaspis crawii | I | Hemiptera: Diaspididae |
| Bathycoelia thalassina | I | Hemiptera: Pentatomidae |
| Bemisia giffardi | I | Hemiptera: Aleyrodidae |
| **Biprorulus bibax** | **I** | **Hemiptera: Pentatomidae** |
| Blakeslea trispora | F | Zygomycota |
| Bonagota cranaodes | I | Lepidoptera: Tortricidae |
| **Brevipalpus chilensis** | **A** | **Acarida: Tenuipalpidae** |
| Brevipalpus junicus | A | Acarida: Tenuipalpidae |
| Calacarus citrifolii | A | Acarida: Eriophyidae |
| Calonectria citri | F | Ascomycota |
| Cania bilinea | I | Lepidoptera: Limacodidae |
| Capnodium brasiliense | F | |
| Capnodium tanakae | F | Ascomycota |
| Cappaea taprobanensis | I | Hemiptera: Pentatomidae |
| Carbula humerigera | I | Hemiptera: Pentatomidae |
| Caura pugillator | I | Hemiptera: Pentatomidae |
| Cephaleuros virescens | Algae | Trentepohliaceae |
| Ceramothyrium aurantii | F | |
| Ceramothyrium citricola | F | |
| Cercospora gigantea | F | Ascomycota |
| Cerococcus muratae | I | Hemiptera: Cerococcidae |
| Ceroplastes centroroseus | I | Hemiptera: Coccidae |
| Ceroplastes pseudoceriferus | I | Hemiptera: Coccidae |
| Ceroplastes rubens | I | Hemiptera: Coccidae |
| Cetonia speculifera | I | Coleoptera: Scarabaeidae |
| Chaetanaphothrips signipennis | I | Thysanoptera: Thripidae |
| Chaetoscorias vulgaris | F | Ascomycota |
| Chaetothyrium echinulatum | F | Ascomycota |
| Chaetothyrium petchii | F | Ascomycota |
| Chaetothyrium setosum | F | Ascomycota |
| Chaetothyrium spinigerum | F | Ascomycota |
| Chinavia hilaris | I | Hemiptera: Pentatomidae |
| Chloropulvinaria aurantii | I | Hemiptera: Coccidae |
| Chloropulvinaria polygonata | I | Hemiptera: Coccidae |
| Chrysocoris grandis | I | Hemiptera: Scutelleridae |
| **Citripestis sagittiferella** | **I** | **Lepidoptera: Pyralidae** |
| Citrus necrotic spot virus (proposed) | V | Dichorhavirus (proposed) |
| Citrus yellow vein clearing virus | V | Alphaflexiviridae: mandarivirus |
| Cletomorpha unifasciata | I | Hemiptera: Coreidae |
| Cletus trigonus | I | Hemiptera: Coreidae |
| Cnephasia jactatana | I | Lepidoptera: Tortricidae |
| Coccus viridis | I | Hemiptera: Coccidae |
| Coilodera penicillata | I | Coleoptera: Scarabaeidae |
| Colgar peracutum | I | Hemiptera: Flatidae |
| Colgaroides acuminata | I | Hemiptera: Flatidae |
| Colletotrichum boninense | F | Ascomycota |
| Colletotrichum citri | F | Ascomycota |
| Colletotrichum citricola | F | Ascomycota |
| Colletotrichum constrictum | F | Ascomycota |
| Colletotrichum limetticola | F | Ascomycota |
| Colletotrichum novae-zelandiae | F | Ascomycota |
| Colletotrichum siamense | F | Ascomycota |
| Coptosoma nubila | I | Hemiptera: Plataspidae |
| Coridius chinensis | I | Hemiptera: Dinidoridae |
| Coridius fuscus | I | Hemiptera: Dinidoridae |
| **Coscinoptycha improbana** | **I** | **Lepidoptera: Carposinidae** |

| Species | Type | Taxonomy |
|---|---|---|
| Cryptoblabes adoceta | I | Lepidoptera: Pyralidae |
| Cryptoblabes hemigypsa | I | Lepidoptera: Pyralidae |
| **Cryptothelea variegata** | **I** | **Lepidoptera: Psychidae** |
| Ctenopseustis herana | I | Lepidoptera: Tortricidae |
| **Ctenopseustis obliquana** | **I** | **Lepidoptera: Tortricidae** |
| Dalpada oculata | I | Hemiptera: Pentatomidae |
| Dalpada smaragdina | I | Hemiptera: Pentatomidae |
| Danothrips trifasciatus | I | Thysanoptera: Thripidae |
| Dasynus antennatus | I | Hemiptera: Coreidae |
| **Deudorix isocrates** | **I** | **Lepidoptera: Lycaenidae** |
| Dialeurodes citricola | I | Hemiptera: Aleyrodidae |
| Dialeurolobus erythrinae | I | Hemiptera: Aleyrodidae |
| Dialeurolonga communis | I | Hemiptera: Aleyrodidae |
| Dialeurolonga elongata | I | Hemiptera: Aleyrodidae |
| Dialeurolonga simplex | I | Hemiptera: Aleyrodidae |
| Diaporthe biconispora | F | Ascomycota |
| Diaporthe biguttulata | F | Ascomycota |
| Diaporthe citriasiana | F | Ascomycota |
| Diaporthe discoidispora | F | Ascomycota |
| Diaporthe multigutullata | F | Ascomycota |
| Diaporthe ovalispora | F | Ascomycota |
| Diaporthe subclavata | F | Ascomycota |
| Diaporthe unshiuensis | F | Ascomycota |
| **Diaprepes abbreviatus** | **I** | **Coleoptera: Curculionidae** |
| **Dichocrocis punctiferalis** | **I** | **Lepidoptera: Crambidae** |
| Distantasca smithi | I | Hemiptera: Cicadellidae |
| Distantiella theobroma | I | Hemiptera: Miridae |
| Drepanococcus chiton | I | Hemiptera: Coccidae |
| Drosicha corpulenta | I | Hemiptera: Monophlebidae |
| Drosicha mangiferae | I | Hemiptera: Monophlebidae |
| Dysdercus cingulatus | I | Hemiptera: Pyrrhocoridae |
| Dysdercus maurus | I | Hemiptera: Pyrrhocoridae |
| Dysdercus melanoderes | I | Hemiptera: Pyrrhocoridae |
| Dysdercus nigrofasciatus | I | Hemiptera: Pyrrhocoridae |
| Dysdercus peruvianus | I | Hemiptera: Pyrrhocoridae |
| Dysdercus suturellus | I | Hemiptera: Pyrrhocoridae |
| Dysmicoccus nesophilus | I | Hemiptera: Pseudococcidae |
| **Ecdytolopha aurantianum** | **I** | **Lepidoptera: Tortricidae** |
| Gymnosandra punctidiscanum | I | Lepidoptera: Tortricidae |
| Edessa meditabunda | I | Hemiptera: Pentatomidae |
| Edessa pictiventris | I | Hemiptera: Pentatomidae |
| Edessa polita | I | Hemiptera: Pentatomidae |
| Edessa quadridens | I | Hemiptera: Pentatomidae |
| **Egira curialis** | **I** | **Lepidoptera: Noctuidae** |
| Empoasca distinguenda | I | Hemiptera: Cicadellidae |
| Eotetranychus asiaticus | A | Acarida: Tetranychidae |
| Eotetranychus cendanai | A | Acarida: Tetranychidae |
| **Eotetranychus kankitus** | **A** | **Acarida: Tetranychidae** |
| **Eotetranychus sexmaculatus** | **A** | **Acarida: Tetranychidae** |
| Eutetranychus africanus | A | Acarida: Tetranychidae |
| Epuraea fallax | I | Coleoptera: Nitidulidae |
| Ericeia inangulata | I | Lepidoptera: Noctuidae |
| **Erthesina fullo** | **I** | **Hemiptera: Pentatomidae** |
| Eucorysses grandis | I | Hemiptera: Pentatomidae |
| Eumeta japonica | I | Lepidoptera: Psychidae |
| Eumeta minuscula | I | Lepidoptera: Psychidae |
| Euryaspis flavescens | I | Hemiptera: Pentatomidae |
| Euryophthalmus balteatus | I | Hemiptera: Pyrrhocoridae |
| Exophthalmus scalaris | I | Coleoptera: Curculionidae |
| Eysarcoris guttiger | I | Hemiptera: Pentatomidae |
| Ferrisia terani | I | Hemiptera: Pseudococcidae |
| Ferrisia virgata | I | Hemiptera: Pseudococcidae |
| Fiorinia proboscidaria | I | Hemiptera: Diaspididae |
| Formicoccus robustus | I | Hemiptera: Pseudococcidae |
| Frankliniella australis | I | Thysanoptera: Thripidae |
| Frankliniella gemina | I | Thysanoptera: Thripidae |

| Species | Type | Taxonomy |
|---|---|---|
| Frankliniella insularis | I | Thysanoptera: Thripidae |
| Fumiglobus citrinus | F | Ascomycota |
| Fusarium expansum | F | Ascomycota |
| Gatesclarkeana idia | I | Lepidoptera: Tortricidae |
| Geloptera porosa | I | Coleoptera: Chrysomelidae |
| Glaucias crassa | I | Hemiptera: Pentatomidae |
| Glaucias subpunctatus | I | Hemiptera: Pentatomidae |
| Gloeosporium citri | F | Ascomycota |
| Gymnetosoma mathani | I | Coleoptera: Scarabaeidae |
| Hendersonia citri | F | Ascomycota |
| Hendersonia socia | F | Ascomycota |
| Hibiscus green spot virus 2 | V | Unassigned: Higrevirus |
| Homalogonia obtusa | I | Hemiptera: Pentatomidae |
| Homoeocerus pallens | I | Hemiptera: Coreidae |
| Homona magnanima | I | Lepidoptera: Tortricidae |
| Hygia opaca | I | Hemiptera: Coreidae |
| Hyphantus sulcifrons | I | Coleoptera: Curculionidae |
| Hypocapnodium japonicum | F | Ascomycota |
| Hypselonotus interruptus | I | Hemiptera: Coreidae |
| Icerya aegyptiaca | I | Hemiptera: Margarodidae |
| Inga lacunata | I | Lepidoptera: Oecophoridae |
| Insignorthezia pseudinsignis | I | Hemiptera: Ortheziidae |
| Ischnaspis longirostris | I | Hemiptera: Diaspididae |
| Isonychus albicinctus | I | Coleoptera: Scarabaeidae |
| Isotenes miserana | I | Lepidoptera: Tortricidae |
| Lachnopus hispidus | I | Coleoptera: Curculionidae |
| Lachnopus splendidus | I | Coleoptera: Curculionidae |
| Lachnopus vittatus | I | Coleoptera: Curculionidae |
| Lepidosaphes laterochitinosa | I | Hemiptera: Diaspididae |
| Leptoglossus chilensis | I | Hemiptera: Coreidae |
| Leptoglossus gonagra | I | Hemiptera: Coreidae |
| Leptoglossus gonagra (as L. australis or L. membraceanus) | I | Hemiptera: Coreidae |
| Leptoglossus phyllopus | I | Hemiptera: Coreidae |
| **Leptoglossus zonatus** | **I** | **Hemiptera: Coreidae** |
| Limacinia aurantii | F | |
| **Lobiopa insularis** | **I** | **Coleoptera: Nitidulidae** |
| Lorryia turrialbensis | A | Acarida: Tydeidae |
| Loxa flavicornis | I | Hemiptera: Pentatomidae |
| Mahasena minuscula | I | Lepidoptera: Psychidae |
| Maleuterpes dentipes | I | Coleoptera: Curculionidae |
| Maleuterpes spinipes | I | Coleoptera: Curculionidae |
| **Marmara gulosa** | **I** | **Lepidoptera: Gracillariidae** |
| Massilieurodes fici | I | Hemiptera: Aleyrodidae |
| Megymenum gracilicorne | I | Hemiptera: Dinidoridae |
| Melacoryphus circumlitus | I | Hemiptera: Lygaeidae |
| Meliola butleri | F | Ascomycota |
| Meliola citricola | F | Ascomycota |
| Metaleurodicus minimus | I | Hemiptera: Aleyrodidae |
| Metonymia glandulosa | I | Hemiptera: Pentatomidae |
| Mimela flavilabris | I | Coleoptera: Scarabaeidae |
| Mimela splendens | I | Coleoptera: Scarabaeidae |
| Mimela testaceipes | I | Coleoptera: Scarabaeidae |
| Monolepta australis | I | Coleoptera: Chrysomelidae |
| Morfea alaskensis var. minor | F | |
| Morganella longispina | I | Hemiptera: Diaspididae |
| Musgraveia sulciventris | I | Hemiptera: Tessaratomidae |
| Mycetaspis personata | I | Hemiptera: Diaspididae |
| Mygdonia tuberculosa | I | Hemiptera: Coreidae |
| Myriangium floridanum | F | |
| Nagodopsis shirakiana | I | Lepidoptera: Limacodidae |
| Narosa nitobei | I | Lepidoptera: Limacodidae |
| Naupactus ambiguus | I | Coleoptera: Curculionidae |
| Naupactus rivulosus | I | Coleoptera: Curculionidae |
| Naupactus versatilis | I | Coleoptera: Curculionidae |
| Neocosmospora ipomoeae | F | Ascomycota |

| Species | Type | Taxonomy |
|---|---|---|
| Neosilba batesi | I | Diptera: Lonchaeidae |
| Neosilba glaberrima | I | Diptera: Lonchaeidae |
| Neosilba inesperata | I | Diptera: Lonchaeidae |
| Neosilba pendula | I | Diptera: Lonchaeidae |
| **Neosilba zadolicha** | **I** | **Diptera: Lonchaeidae** |
| Nezara antennata | I | Hemiptera: Pentatomidae |
| **Nipaecoccus viridis** | **I** | **Hemiptera: Pseudococcidae** |
| Nothopatella lecanidium | F | Ascomycota |
| Nyctemera adversata | I | Lepidoptera: Arctiidae |
| Oidium tingitaninum | F | Ascomycota |
| Oiketicus platensis | I | Lepidoptera: Psychidae |
| Oncopeltus stali | I | Hemiptera: Lygaeidae |
| Orasema simplex | I | Hymenoptera: Eucharitidae |
| Orchamoplatus caledonicus | I | Hemiptera: Aleyrodidae |
| Orchamoplatus mammaeferus | I | Hemiptera: Aleyrodidae |
| Orchamoplatus noumeae | I | Hemiptera: Aleyrodidae |
| Ostrinia furnacalis | I | Lepidoptera: Pyralidae |
| Ourapteryx nivea | I | Lepidoptera: Geometridae |
| Pachnaeus azurescens | I | Coleoptera: Curculionidae |
| Pachnaeus litus | I | Coleoptera: Curculionidae |
| Pachnaeus scalaris | I | Coleoptera: Curculionidae |
| Palomena angulosa | I | Hemiptera: Pentatomidae |
| Panonychus elongatus | A | Acarida: Tetranychidae |
| **Paracoccus burnerae** | **I** | **Hemiptera: Pseudococcidae** |
| Paracoccus ferrisi | I | Hemiptera: Pseudococcidae |
| **Paracoccus marginatus** | **I** | **Hemiptera: Pseudococcidae** |
| Paracoccus tripurae | I | Hemiptera: Pseudococcidae |
| Paraleyrodes bondari | I | Hemiptera: Aleyrodidae |
| Paraleyrodes citri | I | Hemiptera: Aleyrodidae |
| Paraleyrodes citricolus | I | Hemiptera: Aleyrodidae |
| Paraleyrodes crateraformans | I | Hemiptera: Aleyrodidae |
| Paraleyrodes naranjae | I | Hemiptera: Aleyrodidae |
| Paraleyrodes persea | I | Hemiptera: Aleyrodidae |
| Paraleyrodes proximus | I | Hemiptera: Aleyrodidae |
| Paraleyrodes pseudonaranjae | I | Hemiptera: Aleyrodidae |
| Paraleyrodes singularis | I | Hemiptera: Aleyrodidae |
| Paraleyrodes urichii | I | Hemiptera: Aleyrodidae |
| Parapantomorus fluctuosus | I | Coleoptera: Curculionidae |
| Parapronematus citri | A | Acarida: Tydeidae |
| Parlatoria citri | I | Hemiptera: Diaspididae |
| Parlatoria pittospori | I | Hemiptera: Diaspididae |
| Paropodia intermedia | I | Hemiptera: Kerridae |
| Passalora loranthi | F | Ascomycota |
| Penthimia nitida | I | Hemiptera: Cicadellidae |
| Pestalotiopsis adusta | F | Ascomycota |
| Phaeopeltis japonica | F | Ascomycota |
| Phaeosaccardinula javanica | F | Ascomycota |
| Phenacoccus pergandei | I | Hemiptera: Pseudococcidae |
| Philephedra broadwayi | I | Hemiptera: Coccidae |
| Phyllosticta citriasiana | F | Ascomycota |
| Pinnaspis theae | I | Hemiptera: Diaspididae |
| Pinnaspis uniloba | I | Hemiptera: Diaspididae |
| Planococcus kenyae | I | Hemiptera: Pseudococcidae |
| Planococcus kraunhiae | I | Hemiptera: Pseudococcidae |
| Planococcus lilacinus | I | Hemiptera: Pseudococcidae |
| Planococcus minor | I | Hemiptera: Pseudococcidae |
| Planotortrix octo | I | Lepidoptera: Tortricidae |
| **Platynota flavedana** | **I** | **Lepidoptera: Tortricidae** |
| Platynota rostrana | I | Lepidoptera: Tortricidae |
| Plautia stali | I | Hemiptera: Pentatomidae |
| Podoxyphium citricola | F | Ascomycota |
| Porthesis scintillans | I | Lepidoptera: Lymantriidae |
| **Praelongorthezia praelonga** | **I** | **Hemiptera: Ortheziidae** |
| **Prays endocarpa** | **I** | **Lepidoptera: Yponomeutidae** |
| **Prays endolemma** | **I** | **Lepidoptera: Yponomeutidae** |

| Species | Type | Taxonomy |
|---|---|---|
| **Proeulia auraria** | **I** | **Lepidoptera: Tortricidae** |
| **Proeulia chrysopteris** | **I** | **Lepidoptera: Tortricidae** |
| Proeulia triquetra | I | Lepidoptera: Tortricidae |
| Protaetia brevitarsis | I | Coleoptera: Scarabaeidae |
| Protaetia orientalis | I | Coleoptera: Scarabaeidae |
| Pseudaonidia duplex | I | Hemiptera: Diaspididae |
| Pseudaonidia trilobitiformis | I | Hemiptera: Diaspididae |
| **Pseudococcus maritimus** | **I** | **Hemiptera: Pseudococcidae** |
| Pulvinaria citricola | I | Hemiptera: Coccidae |
| Pulvinaria psidii | I | Hemiptera: Coccidae |
| Puto barberi | I | Hemiptera: Putoidae |
| Rastrococcus iceryoides | I | Hemiptera: Pseudococcidae |
| **Resseliella citrifrugis** | **I** | **Diptera: Cecidomyiidae** |
| Rhomborrhina fulvopilosa | I | Coleoptera: Scarabaeidae |
| Rhynchocoris humeralis | I | Hemiptera: Pentatomidae |
| Rhynchocoris nigridens | I | Hemiptera: Pentatomidae |
| Riptortus clavatus | I | Hemiptera: Alydidae |
| Riptortus pedestris | I | Hemiptera: Alydidae |
| Scaphytopius acutus | I | Hemiptera: Cicadellidae |
| Scaphytopius marginelineatus | I | Hemiptera: Cicadellidae |
| Scaphytopius nitidus | I | Hemiptera: Cicadellidae |
| Schizotetranychus baltazari | A | Acarida: Tetranychidae |
| Schizotetranychus hindustanicus | A | Acarida: Tetranychidae |
| Schizotetranychus spiculus | A | Acarida: Tetranychidae |
| Scirtothrips albomaculatus | I | Thysanoptera: Thripidae |
| Scorias citrina | F | Ascomycota |
| Scutellera perplexa | I | Hemiptera: Scutelleridae |
| Selenaspidus articulatus | I | Hemiptera: Diaspididae |
| Selenothrips rubrocinctus | I | Thysanoptera: Thripidae |
| Septosporium brasiliense | F | Ascomycota |
| Sericocoris acromelanthes | I | Hemiptera: Pyrrhocoridae |
| Solenopsis xyloni | I | Hymenoptera: Formicidae |
| Spilarctia subcarnea | I | Lepidoptera: Arctiidae |
| Stenocoris sordida | I | Hemiptera: Coreidae |
| Stomiopeltis citri | F | Ascomycota |
| Stomiopeltis minor | F | Ascomycota |
| Sympiezomias citri | I | Coleoptera: Curculionidae |
| Sympiezomias cribricollis | I | Coleoptera: Curculionidae |
| Sympiezomias lewisi | I | Coleoptera: Curculionidae |
| Tegolophus australis | A | Acarida: Eriophyidae |
| Tetraleurodes acaciae | I | Hemiptera: Aleyrodidae |
| Tetraleurodes cruzi | I | Hemiptera: Aleyrodidae |
| Tetraleurodes mexicana | I | Hemiptera: Aleyrodidae |
| Tetraleurodes mori | I | Hemiptera: Aleyrodidae |
| Tetraleurodes ursorum | I | Hemiptera: Aleyrodidae |
| Tetranychus desertorum | A | Acarida: Tetranychidae |
| Tetranychus fijiensis | A | Acarida: Tetranychidae |
| Tetranychus neocaledonicus | A | Acarida: Tetranychidae |
| **Thaumatotibia leucotreta** | **I** | **Lepidoptera: Tortricidae** |
| Thrips flavidulus | I | Thysanoptera: Thripidae |
| Tiracola plagiata | I | Lepidoptera: Noctuidae |
| Toxoptera odinae | I | Hemiptera: Aphididae |
| Trabala vishnou | I | Lepidoptera: Lasiocampidae |
| Tretogonia notatifrons | I | Hemiptera: Cicadellidae |
| Trialeurodes floridensis | I | Hemiptera: Aleyrodidae |
| Trialeurodes mirissimus | I | Hemiptera: Aleyrodidae |
| Trialeurodes variabilis | I | Hemiptera: Aleyrodidae |
| Trialeurodes vitrinellus | I | Hemiptera: Aleyrodidae |
| Tripospermum pes-galinae | F | Ascomycota |
| **Tuckerella knorri** | **A** | **Acarida: Tuckerellidae** |
| Tuckerella ornata | A | Acarida: Tuckerellidae |
| Tuckerella pavoniformis | A | Acarida: Tuckerellidae |
| Tydeus tuttlei | A | Acarida: Tydeidae |
| Udinia catori | I | Hemiptera: Coccidae |
| Udinia farquharsoni | I | Hemiptera: Coccidae |
| Ulodemis trigrapha | I | Lepidoptera: Tortricidae |

| Species | Type | Taxonomy |
|---|---|---|
| Vasdavidius setiferus | I | Hemiptera: Aleyrodidae |
| Vitellus orientalis | I | Hemiptera: Pentatomidae |
| Xenaleyrodes broughae | I | Hemiptera: Aleyrodidae |
| **Zaprionus indianus** | **I** | **Diptera: Drosophilidae** |
| Zonocerus elegans | I | Orthoptera, Pyrgomorphidae |
| Zonocerus variegatus | I | Orthoptera, Pyrgomorphidae |

## ANNEX 6. Organisms excluded from further consideration at Step 1 and Step 2

The table includes the following categories: contaminant, all NO categories (for those, one organism may fall under several NO categories, but only one was used to exclude it, and not all are indicated) (i.e. a pest may have been excluded because it is regulated in the EU or because it is widespread in the EU, but it may be that *Citrus* are not hosts, or that it is not associated with fruit).
Warning: this is not a list of *Citrus* pests: the host status was not necessarily verified for pests in NO categories excluded for other reasons (e.g. present in the EU, associated to wood, regulated in the EU etc.).
Type of pests: A = Arachnida, B = Bacteria (incl. phytoplasma), C = Chromista, F = Fungi, G = Gastropoda, I = Insecta, V = Viruses and viroids.

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Anopolepis gracilipes | I | Hymenoptera: Formicidae | Contaminant |
| Caliothrips fasciatus | I | Thysanoptera: Thripidae | Contaminant |
| Macchiademus diplopterus | I | Hemiptera: Lygaeidae | Contaminant |
| Microxeromagna lowei | G | Helicoidea: Hygromiidae | Contaminant |
| Microxeromagna vestita | G | Helicoidea: Hygromiidae | Contaminant |
| Naupactus xanthographus | I | Coleoptera: Curculionidae | Contaminant |
| Orthorhinus cylindrirostris | I | Coleoptera: Curculionidae | Contaminant |
| Paratrechina longicornis | I | Hymenoptera: Formicidae | Contaminant |
| Solenopsis geminata | I | Hymenoptera: Formicidae | Contaminant |
| Solenopsis invicta | I | Hymenoptera: Formicidae | Contaminant |
| Abgrallaspis cyanophylli | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Abgrallaspis sp. | I | Hemiptera: Diaspididae | NO5 (other reason) |
| Acanalonia conica | I | Hemiptera: Acanaloniidae | NO2 (not associated with Citrus fruit) |
| Acanthocoris dilatatus | I | Hemiptera: Coreidae | NO5 (other reason) |
| Acanthoecia laminati | I | Lepidoptera: Psychidae | NO2 (not associated with Citrus fruit) |
| Aceria sheldoni | A | Acarida: Eriophyidae | NO3 (present in the EU) |
| Achaea janata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Achaea serva | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Acharia stimulea | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Achatina fulica | G | Sigmurethra: Achatinidae | NO2 (not associated with Citrus fruit) |
| Achlyodes thraso ssp. thraso | I | Lepidopteera: Hesperiidae | NO2 (not associated with Citrus fruit) |
| Acidovorax avenae subsp. avenae | B | Burkholderiales : Comamonadaceae | NO4 (not associated with Citrus) |
| Acidovorax citrulli | B | Burkholderiales: Comamonadaceae | NO3 (present in the EU) |
| Aclees cribratus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Acrogonia flaveoloides | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Acromyrex hispidus | I | Hymenoptera: Formicidae | NO2 (not associated with Citrus fruit) |
| Acromyrmex lundi | I | Hymenoptera: Formicidae | NO2 (not associated with Citrus fruit) |
| Acrogonia citrina | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Acronicta major | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Acrotheca caulium | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Actinotia intermediata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Aculops pelekassi | A | Acarida: Eriophyidae | NO3 (present in the EU) |
| Acutaspis paulista | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Acutaspis scutiformis | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Adoretus formosanus | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Adoretus sinicus | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Adoretus umbrosus | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Adoretus versutus | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Adoxophyes dubia | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Adoxophyes orana fasciata | I | Lepidoptera: Tortricidae | NO5 (other reason) |
| Adoxophyes privatana | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Agestrata orichalcea | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Agonoscelis nubilis | I | Hemiptera: Pentatomidae | NO2 (not associated with Citrus fruit) |
| Agrilus auriventris | I | Coleoptera: Buprestidae | NO2 (not associated with Citrus fruit) |
| Agrotis ipsilon | I | Lepidoptera: Noctuidae | NO3 (present in the EU) |
| Agrotis tokionis | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Aiolopus thalassinus | I | Orthoptera: Acrididae | NO3 (present in the EU) |
| Aleurocanthus cheni | I | Hemiptera: Aleyrodidae | NO5 (other reason) |
| Aleurocanthus punjabensis | I | Hemiptera: Aleyrodidae | NO5 (other reason) |
| Aleurocanthus spiniferus | I | Hemiptera: Aleyrodidae | NO1 (regulated in the EU) |
| Aleurocanthus woglumi | I | Hemiptera: Aleyrodidae | NO1 (regulated in the EU) |
| Aleuroclava aucubae | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Aleuroclava jasmini | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Aleurodicus sp cercana a A. cocois | I | Hemiptera: Aleyrodidae | NO5 (other reason) |
| Aleurolobus marlatti | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Aleurolobus niloticus | I | Hemiptera: Aleyrodidae | NO5 (other reason) |
| Aleuronudus sp. | I | Hemiptera: Aleyrodidae | NO5 (other reason) |
| Aleurothrixus floccosus | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Aleurotrachelus atratus | I | Hemiptera: Aleyrodidae | NO2 (not associated with Citrus fruit) |
| Aleurotrachelus sp. | I | Hemiptera: Aleyrodidae | NO5 (other reason) |
| Aleurotrachelus trachoides | I | Hemiptera: Aleyrodidae | NO2 (not associated with Citrus fruit) |
| Aleyrodidae (non-European whiteflies; Hemiptera: Aleyrodidae, e.g. Orchamoplatus citri) | I | Hemiptera: Aleyrodidae | NO5 (other reason) |
| Alternaria alternata | F | Ascomycota | NO3 (present in the EU) |
| Alternaria brassicae | F | Ascomycota | NO3 (present in the EU) |
| Alternaria citri | F | Ascomycota | NO3 (present in the EU) |
| Alternaria citriarbusti | F | Ascomycota | NO5 (other reason) |
| Alternaria citrimacularis | F | Ascomycota | NO5 (other reason) |
| Alternaria citrimacularis sp. nov. | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Alternaria dumosa | F | Ascomycota | NO5 (other reason) |
| Alternaria interrupta | F | Ascomycota | NO5 (other reason) |
| Alternaria limicola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Alternaria limoniasperae | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Alternaria perangusta | F | Ascomycota | NO5 (other reason) |
| Alternaria tenuissima | F | Ascomycota | NO3 (present in the EU) |
| Alternaria toxicogenica | F | Ascomycota | NO5 (other reason) |
| Alternaria turkisafria | F | Ascomycota | NO5 (other reason) |
| American plum line pattern virus | V | Bromoviridae: Ilarvirus | NO1 (regulated in the EU) |
| Amplicephalus dubius | I | Hemiptera: Cicadellidae | NO4 (not associated with Citrus) |
| Amplicephalus marginellanus | I | Hemiptera: Cicadellidae | NO4 (not associated with Citrus) |
| Amrasca biguttula | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Amrasca flavescens | I | Hemiptera: Cicadellidae | NO5 (other reason) |
| Amsacta lactinea | I | Lepidoptera: Arctiidae | NO2 (not associated with Citrus fruit) |
| Anarsia lineatella | I | Lepidoptera: Gelechiidae | NO3 (present in the EU) |
| Anastrepha alveatoides | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha chiclayae | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha daciformis | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha fraterculus | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha grandis | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha ludens | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha obliqua | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha punctata | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha rosilloi | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha schultzi | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha serpentina | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha striata | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anastrepha suspensa | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Anatrachyntis badia | I | Lepidoptera: Cosmopterigidae | NO3 (present in the EU) |
| Ancistrosoma klugi | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Ancylis unculana | I | Lepidoptera: Tortricidae | NO3 (present in the EU) |
| Andaspis hawaiiensis | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Anomala 'rachypyga | I | Coleoptera: Scarabaeidae | NO5 (other reason) |
| Anomala albopilosa | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Anomala corpulenta | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Anomala cuprea | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Anomala daimiana | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Anomala expansa | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Anomala orientalis | I | Coleoptera: Scarabaeidae | NO1 (regulated in the EU) |
| Anomala rufocuprea | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Anomis flava | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Anomis fulvida | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Anomis mesogona | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Anomis sabulifera | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Anoplocnemis curvipes | I | Hemiptera: Coreidae | NO2 (not associated with Citrus fruit) |
| Anoplocnemis melancholica | I | Hemiptera: Coreidae | NO4 (not associated with Citrus) |
| Anoplocnemis phasiana | I | Hemiptera: Coreidae | NO2 (not associated with Citrus fruit) |
| Anthina brunnea | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Anthina citri | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Anthonomus pomorum | I | Coleoptera: Curculionidae | NO3 (present in the EU) |
| Anthrenus verbasci | I | Coleoptera: Dermestidae | NO3 (present in the EU) |
| Anticarsia irrorata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Antonina crawii | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Anzora unicolor | I | Hemiptera: Flatidae | NO2 (not associated with Citrus fruit) |
| Aonidiella aurantii | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Aonidiella citrina | I | Hemiptera: Diaspididae | NO1 (regulated in the EU) |
| Aonidiella eremocitri | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Apamea aquila | I | Lepidoptera: Noctuidae | NO3 (present in the EU) |
| Apate monachus | I | Coleoptera: Bostrichidae | NO2 (not associated with Citrus fruit) |
| Aphis craccivora | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Aphis fabae | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Aphis gossypii | I | Hemiptera: Aphididae | NO3 (present in the EU) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Aphis nerii | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Aphis spiraecola | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Aphrophora intermedia | I | Hemiptera: Cercopidae | NO2 (not associated with Citrus fruit) |
| Aplonobia citri | A | Acarida: Tetranychidae | NO5 (other reason) |
| Apochima juglansiaria | I | Lepidoptera: Geometridae | NO2 (not associated with Citrus fruit) |
| Apoderus nigroapicatus | I | Coleoptera: Attelabidae | NO2 (not associated with Citrus fruit) |
| Apogonia cribricollis | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Apomyelois ceratoniae | I | Lepidoptera: Pyralidae | NO3 (present in the EU) |
| Apple stem grooving virus | V | Betaflexiviridae: capillovirus | NO3 (present in the EU) |
| Araecerus fasciculatus | I | Coleoptera: Anthribidae | NO3 (present in the EU) |
| Archips atrolucens | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Archips crataegana | I | Lepidoptera: Tortricidae | NO3 (present in the EU) |
| Archips fuscocupreanus | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Archips ingentana | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Archips machlopis | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Archips seminubilus | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Archips xylosteana | I | Lepidoptera: Tortricidae | NO3 (present in the EU) |
| Arcte coerula | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Argyrotaenia citrana | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Armillaria luteobubalina | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Armillaria mellea | F | Basidiomycota | NO3 (present in the EU) |
| Armillaria tabescens | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Artena dotata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Artipus floridanus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Aschersonia placenta | F | Ascomycota | NO5 (other reason) |
| Ascochyta citri | F | Ascomycota | NO3 (present in the EU) |
| Ascochyta corticola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Ascochyta pisi | F | Ascomycota | NO3 (present in the EU) |
| Ascotis selenaria | I | Lepidoptera: Geometridae | NO3 (present in the EU) |
| Asota tortuosa | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Aspavia armigera | I | Hemiptera: Pentatomidae | NO4 (not associated with Citrus) |
| Aspergillus aculeatus | F | Ascomycota | NO5 (other reason) |
| Aspergillus flavus | F | Ascomycota | NO3 (present in the EU) |
| Aspergillus melleus | F | Ascomycota | NO5 (other reason) |
| Aspergillus niger | F | Ascomycota | NO3 (present in the EU) |
| Aspidiotus destructor | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Aspidiotus nerii | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Aspidomorpha difformis | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Astylus quadrilineatus | I | Coloptera: Meloidae | NO2 (not associated with Citrus fruit) |
| Asymmetrasca decedens | I | Hemiptera: Cicadellidae | NO3 (present in the EU) |
| Atactogaster orientalis | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Athelia rolfsii | F | Basidiomycota | NO3 (present in the EU) |
| Athemus suturellus | I | Coleoptera: Cantharidae | NO2 (not associated with Citrus fruit) |
| Atherigona orientalis | I | Diptera: Muscidae | NO3 (present in the EU) |
| Athrypsiastis salva | I | Lepidoptera: Oecophoridae | NO2 (not associated with Citrus fruit) |
| Atta cephalotes | I | Hymenoptera: Formicidae | NO2 (not associated with Citrus fruit) |
| Atta insularis | I | Hymenoptera: Formicidae | NO2 (not associated with Citrus fruit) |
| Atta sexdens | I | Hymenoptera: Formicidae | NO2 (not associated with Citrus fruit) |
| Attacus atlas | I | Lepidoptera: Saturniidae | NO2 (not associated with Citrus fruit) |
| Aulacaspis tubercularis | I | Hemiptera: Diaspididae | NO3 (present in the EU) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Aulacophora femoralis | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Aulacophora nigripennis | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Aulacorthum magnoliae | I | Hemiptera: Aphididae | NO2 (not associated with Citrus fruit) |
| Aulacorthum solani | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Auricularia polytricha | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Autographa californica | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Bactrocera aquilonis | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera carambolae | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera caryeae | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera correcta | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera cucurbitae | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera curvipennis | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera diversa | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera dorsalis | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera dorsalis species complex | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera facialis | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera frauenfeldi | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera invadens | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera jarvisi | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera kirki | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera minax | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera neohumeralis | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera occipitalis | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera papayae | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera passiflorae | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera pedestris | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera philippinensis | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera scutellata | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera tau | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera tryoni | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera tsuneonis | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera xanthodes | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bactrocera zonata | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Bahita spiniventris | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Barriopsis iraniana | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Basiprionota bisignata | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Bastilla analis | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Bastilla crameri | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Bastilla fulvotaenia | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Bastilla joviana | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Bastilla maturata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Bastilla praetermissa | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Bastilla simillima | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Battus polydamas | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Bemisia afer | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Bemisia ovata | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Bemisia tabaci | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Bionectria ochroleuca | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Biston panterinaria | I | Lepidoptera: Geometridae | NO2 (not associated with Citrus fruit) |
| Biston suppressarius | I | Lepidoptera: Geometridae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Bothrogonia ferruginea | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Botryosphaeria dothidea | F | Ascomycota | NO3 (present in the EU) |
| Botryosphaeria parva | F | Ascomycota | NO3 (present in the EU) |
| Botryosphaeria quercuum | F | Ascomycota | NO3 (present in the EU) |
| Botryosphaeria rhodina | F | Ascomycota | NO3 (present in the EU) |
| Botryosphaeria ribis | F | Ascomycota | NO3 (present in the EU) |
| Botryotinia fuckeliana | F | Ascomycota | NO3 (present in the EU) |
| Brachycaudus helichrysi | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Brachycyttarus subteralbatus | I | Lepidoptera: Psychidae | NO2 (not associated with Citrus fruit) |
| Brachystylodes pilosus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Brentus anchorago | I | Coleoptera: Brentidae | NO2 (not associated with Citrus fruit) |
| Brevipalpus californicus | A | Acarida: Tenuipalpidae | NO3 (present in the EU) |
| Brevipalpus lewisi | A | Acarida: Tenuipalpidae | NO3 (present in the EU) |
| Brevipalpus obovatus | A | Acarida: Tenuipalpidae | NO3 (present in the EU) |
| Brevipalpus phoenicis | A | Acarida: Tenuipalpidae | NO3 (present in the EU) |
| Bruchophagus fellis | I | Hymenoptera: Eurytomidae | NO2 (not associated with Citrus fruit) |
| Bryobia praetiosa | A | Acarida: Tetranychidae | NO3 (present in the EU) |
| Bryobia rubrioculus | A | Acarida: Tetranychidae | NO3 (present in the EU) |
| Bucephalogonia xanthophis | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Burkholderia andropogonis | B | Burkholderiales: Burkholderiaceae | NO3 (present in the EU) |
| Cacoecimorpha pronubana | I | Lepidoptera: Tortricidae | NO3 (present in the EU) |
| Cadra cautella | I | Lepidoptera: Pyralidae | NO3 (present in the EU) |
| Calomycterus obcoinicus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Calonectria reteaudii | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Calosphaeria fici | F | | NO4 (not associated with Citrus) |
| Calyptra lata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Calyptra minuticornis | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Calyptra thalictri | I | Lepidoptera: Noctuidae | NO3 (present in the EU) |
| Canephora unicolor | I | Lepidoptera: Psychidae | NO3 (present in the EU) |
| Cania sinensis | I | Lepidoptera: Limacodidae | NO5 (other reason) |
| Capnodium citri | F | Ascomycota | NO3 (present in the EU) |
| Capnodium salicinum | F | Ascomycota | NO3 (present in the EU) |
| Capnophaeum fuliginodes | F | Ascomycota | NO5 (other reason) |
| Carales astur | I | Lepidoptera: Arctiidae | NO2 (not associated with Citrus fruit) |
| Cardiophorus vulgaris | I | Coleoptera: Elateridae | NO2 (not associated with Citrus fruit) |
| Carpoglyphus lactis | A | Acarida: Carpoglyphidae | NO5 (other reason) |
| Carpophilus davidsoni | I | Coleoptera: Nitidulidae | NO2 (not associated with Citrus fruit) |
| Carpophilus hemipterus | I | Coleoptera: Nitidulidae | NO3 (present in the EU) |
| Carpophilus humeralis | I | Coleoptera: Nitidulidae | NO3 (present in the EU) |
| Carpophilus mutilatus | I | Coleoptera: Nitidulidae | NO3 (present in the EU) |
| Carposina niponensis | I | Lepidoptera: Carposinidae | NO1 (regulated in the EU) |
| Cassida circumdata | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Cassida exilis | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Cassida versicolor | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Catinula citri | F | | NO2 (not associated with Citrus fruit) |
| Celidodacus obnubilus | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Cenopalpus pulcher | A | Acarida: Tenuipalpidae | NO3 (present in the EU) |
| Cerace stipatana | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Ceratitis anonae | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Ceratitis capitata | I | Diptera: Tephritidae | NO3 (present in the EU) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Ceratitis cosyra | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Ceratitis ditissima | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Ceratitis penicillata | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Ceratitis quinaria | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Ceratitis rosa | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Ceratobasidium anceps | F | Basidiomycota | NO3 (present in the EU) |
| Ceratobasidium noxium | F | Basidiomycota | NO5 (other reason) |
| Ceratocystis fimbriata | F | Ascomycota | NO3 (present in the EU) |
| Ceratocystis radicicola | F | Ascomycota | NO3 (present in the EU) |
| Ceratothripoides brunneus | I | Thysanoptera: Thripidae | NO5 (other reason) |
| Ceratovacuna lanigera | I | Hemiptera: Aphididae | NO2 (not associated with Citrus fruit) |
| Cercospora angolensis | I | Ascomycota | NO1 (regulated in the EU) |
| Cercospora penzigii | I | Ascomycota | NO3 (present in the EU) |
| Ceresa ustulata | I | Hemiptera: Membracidae | NO2 (not associated with Citrus fruit) |
| Ceroplastes ceriferus | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Ceroplastes cirripediformis | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Ceroplastes destructor | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Ceroplastes floridensis | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Ceroplastes grandis | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Ceroplastes japonicus | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Ceroplastes rusci | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Ceroplastes sinensis | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Ceroplastes stellifer | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Ceroplastes subrotunda | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Cetonia pilifera | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Chaetanaphothrips (undetermined spp.) | I | Thysanoptera: Thripidae | NO5 (other reason) |
| Chaetanaphothrips orchidii | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Chaetodiplodia citri | F | as incertae sedis | NO2 (not associated with Citrus fruit) |
| Chaetothyrium sawadae | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Chalciope mygdon | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Chalcocelis albiguttatus | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Chalioides kondonis | I | Lepidoptera: Psychidae | NO2 (not associated with Citrus fruit) |
| Charaxes jasius | I | Lepidoptera: Nymphalidae | NO3 (present in the EU) |
| Chariaspilates formosaria | I | Lepidoptera: Geometridae | NO3 (present in the EU) |
| Chileulia stalactitis | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Chlorophanus grandis | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Chlorophanus lineolus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Chonocephalus depressus | I | Diptera: Phoridae | NO3 (present in the EU) |
| Choristoneura parallela | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Chromocreopsis cubispora | F | | NO4 (not associated with Citrus) |
| Chrysodeixis eriosoma | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Chrysomphalus aonidum | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Chrysomphalus bifasciculatus | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Chrysomphalus dictyospermi | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Chrysomphalus pinnulifer | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Cicadella viridis | I | Hemiptera: Cicadellidae | NO3 (present in the EU) |
| Cicadellidae | I | Hemiptera: Cicadellidae | NO5 (other reason) |
| Circulifer tenellus | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Citrus bark cracking viroid (previously known as Citrus viroid IV) | V | Pospiviroidae: Cocadviroid | NO3 (present in the EU) |
| Citrus bent leaf viroid | V | Pospiviroidae: Apscaviroid | NO3 (present in the EU) |
| Citrus blight agent | V | Unknown | NO1 (regulated in the EU) |
| Citrus cachexia viroid | V | | NO2 (not associated with Citrus fruit) |
| Citrus chlorotic dwarf-associated virus | V | | NO2 (not associated with Citrus fruit) |
| Citrus dwarfing viroid | V | Pospiviroidae: Apscaviroid | NO3 (present in the EU) |
| Citrus exocortis viroid | V | Pospiviroidae: Pospiviroid | NO3 (present in the EU) |
| Citrus impietratura agent | V | Unknown | NO3 (present in the EU) |
| Citrus leaf rugose ilarvirus | V | Bromoviridae: Ilavirus | NO2 (not associated with Citrus fruit) |
| Citrus leprosis virus | V | Rhabdoviridae: rhabdovirus (unassigned) | NO1 (regulated in the EU) |
| Citrus mosaic virus | V | Secoviridae: sadwavirus | NO1 (regulated in the EU) |
| Citrus psorosis virus complex | V | Ophioviridae: ophiovirus | NO2 (not associated with Citrus fruit) |
| Citrus ringspot virus | V | Ophioviridae: ophiovirus | NO1 (regulated in the EU) |
| Citrus tatter leaf virus | V | Betaflexiviridae: capillovirus | NO1 (regulated in the EU) |
| Citrus tristeza virus | V | Closteroviridae: Closterovirus | *NO1 (regulated in the EU)* |
| Citrus variegation virus | V | Bromoviridae: ilarvirus | NO3 (present in the EU) |
| Citrus vein enation virus | V | Luteoviridae: enamovirus | NO3 (present in the EU) |
| Citrus viroid IV | V | Pospiviroidae: apscaviroid | NO3 (present in the EU) |
| Citrus viroid V | V | Pospiviroidae: apscaviroid | NO3 (present in the EU) |
| Citrus viroid VI | V | Pospiviroidae: apscaviroid | NO3 (present in the EU) |
| Citrus yellow mosaic virus | V | Caulimoviridae: badnavirus | NO1 (regulated in the EU) |
| Citrus yellow mosaic virus | V | Caulimoviridae: badnavirus | NO1 (regulated in the EU) |
| Cladosporium citri | F | Ascomycota | NO5 (other reason) |
| Cladosporium cladosporioides | F | Ascomycota | NO3 (present in the EU) |
| Cladosporium herbarum var. citricola | F | Ascomycota | NO3 (present in the EU) |
| Cladosporium oxysporum | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Cladosporium sclerotiophilum | F | Ascomycota | NO5 (other reason) |
| Clarkeulia bourquini | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Cleoporus variabilis | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Clitea metallica | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Clonostachys rosea | F | Ascomycota | NO5 (other reason) |
| Coccus caparidis | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Coccus hesperidum | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Coccus longulus | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Coccus pseudomagnoliarum | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Cochliobolus lunatus | F | Ascomycota | NO3 (present in the EU) |
| Colletotrichum acutatum | F | Ascomycota | NO3 (present in the EU) |
| Colletotrichum cliviae | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Colletotrichum coccodes | F | Ascomycota | NO3 (present in the EU) |
| Colletotrichum cordylinicola | F | Ascomycota | NO4 (not associated with Citrus) |
| Colletotrichum crassipes | F | Ascomycota | NO3 (present in the EU) |
| Colletotrichum foliicola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Colletotrichum fructicola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Colletotrichum karstii | F | Ascomycota | NO3 (present in the EU) |
| Colletotrichum musae | F | Ascomycota | NO4 (not associated with Citrus) |
| Colletotrichum truncatum | F | Ascomycota | NO3 (present in the EU) |
| Compsus obliquatus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Compsus sp. | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Compsus viridivittatus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Coniothecium citri | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Coniothyrium fuscoatrum | F | Ascomycota | NO3 (present in the EU) |
| Coniothyrium paulense | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Contarinia citri | I | Diptera: Cecidomyiidae | NO2 (not associated with Citrus fruit) |
| Contarinia okadai | I | Diptera: Cecidomyiidae | NO2 (not associated with Citrus fruit) |
| Contarinia okadai | I | Diptera: Cecidomyiidae | NO2 (not associated with Citrus fruit) |
| Coprinellus micaceus | F | Basidiomycota | NO5 (other reason) |
| Coptotermes formosanus | I | Isoptera: Rhinotermitidae | NO2 (not associated with Citrus fruit) |
| Corgatha dictaria | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Corigetus sieversi | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Coriolopsis polyzona | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Coriolus fibula | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Corticium centrifugum | F | Basidiomycota | NO5 (other reason) |
| Corticium koleroga | F | Basidiomycota | NO5 (other reason) |
| Corynespora citricola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Cossus cossus | I | Lepidoptera: Cossidae | NO3 (present in the EU) |
| Craniophora fasciata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Cratosomus punctulatus | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Creatonotos gangis | I | Lepidoptera: Arctiidae | NO4 (not associated with Citrus) |
| Creatonotos transiens | I | Lepidoptera: Arctiidae | NO4 (not associated with Citrus) |
| Creontiades dilutus | I | Hemiptera: Miridae | NO2 (not associated with Citrus fruit) |
| Crinula caliciiformis | F | Ascomycota | NO3 (present in the EU) |
| Cryptoblabes gnidiella | I | Lepidoptera: Pyralidae | NO3 (present in the EU) |
| Cryptomphalus aspersus | G | Sigmurethra: Helicidae | NO3 (present in the EU) |
| Cryptophlebia ombrodelta | I | Lepidoptera: Tortricidae | NO4 (not associated with Citrus) |
| Cryptosporiopsis citri | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Cryptosporiopsis citricarpa | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Ctenoplusia albostriata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Curvularia geniculata | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Cytospora citri | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Dactylispa angulosa | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Dactylispa excisa | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Dacus bivittatus | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Dacus ciliatus | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Dacus transitorius | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Dacus umehi | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Daldinia concentrica | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Daldinia eschscholzii | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Dappula tertia | I | Lepidoptera: Psychidae | NO2 (not associated with Citrus fruit) |
| Darna ochracea | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Darna trima | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Dasineura citri | I | Diptera: Cecidomyiidae | NO2 (not associated with Citrus fruit) |
| Dasychira mendosa | I | Lepidoptera: Lymantriidae | NO2 (not associated with Citrus fruit) |
| Delottococcus aberiae | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Dendrolimus spectabilis | I | Lepidoptera: Lasiocampidae | NO2 (not associated with Citrus fruit) |
| Dexicrates robustus | I | Coleoptera: Bostrichidae | NO2 (not associated with Citrus fruit) |
| Diabrotica marginata | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Diabrotica significata | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Diabrotica speciosa | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Dialeurodes citri | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Dialeurodes kirkaldyi | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Dialeurodes struthanti | I | Hemiptera: Aleyrodidae | NO4 (not associated with Citrus) |
| Dialonectria episphaeria | F | Ascomycota | NO3 (present in the EU) |
| Diaphania pyloalis | I | Lepidoptera: Crambidae | NO2 (not associated with Citrus fruit) |
| Diaphorina citri | I | Hemiptera: Liviidae | NO1 (regulated in the EU) |
| Diaporthe arctii | F | | NO4 (not associated with Citrus) |
| Diaporthe citri | F | Ascomycota | NO3 (present in the EU) |
| Diaporthe citrichinensis | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Diaporthe citrincola | F | Ascomycota | NO5 (other reason) |
| Diaporthe faginea | F | Ascomycota | NO3 (present in the EU) |
| Diaporthe foeniculina | F | Ascomycota | NO3 (present in the EU) |
| Diaporthe medusae | F | Ascomycota | NO5 (other reason) |
| Diaprepes splengleri | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Diatrypella vulgaris | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Dictyophara patruelis | I | Hemiptera: Dictyopharidae | NO2 (not associated with Citrus fruit) |
| Dictyophara sinica | I | Hemiptera: Dictyopharidae | NO2 (not associated with Citrus fruit) |
| Dictyoploca japonica | I | Lepidoptera: Saturniidae | NO2 (not associated with Citrus fruit) |
| Didymella aurantiiphila | F | | NO2 (not associated with Citrus fruit) |
| Dierna strigata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Dilobopterus costalimai | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Dimerium scheffleri | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Dindymia flairpens | I | | NO5 (other reason) |
| Diostrombus politus | I | Hemiptera: Derbidae | NO2 (not associated with Citrus fruit) |
| Diplodia citrina | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Diplodia destruens | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Diplodia indica | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Diplodiella oospora | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Dirioxa pornia | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Dolycoris baccarum | I | Hemiptera: Pentatomidae | NO3 (present in the EU) |
| Dothidea tetraspora var. citricola | F | Ascomycota | NO3 (present in the EU) |
| Drosicha contrahens | I | Hemiptera: Monophlebidae | NO2 (not associated with Citrus fruit) |
| Drosicha howardi | I | Hemiptera: Margarodidae | NO2 (not associated with Citrus fruit) |
| Drosicha stebbingii | I | Hemiptera: Monophlebidae | NO5 (other reason) |
| Drosophila hydei | I | Diptera: Drosophilidae | NO3 (present in the EU) |
| Drosophila immigrans | I | Diptera: Drosophilidae | NO3 (present in the EU) |
| Drosophila repleta | I | Diptera: Drosophilidae | NO3 (present in the EU) |
| Drosophila simulans | I | Diptera: Drosophilidae | NO3 (present in the EU) |
| Duplaspidiotus claviger | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Dysgonia arctotaenia | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Dysgonia arcuata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Dysgonia stuposa | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Dysmicoccus brevipes | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Dysmicoccus neobrevipes | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Echinocnemus bipunctatus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Echinocnemus squameus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Ectinohoplia obducta | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Ectropis crepuscularia | I | Lepidoptera: Geometridae | NO3 (present in the EU) |
| Ectropis excellens | I | Lepidoptera: Geometridae | NO2 (not associated with Citrus fruit) |
| Elsinoe annonae | F | | NO4 (not associated with Citrus) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Elsinoe australis | F | Ascomycota | NO1 (regulated in the EU) |
| Elsinoe fawcettii | F | Ascomycota | NO1 (regulated in the EU) |
| Elytroteinus subtruncatus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Empoasca arborescens | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Empoasca citrusa | I | Hemiptera: Cicadellidae | NO5 (other reason) |
| Empoasca decipiens | I | Hemiptera: Cicadellidae | NO3 (present in the EU) |
| Empoasca fabae | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Empoasca vitis | I | Hemiptera: Cicadellidae | NO3 (present in the EU) |
| Endoclita excrescens | I | Lepidoptera: Hepialidae | NO2 (not associated with Citrus fruit) |
| Endoxylina citricola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Enmonodia feniseca | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Entomogramma torsa | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Eotetranychus lewisi | A | Acarida: Tetranychidae | NO1 (regulated in the EU) |
| Epiacanthus stramineus | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Epilachna paenulata | I | Coleoptera: Coccinellidae | NO2 (not associated with Citrus fruit) |
| Epimactis talantias | I | Lepidoptera: Oecophoridae | NO2 (not associated with Citrus fruit) |
| Epiphyas postvittana | I | Lepidoptera: Tortricidae | NO3 (present in the EU) |
| Epuraea terminalis | I | Coleoptera: Nitidulidae | NO3 (present in the EU) |
| Ercheia cyllaria | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Erebus caprimulgus | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Erebus crepuscularis | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Erebus hieraglyphica | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Erebus macrops | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Erebus walkeri | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Erwinia rhapontici | B | Enterobacteriales: enterobacteriaceae | NO3 (present in the EU) |
| Erysiphe quercicola | F | Ascomycota | NO3 (present in the EU) |
| Erythricium salmonicolor | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Erythroneura sudra | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Eucalymnatus tessellatus | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Eudocima apta | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Eudocima homaena | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Eudocima materna | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Eudocima phalonia | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Eudocima salaminia | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Eudocima tyrannus | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Eulecanium perinflatum | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Euproctis bipunctapex | I | Lepidoptera: Lymantriidae | NO2 (not associated with Citrus fruit) |
| Euproctis flava | I | Lepidoptera: Lymantriidae | NO2 (not associated with Citrus fruit) |
| Euproctis montis | I | Lepidoptera: Lymantriidae | NO2 (not associated with Citrus fruit) |
| Euproctis piperita | I | Lepidoptera: Lymantriidae | NO2 (not associated with Citrus fruit) |
| Euproctis pseudoconspersa | I | Lepidoptera: Lymantriidae | NO2 (not associated with Citrus fruit) |
| Euproctis pulverea | I | Lepidoptera: Lymantriidae | NO2 (not associated with Citrus fruit) |
| Euproctis varians | I | Lepidoptera: Lymantriidae | NO2 (not associated with Citrus fruit) |
| Euricania facialis | I | Hemiptera: Ricaniidae | NO2 (not associated with Citrus fruit) |
| Euricania ocellus | I | Hemiptera: Ricaniidae | NO2 (not associated with Citrus fruit) |
| Euscelidius variegatus | I | Hemiptera: Cicadellidae | NO3 (present in the EU) |
| Eutetranychus anneckei | A | Acarida: Tetranychidae | NO5 (other reason) |
| Eutetranychus banksi | A | Acarida: Tetranychidae | NO3 (present in the EU) |
| Eutetranychus orientalis | A | Acarida: Tetranychidae | NO1 (regulated in the EU) |
| Euthochtha galateor | I | Hemiptera: Coreidae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Eutinophaea bicristata | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Eutypa lata | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Eutypella citri | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Eutypella citricola | F | Ascomycota | NO3 (present in the EU) |
| Eutypella leprosa | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Euzopherodes vapidella | I | Lepidoptera: Pyralidae | NO3 (present in the EU) |
| Exaeretia culcitella | I | Lepidoptera: Depressariidae | NO3 (present in the EU) |
| Exosoma flaviventre | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Eysarcoris ventralis | I | Hemiptera: Pentatomidae | NO3 (present in the EU) |
| Ferrariana trivittata | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Fiorinia fioriniae | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Fiorinia theae | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Formica japonica | I | Hymenoptera: Formicidae | NO5 (other reason) |
| Frankliniella bispinosa | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Frankliniella distinguenda | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Frankliniella gardeniae | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Frankliniella intonsa | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Frankliniella occidentalis | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Fusarium concolor | F | Ascomycota | NO3 (present in the EU) |
| Fusarium limonis | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Fusarium oxysporum | F | Ascomycota | NO3 (present in the EU) |
| Fusarium oxysporum f. sp. citri | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Fusarium oxysporum f. sp. vasinfectum | F | Ascomycota | NO3 (present in the EU) |
| Fusarium oxysporum var. aurantiacum | F | Ascomycota | NO3 (present in the EU) |
| Fusarium roseum | F | Ascomycota | NO5 (other reason) |
| Fusarium sambucinum | F | Ascomycota | NO3 (present in the EU) |
| Fusarium scirpi | F | Ascomycota | NO3 (present in the EU) |
| Fusarium solani | F | Ascomycota | NO3 (present in the EU) |
| Ganoderma applanatum | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Ganoderma lucidum | F | Basidiomycota | NO3 (present in the EU) |
| Ganoderma tropicum | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Gargara genistae | I | Hemiptera: Membracidae | NO3 (present in the EU) |
| Gascardia brevicauda | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Gatesclarkeana erotias | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Geisha distinctissima | I | Hemiptera: Flatidae | NO2 (not associated with Citrus fruit) |
| Geococcus citrinus | I | Hemiptera: Rhizoecidae | NO2 (not associated with Citrus fruit) |
| Geotrichum candidum | F | Ascomycota | NO3 (present in the EU) |
| Geotrichum candidum var citri-aurantii | F | Ascomycota | NO3 (present in the EU) |
| Gibberella avenacea | F | Ascomycota | NO3 (present in the EU) |
| Gibberella baccata | F | Ascomycota | NO3 (present in the EU) |
| Gibberella fujikuroi | F | Ascomycota | NO3 (present in the EU) |
| Gibberella fujikuroi var. subglutinans | F | Ascomycota | NO3 (present in the EU) |
| Gloeodes pomigena | F | Ascomycota | NO3 (present in the EU) |
| Gloeosporium citricola | F | Ascomycota | NO5 (other reason) |
| Glomerella cingulata | F | Ascomycota | NO3 (present in the EU) |
| Glycyphana fulvistemma | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Gonodonta incurva | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Grammodes geometrica | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Grammodes stolida | I | Lepidoptera: Noctuidae | NO3 (present in the EU) |
| Graphognathus leucoloma | I | Coleoptera: Curculionidae | NO1 (regulated in the EU) |
| Gynaikothrips ficorum | I | Thysanoptera: Phlaeothripidae | NO3 (present in the EU) |
| Gynaikothrips uzeli | I | Thysanoptera: Phlaeothripidae | NO4 (not associated with Citrus) |
| Haematonectria haematococca | F | Ascomycota | NO3 (present in the EU) |
| Halyomorpha annulicornis | I | Hemiptera: Pentatomidae | NO4 (not associated with Citrus) |
| Halyomorpha halys | I | Hemiptera: Pentatomidae | NO3 (present in the EU) |
| Halyomorpha picus | I | Hemiptera: Pentatomidae | NO4 (not associated with Citrus) |
| Halyomorpha reflexa | I | Hemiptera: Pentatomidae | NO4 (not associated with Citrus) |
| Hapalopidus placodes | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Haplosomoides costata | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Haplothrips angustus | I | Thysanoptera: Thripidae | NO4 (not associated with Citrus) |
| Haplothrips chinensis | I | Thysanoptera: Phlaeothripidae | NO2 (not associated with Citrus fruit) |
| Haplothrips subtilissimus | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Haplothrips victoriensis | I | Thysanoptera: Thripidae | NO5 (other reason) |
| Hapsifera barbata | I | Lepidoptera: Tineidae | NO2 (not associated with Citrus fruit) |
| Hassaku dwarf virus | V | Closteroviridae: Closterovirus | NO5 (other reason) |
| Helicobasidium mompa | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Helicoverpa armigera | I | Lepidoptera: Noctuidae | *NO1 (regulated in the EU)* |
| Helicoverpa assulta | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Helicoverpa punctigera | I | Lepidoptera: Noctuidae | NO4 (not associated with Citrus) |
| Helicoverpa zea | I | Lepidoptera: Noctuidae | NO1 (regulated in the EU) |
| Heliothis viriplaca | I | Lepidoptera: Noctuidae | NO3 (present in the EU) |
| Heliothrips haemorrhoidalis | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Hemaspidoproctus cinereus | I | Hemiptera: Monophlebidae | NO2 (not associated with Citrus fruit) |
| Hemerophila subplagiata | I | Lepidoptera: Choreutidae | NO2 (not associated with Citrus fruit) |
| Hemiberlesia cyanophylli | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Hemiberlesia diffinis | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Hemiberlesia lataniae | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Hemiberlesia palmae | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Hemiberlesia rapax | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Hemithea aestivaria | I | Lepidoptera: Geometridae | NO3 (present in the EU) |
| Heterochaete tenuicula | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Hishimonus phycitis | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Hishimonus sellatus | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Holotrichia kiotoensis | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Holotrichia parallela | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Holotrichia plumbea | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Holotrichia sauteri | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Holotrichia sinensis | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Homalodisca ignorata | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Homalodisca vitripennis | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Homoeocerus dan | I | Hemiptera: Coreidae | NO5 (other reason) |
| Homona coffearia | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Hop stunt viroid | V | Pospiviroidae: Hostuviroid | NO3 (present in the EU) |
| Horcias nobilellus | I | Hemiptera: Miridae | NO2 (not associated with Citrus fruit) |
| Hortensia similis | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Howardia biclavis | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Hulodes caranea | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Hyalarcta huebneri | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Hyphantria cunea | I | Lepidoptera: Arctiidae | NO3 (present in the EU) |
| Hypocrea lixii | F | Ascomycota | NO3 (present in the EU) |
| Hypomeces squamosus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Hypomecis punctinalis | I | Lepidoptera: Geometridae | NO3 (present in the EU) |
| Hypopyra vespertilio | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Hypsipyla robusta | I | Lepidoptera: Pyralidae | NO2 (not associated with Citrus fruit) |
| Icerya formicarum | I | Hemiptera: Margarodidae | NO3 (present in the EU) |
| Icerya purchasi | I | Hemiptera: Margarodidae | NO3 (present in the EU) |
| Icerya seychellarum | I | Hemiptera: Margarodidae | NO3 (present in the EU) |
| Idioscopus incertus | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Inca clathrata ssp. sommeri | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Indian citrus ringspot virus | V | Alphaflexiviridae: mandarivirus | NO2 (not associated with Citrus fruit) |
| Iscadia inexacta | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Ischyja manlia | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Ishidaella albomarginata | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Jacobiasca formosana | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Jacobiasca lybica | I | Hemiptera: Cicadellidae | NO3 (present in the EU) |
| Khuskia oryzae | F | Ascomycota | NO3 (present in the EU) |
| Kilifia acuminata | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Kolla atramentaria | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Kophene snelleni | I | Lepidoptera: Psychidae | NO2 (not associated with Citrus fruit) |
| Labioproctus poleii | I | Hemiptera: Monophlebidae | NO2 (not associated with Citrus fruit) |
| Lacera alope | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Lacon binodulus | I | Coleoptera: Elateridae | NO2 (not associated with Citrus fruit) |
| Lagoptera dotata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Lasiodiplodia citricola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Lasiodiplodia iraniensis | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Lasiodiplodia pseudotheobromae | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Lasiodiplodia theobromae | F | Ascomycota | NO3 (present in the EU) |
| Lawana imitata | I | Hemiptera: Flatidae | NO2 (not associated with Citrus fruit) |
| Lecanodiaspis dendrobii | I | Hemiptera: Asterolecaniidae | NO2 (not associated with Citrus fruit) |
| Lecanodiaspis sp. | I | Hemiptera: Asterolecaniidae | NO2 (not associated with Citrus fruit) |
| Ledra auditura | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Lefroyothrips lefroyi | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Lelia decempunctata | I | Hemiptera: Pentatomidae | NO2 (not associated with Citrus fruit) |
| Lelia octopunctata | I | Hemiptera: Pentatomidae | NO2 (not associated with Citrus fruit) |
| Lema fortunei | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Lepidosaphes beckii | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Lepidosaphes gloverii | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Lepidosaphes pallida | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Lepidosaphes pinnaeformis | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Lepidosaphes tubulorum | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Lepidosaphes ulmi | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Lepropus flavovittatus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Leptocera sp. | I | Diptera: Sphaeroceridae | NO5 (other reason) |
| Leptocorisa acuta | I | Hemiptera: Alydidae | NO2 (not associated with Citrus fruit) |
| Leptocorisa chinensis | I | Hemiptera: Alydidae | NO4 (not associated with Citrus) |
| Leptopius squalidus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Leptops squalidus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Leptosphaeria bondari | F | | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Liberibacter africanus | B | Liberibacter | NO1 (regulated in the EU) |
| Liberibacter americanus | B | Liberibacter | NO1 (regulated in the EU) |
| Liberibacter asiaticus | B | Liberibacter | NO1 (regulated in the EU) |
| Liberibacter spp. | B | | NO2 (not associated with Citrus fruit) |
| Lindingaspis rossii | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Linepithema humile | I | Hymenoptera: Formicidae | NO3 (present in the EU) |
| Liorhyssus hyalinus | I | Hemiptera: Rhopalidae | NO3 (present in the EU) |
| Lipaphis pseudobrassicae | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Lopholeucaspis cockerelli | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Lopholeucaspis japonica | I | Hemiptera: Diaspididae | NO1 (regulated in the EU) |
| Lorryia formosa | A | Acarida: Tydeidae | NO3 (present in the EU) |
| Lorryia formosa | A | Acarida: Tydeidae | NO3 (present in the EU) |
| Luperomorpha funesta | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Luperomorpha xanthodera | I | Coleoptera: Chrysomelidae | NO3 (present in the EU) |
| Lygniodes hypoleuca | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Lygocoris lucorum | I | Hemiptera: Miridae | NO3 (present in the EU) |
| Lymantria dispar | I | Lepidoptera: Lymantriidae | NO3 (present in the EU) |
| Macaldenia palumba | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Machaerotypus sibiricus | I | Hemiptera: Membracidae | NO2 (not associated with Citrus fruit) |
| Maconellicoccus hirsutus | I | Hemiptera: Pseudococcidae | *NO3 (present in the EU)* |
| Macrodactylus pumilio | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Macrophomina phaseolina | F | Ascomycota | NO3 (present in the EU) |
| Macrosiphum euphorbiae | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Macrosiphum gei | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Macrostylus puberulus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Macugonalia cavifrons | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Macugonalia leucomelas | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Mahasena colona | I | Lepidoptera: Psychidae | NO2 (not associated with Citrus fruit) |
| Maladera orientalis | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Mamestra brassicae | I | Lepidoptera: Noctuidae | NO3 (present in the EU) |
| Marasmiellus scandens | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Marasmus crinis-equis | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Marmara salictella | I | Lepidoptera: Gracillariidae | NO5 (other reason) |
| Maroga melanostigma | I | Lepidoptera: Oecophoridae | NO2 (not associated with Citrus fruit) |
| Maruca vitrata | I | Lepidoptera: Crambidae | NO4 (not associated with Citrus) |
| Massaria citricola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Medythia nigrobilineata | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Megacopta cribaria | I | Hemiptera: Plataspidae | NO2 (not associated with Citrus fruit) |
| Megalotomus costalis | I | Hemiptera: Alydidae | NO2 (not associated with Citrus fruit) |
| Megalurothrips distalis | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Megaplatypus mutatus | I | Coleoptera: Platypodidae | NO2 (not associated with Citrus fruit) |
| Melanitis leda | I | Lepidoptera: Nymphalidae | NO4 (not associated with Citrus) |
| Melanographia flexilineata | I | Lepidoptera: Arctiidae | NO2 (not associated with Citrus fruit) |
| Melanographium citri | F | | NO4 (not associated with Citrus) |
| Melanomma citricola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Melanotus annosus | I | Coleoptera: Elateridae | NO2 (not associated with Citrus fruit) |
| Melanotus legatus | I | Coleoptera: Elateridae | NO2 (not associated with Citrus fruit) |
| Melipona sp. | I | Hymenoptera: Meliponidae | NO5 (other reason) |
| Menida bengalensis | I | Hemiptera: Pentatomidae | NO5 (other reason) |
| Menophra senilis | I | Lepidoptera: Geometridae | NO2 (not associated with Citrus fruit) |
| Metaleurodicus cardini | I | Hemiptera: Aleyrodidae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Metcalfa pruinosa | I | Hemiptera: Flatidae | NO3 (present in the EU) |
| Metopta rectifasciata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Metura elongatus | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Microcephalothrips abdominalis | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Microdiplodia heteroclita | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Microdochium dimerum | F | Ascomycota | NO3 (present in the EU) |
| Micropeltis duoseptata | F | Ascomycota (incertae sedis] | NO2 (not associated with Citrus fruit) |
| Mictis profana | I | Hemiptera: Coreidae | NO2 (not associated with Citrus fruit) |
| Milviscutulus mangiferae | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Mimastra cyanura | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Miridiva coreana | I | Coleoptera: Scarabaeidae | NO5 (other reason) |
| Mocis dalosa | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Mocis frugalis | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Mocis undata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Monema flavescens | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Monocesta coryli | I | Coleoptera: Chrysomelidae | NO4 (not associated with Citrus) |
| Mucor alboater | F | Zygomycota | NO5 (other reason) |
| Mycena citricolor | F | Agaricomycotina | NO2 (not associated with Citrus fruit) |
| Mycosphaerella aurantia | F | Ascomycota | NO3 (present in the EU) |
| Mycosphaerella citri | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Mycosphaerella horii | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Mycosphaerella lageniformis | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Mycosphaerella loefgreni | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Mycosphaerella tassiana | F | Ascomycota | NO3 (present in the EU) |
| Mycosphaerella tilakii | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Mycterothrips glycines | I | Thysanoptera: Thripidae | NO4 (not associated with Citrus) |
| Myllocerus discolor | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Myllocerus viridanus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Myrothecium roridum | F | Ascomycota | NO3 (present in the EU) |
| Myrothecium verrucaria | F | Ascomycota | NO5 (other reason) |
| Myzus persicae | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Natsudaidai dwarf virus | V | | NO5 (other reason) |
| Naupactus curtus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Naupactus navicularis | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Naupactus tarsalis | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Navel orange infectious mottling virus | V | Secoviridae: sadwavirus | NO5 (other reason) |
| Nectria cancri f. sp. aurantii | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Nectria heterosperma | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Nemania serpens | F | Ascomycota | NO3 (present in the EU) |
| Nematospora coryli | F | Ascomycota | NO3 (present in the EU) |
| Neoaliturus haematoceps | I | Hemiptera: Cicadellidae | NO3 (present in the EU) |
| Neosetophoma samarorum | F | Ascomycota | NO3 (present in the EU) |
| Neostauropus alternus | I | Lepidoptera: Notodontidae | NO2 (not associated with Citrus fruit) |
| Nephotettix cincticeps | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Nephotettix virescens | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Nezara viridula | I | Hemiptera: Pentatomidae | NO3 (present in the EU) |
| Nipaecoccus filamentosus | I | Hemiptera: Pseudococcidae | NO5 (other reason) |
| Nipaecoccus nipae | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Nipponovalgus angusticollis | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Nirvana pallida | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Nirvana suturalis | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Nisia atrovenosa | I | Hemiptera: Meenoplidae | NO3 (present in the EU) |
| Nisia nervosa | I | Hemiptera: Meenoplidae | NO3 (present in the EU) |
| Non-European scale insects (Hemiptera: Coccoidea, e.g. Ceroplastes sinensis) | I | Hemiptera: Coccoidea | NO5 (other reason) |
| Non-European whiteflies (Hemiptera: Aleyrodidae, e.g. Orchamoplatus citri) | I | Hemiptera: Aleyrodidae | NO5 (other reason) |
| Notobitus meleagris | I | Hemiptera: Coreidae | NO5 (other reason) |
| Nysius clevelandensis | I | Hemiptera: Lygaeidae | NO2 (not associated with Citrus fruit) |
| Nysius vinitor | I | Hemiptera: Lygaeidae | NO2 (not associated with Citrus fruit) |
| Octaspidiotus stauntoniae | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Odontolabis cuvera | I | Coleoptera: Lucanidae | NO2 (not associated with Citrus fruit) |
| Odontolabis siva | I | Coleoptera: Lucanidae | NO2 (not associated with Citrus fruit) |
| Odontopera arida | I | Lepidoptera: Geometridae | NO2 (not associated with Citrus fruit) |
| Odontotermes lokanandi | I | Isoptera: Termitidae | NO2 (not associated with Citrus fruit) |
| Oides decempunctata | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Oidium citri-aurantii | F | Ascomycota | NO5 (other reason) |
| Oiketicus kirbyi | I | Lepidoptera: Psychidae | NO2 (not associated with Citrus fruit) |
| Olethreutes metallicana | I | Lepidoptera: Tortricidae | NO3 (present in the EU) |
| Oligonychus coffeae | A | Acarida: Tetranychidae | NO2 (not associated with Citrus fruit) |
| Oligonychus peruvianus | A | Acarida: Tetranychidae | NO2 (not associated with Citrus fruit) |
| Oncometopia facialis | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Oncometopia orbona | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Ophisma gravata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Ophiusa cantonensis | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Ophiusa coronata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Ophiusa disjungens | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Ophiusa tirhaca | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Ophiusa trapezium | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Ophiusa triphaenoides | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Ophthalmitis irrorataria | I | Lepidoptera: Geometridae | NO2 (not associated with Citrus fruit) |
| Oraesia emarginata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Oraesia excavata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Orasema sp. | I | Hymenoptera: Eucharitidae | NO5 (other reason) |
| Orchamoplatus citri | I | Hemiptera: Aleyrodidae | NO2 (not associated with Citrus fruit) |
| Ornatalcides trifidus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Orthezia insignis | I | Hemiptera: Orthezиidae | NO2 (not associated with Citrus fruit) |
| Orthobelus flavipes | I | Hemiptera: Membracidae | NO2 (not associated with Citrus fruit) |
| Orthopagus splendens | I | Hemiptera: Dictyopharidae | NO2 (not associated with Citrus fruit) |
| Otala lactea | G | Sigmurethra: Helicidae | NO3 (present in the EU) |
| Otiorhynchus cribricollis | I | Coleoptera: Curculionidae | NO3 (present in the EU) |
| Otiorhynchus meridionalis | I | Coleoptera: Curculionidae | NO3 (present in the EU) |
| Oulema oryzae | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Oxycetonia jucunda | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Oxycetonia versicolor | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Oxyodes scrobiculata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Pachnaeus opalus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Pandemis cerasana | I | Lepidoptera: Tortricidae | NO3 (present in the EU) |
| Pandemis chlorograpta | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Panonychus citri | A | Acarida: Tetranychidae | NO3 (present in the EU) |
| Panonychus ulmi | A | Acarida: Tetranychidae | NO3 (present in the EU) |
| Pantoea agglomerans (Beijerinck) Gavini et al. [Syn.: Erwinia lathyri (Manns & Taubenhaus) Magrou] | I | Coleoptera: Scarabaeidae | NO5 (other reason) |
| Pantomorus cervinus | I | Coleoptera: Curculionidae | NO3 (present in the EU) |
| Pantomorus postfasciatus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Papilio | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio anchisiades | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio androgeus | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio bianor | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio cresphontes | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio demoleus | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio dialis | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio helenus | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio isidorus isidorus | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio maackii | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio machaon | I | Lepidoptera: Papilionidae | NO3 (present in the EU) |
| Papilio macilentus | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio memnon | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio nephelus chaon | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio paeon paeon | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio paris | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio polytes | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio protenor | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio thaiwanus | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio thoas | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio xuthus | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Papilio zelicaon | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Parabemisia myricae | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Paracardiophorus pullatus | I | Coleoptera: Elateridae | NO2 (not associated with Citrus fruit) |
| Paraleyrodes minei | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Paranthostomella citri | I | Lepidoptera: Papilionidae | NO2 (not associated with Citrus fruit) |
| Parasa consocia | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Parasa sinica | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Parasaissetia nigra | I | Hemiptera: Coccidae | NO1 (regulated in the EU) |
| Paratachardina lobata | I | Kerriidae | *NO2 (not associated with Citrus fruit)* |
| Paratachardina theae | I | Hemiptera: Kerriidae | NO2 (not associated with Citrus fruit) |
| Parlatoria camelliae | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Parlatoria cinerea | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Parlatoria oleae | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Parlatoria pergandii | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Parlatoria proteus | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Parlatoria theae | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Parlatoria ziziphi | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Parnara guttatus | I | Lepidoptera: Hesperiidae | NO2 (not associated with Citrus fruit) |
| Paroplapoderus pardalis | I | Coleoptera: Attelabidae | NO2 (not associated with Citrus fruit) |
| Parthenolecanium corni | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Parthenolecanium perlatum | F | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Parthenolecanium persicae | I | Hemiptera: Coccidae | NO3 (present in the EU) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Pellicularia alba | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Pellicularia kolegora | F | | NO4 (not associated with Citrus) |
| Penicillium citrinum | F | Ascomycota | NO3 (present in the EU) |
| Penicillium digitatum | F | Ascomycota | NO3 (present in the EU) |
| Penicillium diversum | F | Ascomycota | NO3 (present in the EU) |
| Penicillium expansum | F | Ascomycota | NO3 (present in the EU) |
| Penicillium fructigenum | F | Ascomycota | NO5 (other reason) |
| Penicillium italicum | F | Ascomycota | NO3 (present in the EU) |
| Penicillium ulaiense | F | Ascomycota | NO3 (present in the EU) |
| Penicillium viridicatum | F | Ascomycota | NO3 (present in the EU) |
| Peniophora albobadia | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Peniophora cinerea | F | Ascomycota | NO3 (present in the EU) |
| Pentastiridius apicalis | I | Hemiptera: Cixiidae | NO2 (not associated with Citrus fruit) |
| Penthimiola bella | I | Hemiptera: Cicadellidae | NO3 (present in the EU) |
| Perenniporia ochroleuca | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Periconia byssoides | F | Ascomycota | NO3 (present in the EU) |
| Peridroma saucia | I | Lepidoptera: Noctuidae | NO3 (present in the EU) |
| Perilampsis woodi | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Perperus lateralis | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Pestalotia guepinii | F | Ascomycota | NO3 (present in the EU) |
| Pestalotiopsis citri | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Pestalotiopsis neglecta | F | Ascomycota | NO3 (present in the EU) |
| Petrobia harti | A | Acarida: Tetranychidae | NO3 (present in the EU) |
| Petrobia latens | A | Acarida: Tetranychidae | NO3 (present in the EU) |
| Peyronellaea pinodella | F | Ascomycota | NO3 (present in the EU) |
| Peyronellaea pinodes | F | Ascomycota | NO3 (present in the EU) |
| Pezothrips kellyanus | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Phaeosaccardinula guajavae | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phalera assimilis | I | Lepidoptera: Notodontidae | NO2 (not associated with Citrus fruit) |
| Phalera bucephala | I | Lepidoptera: Notodontidae | NO3 (present in the EU) |
| Phellinus noxius | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Phenacoccus madeirensis | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Phenacoccus manihoti | I | Hemiptera: Pseudococcidae | NO4 (not associated with Citrus) |
| Phenacoccus solenopsis | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Phenacoccus tucumanus | I | Hemiptera: Pseudococcidae | NO2 (not associated with Citrus fruit) |
| Philephedra tuberculosa | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Phloeobius alternans | I | Coleoptera: Anthribidae | NO2 (not associated with Citrus fruit) |
| Phlyctinus callosus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Phoma exigua | F | Ascomycota | NO3 (present in the EU) |
| Phoma limonii | F | Ascomycota | NO5 (other reason) |
| Phoma macrophoma | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phoma nainiensis | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phoma puttemansii | F | Ascomycota | NO5 (other reason) |
| Phyllobius longicornis | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Phyllocnistis citrella | I | Lepidoptera: Gracillariidae | NO3 (present in the EU) |
| Phyllocnistis saligna | I | Lepidoptera: Gracillariidae | NO3 (present in the EU) |
| Phyllocoptruta oleivora | A | Acarida: Eriophyidae | NO3 (present in the EU) |
| Phyllodes consobrina | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Phyllodes eyndhovi | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Phyllodes punctifascia | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Phyllosticta adusta | F | Ascomycota | NO3 (present in the EU) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Phyllosticta ampelicida | F | Ascomycota | NO3 (present in the EU) |
| Phyllosticta arethusa | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phyllosticta aurantiicola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phyllosticta aurantiifolia | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phyllosticta beltranii | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phyllosticta capitalensis | F | Ascomycota | NO3 (present in the EU) |
| Phyllosticta citribraziliensis | F | Ascomycota | NO5 (other reason) |
| Phyllosticta citricarpa | F | Ascomycota | NO1 (regulated in the EU) |
| Phyllosticta citrichinaensis | F | Ascomycota | NO5 (other reason) |
| Phyllosticta citrimaxima | F | Ascomycota | NO5 (other reason) |
| Phyllosticta disciformis | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phyllosticta erratica | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phyllosticta hesperidearum | F | Ascomycota | NO3 (present in the EU) |
| Phyllosticta hypoglossi | F | Ascomycota | NO5 (other reason) |
| Phyllosticta limonum | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phyllosticta longispora | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phyllosticta scabiosa | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Phymatotrichopsis omnivora | F | Ascomycota | NO1 (regulated in the EU) |
| Physauchenia bifasciata | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Physopelta gutta | I | Hemiptera: Largidae | NO2 (not associated with Citrus fruit) |
| Phytophthora boehmeriae | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytophthora cactorum | F | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytophthora capsici | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytophthora cinnamomi | F | Ascomycota | NO3 (present in the EU) |
| Phytophthora citricola | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytophthora citrophthora | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytophthora cryptogea | F | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytophthora hibernalis | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytophthora humicola | C | Pseudofungi: Oomycetes | NO5 (other reason) |
| Phytophthora inundata | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytophthora nicotianae | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytophthora nicotianae var. parasitica | C | Pseudofungi: Oomycetes | NO5 (other reason) |
| Phytophthora palmivora | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytophthora syringae | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Phytoplasma asteris | B | Acholeplasmatales: Acholeplasmataceae | NO3 (present in the EU) |
| Phytoplasma aurantifolia | B | Acholeplasmatales: Acholeplasmataceae | NO1 (regulated in the EU) |
| phytoplasma: "16Sr Group I phytoplasma" | B | Acholeplasmatales: Acholeplasmataceae | NO2 (not associated with Citrus fruit) |
| Piazomias lewisi | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Piesma cinereum | I | Hemiptera: Piesmatidae | NO2 (not associated with Citrus fruit) |
| Pigeon pea witches' broom phytoplasma | B | Acholeplasmatales: Acholeplasmataceae | NO2 (not associated with Citrus fruit) |
| Pindara illibata | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Pinnaspis aspidistrae | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Pinnaspis strachani | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Pithomyces sacchari | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Plagiodera versicolora | I | Coleoptera: Chrysomelidae | NO3 (present in the EU) |
| Planococcus citri | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Platyja umminea | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Platymycteropsis mandarinus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Platynota stultana | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Platypus parallelus | I | Coleoptera: Patypotidae | NO2 (not associated with Citrus fruit) |
| Platypus wesmaeli | I | Coleoptera: Patypotidae | NO2 (not associated with Citrus fruit) |
| Plectipus | U | Unknown | NO5 (other reason) |
| Plenodomus tracheiphilus | F | Ascomycota | NO1 (regulated in the EU) |
| Pleospora disrupta | I | Ascomycota | NO3 (present in the EU) |
| Pleospora herbarum | F | Ascomycota | NO3 (present in the EU) |
| Plesiommata corniculata | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Plusiodonta coelonota | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Podagricomela nigricollis | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Podagricomela weise | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Podonectria coccicola | F | Ascomycota | NO5 (other reason) |
| Podontia lutea | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Poecilocoris duraei | I | Hemiptera: Scutelleridae | NO5 (other reason) |
| Poecilophilides rusticola | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Polygonia c-aureum | I | Lepidoptera: Nymphalidae | NO2 (not associated with Citrus fruit) |
| Polyphagotarsonemus latus | A | Acarida: Tarsonemidae | NO3 (present in the EU) |
| Praelongorthezia citricola | I | Hemiptera: Orthezиidae | NO2 (not associated with Citrus fruit) |
| Praelongorthezia olivicola | I | Hemiptera: Orthezиidae | NO2 (not associated with Citrus fruit) |
| Prays citri | I | Lepidoptera: Yponomeutidae | NO3 (present in the EU) |
| Prays nephelomina | I | Lepidoptera: Yponomeutidae | NO2 (not associated with Citrus fruit) |
| Prays parili | I | Lepidoptera: Yponomeutidae | NO2 (not associated with Citrus fruit) |
| Prodiplosis longifila | I | Diptera: Cecidomyiidae | NO2 (not associated with Citrus fruit) |
| Protaetia fusca | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Protopulvinaria pyriformis | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Pseudanaphothrips achaetus | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Pseudatelus raptorius | I | Hemiptera: Pentatomidae | NO4 (not associated with Citrus) |
| Pseudaulacaspis pentagona | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Pseudischnaspis acephala | I | Hemiptera: Diaspididae | NO2 (not associated with Citrus fruit) |
| Pseudocercospora angolensis | F | Ascomycota | NO1 (regulated in the EU) |
| Pseudocercospora citri | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Pseudococcus aonidum | I | Hemiptera: Pseudococcidae | NO5 (other reason) |
| Pseudococcus calceolariae | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Pseudococcus citriculus | I | Hemiptera: Pseudococcidae | NO5 (other reason) |
| Pseudococcus comstocki | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Pseudococcus cryptus | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Pseudococcus longispinus | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Pseudococcus viburni | I | Hemiptera: Pseudococcidae | NO3 (present in the EU) |
| Pseudocochliobolus pallescens | F | Ascomycota | NO5 (other reason) |
| Pseudocribrolecanium andersoni | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Pseudomonas fluorescens | B | Pseudomonales: Pseudomonadaceae | NO5 (other reason) |
| Pseudomonas syringae | B | Pseudomonadales: Pseudomonadaceae | NO3 (present in the EU) |
| Pseudomonas syringae pv. garcae | B | Pseudomonales: Pseudomonaceae | NO4 (not associated with Citrus) |
| Pseudomonas syringae pv. syringae | B | Pseudomonadales: Pseudomonadaceae | NO3 (present in the EU) |
| Pseudomonas viridiflava | B | Pseudomonadales: Pseudomonadaceae | NO3 (present in the EU) |
| Pseudoparlatoria parlatorioides | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Psorosticha melanocrepida | I | Lepidoptera: Depressariidae | NO2 (not associated with Citrus fruit) |
| Psorosticha zizyphi | I | Lepidoptera: Depressariidae | NO2 (not associated with Citrus fruit) |
| Psylla citricola | I | Hemiptera: Psyllidae | NO2 (not associated with Citrus fruit) |
| Psylla citrisuga | I | Hemiptera: Psyllidae | NO2 (not associated with Citrus fruit) |
| Psylla coccinea | I | Hemiptera: Psyllidae | NO2 (not associated with Citrus fruit) |
| Pulvinaria decorata | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Pulvinaria flavescens | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Pulvinaria floccifera | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Pulvinaria polygonata | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Pulvinaria sp. | I | Hemiptera: Coccidae | NO5 (other reason) |
| Pycnoporus coccineus | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Pylargosceles steganioides | I | Lepidoptera: Geometridae | NO2 (not associated with Citrus fruit) |
| Pyrenochaeta destructiva | B | Pseudomonales: Pseudomonaceae | NO2 (not associated with Citrus fruit) |
| Pyrops candelaria | I | Hemiptera: Fulgoridae | NO2 (not associated with Citrus fruit) |
| Pythium aphanidermatum | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Pythium debaryanum | C | Oomycota | NO3 (present in the EU) |
| Pythium debaryanum | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Pythium spinosum | C | Pseudofungi: Oomycetes | NO2 (not associated with Citrus fruit) |
| Pythium splendens | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Pythium ultimum | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Pythium vexans | C | Pseudofungi: Oomycetes | NO3 (present in the EU) |
| Ramularia serratula | F | | NO2 (not associated with Citrus fruit) |
| Rastrococcus truncatispinus | I | Hemiptera: Pseudococcidae | NO2 (not associated with Citrus fruit) |
| Recilia dorsalis | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Redoa alba | I | Lepidoptera: Lymantriidae | NO5 (other reason) |
| Rhizobium radiobacter | B | Rhizobiales: Rhizobiaceae | NO3 (present in the EU) |
| Rhizobium rhizogenes | B | Rhizobiales: Rhizobiaceae | NO3 (present in the EU) |
| Rhizopus stolonifer | F | Zygomycota | NO3 (present in the EU) |
| Rhomborrhina japonica | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Rhomborrhina resplendens | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Rhomborrhina unicolor | I | Coleoptera: Scarabaeidae | NO2 (not associated with Citrus fruit) |
| Rhopalosiphum maidis | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Rhynchodiplodia citri | F | Ascomycota | NO5 (other reason) |
| Rhynchophorus palmarum | I | Coleoptera: Curculionidae | NO1 (regulated in the EU) |
| Rhyncophorus palmarum | I | Coleoptera: Curculionidae | NO1 (regulated in the EU) |
| Rhytia hypermnestra | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Rhytidhysteron rufulum | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Ricania japonica | I | Hemiptera: Ricaniidae | NO3 (present in the EU) |
| Ricania simulans | I | Hemiptera: Ricaniidae | NO2 (not associated with Citrus fruit) |
| Ricania speculum | I | Hemiptera: Ricaniidae | NO3 (present in the EU) |
| Ricania taeniata | I | Hemiptera: Ricaniidae | NO2 (not associated with Citrus fruit) |
| Rigidoporus hypobrunneus | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Rigidoporus microporus | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Riptortus | I | Hemiptera: Alydidae | NO5 (other reason) |
| Riptortus linearis | I | Hemiptera: Alydidae | NO2 (not associated with Citrus fruit) |
| Rondibtlis chengluensis | U | Unknown | NO5 (other reason) |
| Rosellinia bunodes | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Rosellinia necatrix | F | Ascomycota | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Rosellinia pepo | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Rothschildia hesperus (hespera) | I | Lepidoptera: Saturniidae | NO2 (not associated with Citrus fruit) |
| Ruggieria glaucescens | F | Ascomycota | NO3 (present in the EU) |
| Saissetia coffeae | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Saissetia miranda | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Saissetia neglecta | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Saissetia oleae | I | Hemiptera: Coccidae | NO3 (present in the EU) |
| Salurnis marginellus | I | Hemiptera: Flatidae | NO2 (not associated with Citrus fruit) |
| Samia cynthia | I | Lepidoptera: Saturniidae | NO3 (present in the EU) |
| Satsuma dwarf virus | V | Secoviridae: sadwavirus | NO1 (regulated in the EU) |
| Scepticus insularis | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Scepticus tigrinus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Schizophyllum commune | F | Basidiomycota | NO3 (present in the EU) |
| Schizothyrium pomi | F | Ascomycota | NO3 (present in the EU) |
| Sciobius granosus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Scirtothrips aurantii | I | Thysanoptera: Thripidae | NO1 (regulated in the EU) |
| Scirtothrips citri | I | Thysanoptera: Thripidae | NO1 (regulated in the EU) |
| Scirtothrips dorsalis | I | Thysanoptera: Thripidae | *NO1 (regulated in the EU)* |
| Scirtothrips inermis | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Scirtothrips mangiferae | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Sclerotinia sclerotiorum | F | Ascomycota | NO3 (present in the EU) |
| Scolecopeltis tropicalis | F | | NO5 (other reason) |
| Scolypopa australis | I | Hemiptera: Ricaniidae | NO2 (not associated with Citrus fruit) |
| Scotinophara lurida | I | Hemiptera: Pentatomidae | NO4 (not associated with Citrus) |
| Scudderia furcata | I | Orthoptera: Acrididae | NO2 (not associated with Citrus fruit) |
| Septobasidium bogoriense | F | Basidiomycota | NO4 (not associated with Citrus) |
| Septobasidium citricolum | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Septobasidium paulense | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Septobasidium pseudopedicellatum | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Septobasidium saccardinum | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Septoria arethusa | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Septoria aurentiicola | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Septoria cattanei | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Septoria citri | F | Ascomycota | NO3 (present in the EU) |
| Septoria limonum | F | Ascomycota | NO3 (present in the EU) |
| Serrodes campana | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Serrognathus titanus | I | Coleoptera: Lucanidae | NO2 (not associated with Citrus fruit) |
| Setora postornata | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Settela citricola | F | | NO2 (not associated with Citrus fruit) |
| Seuratia millardetii | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Sibine sp. | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Sibine trimaculata | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Silana farinosa | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Singhiella citrifolii | I | Hemiptera: Aleyrodidae | NO2 (not associated with Citrus fruit) |
| Sinomegoura citricola | I | Hemiptera: Aphididae | NO2 (not associated with Citrus fruit) |
| Siphanta acuta | I | Hemiptera: Flatidae | NO2 (not associated with Citrus fruit) |
| Siphanta hebes | I | Hemiptera: Flatidae | NO2 (not associated with Citrus fruit) |
| Siphoninus phillyreae | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Sirothyrium citri | F | Ascomycota | NO5 (other reason) |
| Sitobion ibarae | I | Hemiptera: Aphididae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Solenoplea ceracea | F | | NO2 (not associated with Citrus fruit) |
| Solenopsis gayi | I | Hymenoptera: Formicidae | NO2 (not associated with Citrus fruit) |
| Solenopsis gayi | I | Hymenoptera: Formicidae | NO5 (other reason) |
| Solenosthedium chinensis | I | Hemiptera: Scutelleridae | NO5 (other reason) |
| Sonesimia grossa | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Sophonia orientalis | I | Hemiptera: Cicadellidae | NO2 (not associated with Citrus fruit) |
| Sparganothis sulfureana | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Spegazzinia ornata | F | Ascomycota | NO5 (other reason) |
| Spegazzinia tessarthra | F | Ascomycota | NO5 (other reason) |
| Speiredonia retorta | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Sphaceloma fawcettii var. scabiosae | F | Ascomycota | NO1 (regulated in the EU) |
| Sphaceloma punicae | F | Ascomycota | NO5 (other reason) |
| Sphaeropsis tumefaciens | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Sphictyrtus chrysis | I | Hemiptera: Coreidae | NO2 (not associated with Citrus fruit) |
| Sphrageidus similis | I | Lepidoptera: Lymantriidae | NO3 (present in the EU) |
| Spintherophyta semiaurata | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Spiroplasma citri | B | Entomoplasmatales: Spiroplasmataceae | NO1 (regulated in the EU) |
| Spodoptera eridania | I | Lepidoptera: Noctuidae | NO1 (regulated in the EU) |
| Spodoptera exigua | I | Lepidoptera: Noctuidae | NO3 (present in the EU) |
| Spodoptera frugiperda | I | Lepidoptera: Noctuidae | NO1 (regulated in the EU) |
| Spodoptera littoralis | I | Lepidoptera: Noctuidae | NO1 (regulated in the EU) |
| Spodoptera litura | I | Lepidoptera: Noctuidae | NO1 (regulated in the EU) |
| Spodoptera ornithogalli | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Spoladea recurvalis | I | Lepidoptera: Crambidae | NO3 (present in the EU) |
| Sporobolomyces roseus | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Sporocybe hybrida | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Squamura dea | I | Lepidoptera: Metarbelidae | NO2 (not associated with Citrus fruit) |
| Squamura quadrinota | I | Lepidoptera: Metarbelidae | NO2 (not associated with Citrus fruit) |
| Squamura tetraonis | I | Lepidoptera: Metarbelidae | NO2 (not associated with Citrus fruit) |
| Stathmopoda auriferella | I | Lepidoptera: Stathmopodidae | NO3 (present in the EU) |
| Stauropus fagi | I | Lepidoptera: Notodontidae | NO3 (present in the EU) |
| Stelidota geminata | I | Coleoptera: Nitidulidae | NO3 (present in the EU) |
| Stictis radiata | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Strawberry latent ringspot virus | V | Secoviridae | NO3 (present in the EU) |
| Stroggylocephalus agrestis | I | Hemiptera: Cicadellidae | NO3 (present in the EU) |
| Symmathetes kollari | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Sympiezomias velatus | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |
| Sympis rufibasis | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Synanthedon hector | I | Lepidoptera: Sesiidae | NO2 (not associated with Citrus fruit) |
| Syncephalastrum racemosum | F | Zygomycota | NO5 (other reason) |
| Sypnoides simplex | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Takahashia japonica | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Tambinia debilis | I | Hemiptera: Tropiduchidae | NO2 (not associated with Citrus fruit) |
| Tapajosa rubromarginata | I | Hemiptera: Cicadellidae | NO1 (regulated in the EU) |
| Tarsonemus cryptocephalus | A | Acarida: Tarsonemidae | NO5 (other reason) |
| Tarsonemus sp. | A | Acarida: Tarsonemidae | NO5 (other reason) |
| Tatumella citrea | B | Enterobacteriales: Enterobacteriaceae | NO2 (not associated with Citrus fruit) |
| Teratopactus nodicollis | I | Coleoptera: Curculionidae | NO2 (not associated with Citrus fruit) |

| Name | | Taxonomy | Reason |
|---|---|---|---|
| Terthron albovittatum | I | Hemiptera: Delphacidae | NO5 (other reason) |
| Tessaratoma papillosa | I | Hemiptera: Pentatomidae | NO2 (not associated with Citrus fruit) |
| Tessaratoma quadrata | I | Hemiptera: Pentatomidae | NO2 (not associated with Citrus fruit) |
| Tetranychus cinnabarinus | A | Acarida: Tetranychidae | NO3 (present in the EU) |
| Tetranychus kanzawai | A | Acarida: Tetranychidae | NO3 (present in the EU) |
| Tetranychus mexicanus | A | Acarida: Tetranychidae | NO2 (not associated with Citrus fruit) |
| Tetranychus urticae | A | Acarida: Tetranychidae | NO3 (present in the EU) |
| Tetreuaresta punctipennata | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Thanatephorus cucumeris | F | Basidiomycota | NO3 (present in the EU) |
| Theba pisana | G | Sigmurethra: Helicidae | NO3 (present in the EU) |
| Thielavopsis basicola | F | Ascomycota | NO3 (present in the EU) |
| Thlaspida biramosa japonica | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Thosea sinensis | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Thosea sinensis coreana | I | Lepidoptera: Limacodidae | NO2 (not associated with Citrus fruit) |
| Thrips andrewsi | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Thrips coloratus | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Thrips flavus | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Thrips hawaiiensis | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Thrips imaginis | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Thrips malloti | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Thrips nigropilosus | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Thrips palmi | I | Thysanoptera: Thripidae | NO1 (regulated in the EU) |
| Thrips safrus | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Thrips setipennis | I | Thysanoptera: Thripidae | NO2 (not associated with Citrus fruit) |
| Thrips tabaci | I | Thysanoptera: Thripidae | NO3 (present in the EU) |
| Throscoryssa citri | I | Coleoptera: Chrysomelidae | NO2 (not associated with Citrus fruit) |
| Thyas juno | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Tinocallis kahawaluokalani | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Tinocallis zelkowae | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Tiracola grandirena | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Tomoplagia costalimai | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Tomoplagia phaedra | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Tortrix excessana | I | Lepidoptera: Tortricidae | NO2 (not associated with Citrus fruit) |
| Toumeyella cubensis | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Toxoptera aurantii | I | Hemiptera: Aphididae | NO3 (present in the EU) |
| Toxoptera citricidus | I | Hemiptera: Aphididae | NO1 (regulated in the EU) |
| Trametes villosa | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Trialeurodes abutiloneus | I | Hemiptera: Aleyrodidae | NO2 (not associated with Citrus fruit) |
| Trialeurodes vaporariorum | I | Hemiptera: Aleyrodidae | NO3 (present in the EU) |
| Trichoderma harzianum | F | Ascomycota | NO2 (not associated with Citrus fruit) |
| Trichoderma viride | F | Ascomycota | NO5 (other reason) |
| Trichoplusia ni | I | Lepidoptera: Noctuidae | NO3 (present in the EU) |
| Trichurus gorgonifer | F | Ascomycota | NO3 (present in the EU) |
| Trigona hyalinata amazonensis | I | Hymenoptera: Apidae | NO2 (not associated with Citrus fruit) |
| Trigona testacea cupira | I | Hymenoptera: Apidae | NO2 (not associated with Citrus fruit) |
| Trigona trinidadensis | I | Hymenoptera: Apidae | NO2 (not associated with Citrus fruit) |
| Trigonodes hyppasia | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Trioza erytreae | I | Hemiptera: Triozidae | NO1 (regulated in the EU) |
| Trirhithrum nigerrimum | I | Diptera: Tephritidae | NO1 (regulated in the EU) |
| Unaspis citri | I | Hemiptera: Diaspididae | NO1 (regulated in the EU) |
| Unaspis euonymi | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Unaspis yanonensis | I | Hemiptera: Diaspididae | NO3 (present in the EU) |
| Uredo citri | F | Basidiomycota | NO2 (not associated with Citrus fruit) |
| Ustulina deusta | F | | NO2 (not associated with Citrus fruit) |
| Vespa crabro | I | Hymenoptera: Vespidae | NO3 (present in the EU) |
| Vespa mandarina | I | Hymenoptera: Vespidae | NO2 (not associated with Citrus fruit) |
| Vinsonia stellifera | I | Hemiptera: Coccidae | NO2 (not associated with Citrus fruit) |
| Wound tumor virus | V | Reoviridae: phytoreovirus | NO4 (not associated with Citrus) |
| Xanthochroa waterhousei | I | Coleoptera: Oedemeridae | NO2 (not associated with Citrus fruit) |
| Xanthodes transversa | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Xanthomonas citri pv. aurantifolii | B | Xanthomonadales: Xanthomonadaceae | NO1 (regulated in the EU) |
| Xanthomonas citri pv. bilvae | B | Xanthomonadales: Xanthomonadaceae | NO1 (regulated in the EU) |
| Xanthomonas citri pv. citri | B | Xanthomonadales: Xanthomonadaceae | NO1 (regulated in the EU) |
| Xanthomons alfalfae subsp. citrumelonis | B | Xanthomonadales: Xanthomonadaceae | NO1 (regulated in the EU) |
| Xestia c-nigrum | I | Lepidoptera: Noctuidae | NO3 (present in the EU) |
| Xylella fastidiosa | B | Xanthomonadales: Xanthomonadaceae | NO1 (regulated in the EU) |
| Xylena formosa | I | Lepidoptera: Noctuidae | NO2 (not associated with Citrus fruit) |
| Zaprionus tuberculatus | I | Diptera: Drosophilidae | NO3 (present in the EU) |
| Zeuzera coffeae | I | Lepidoptera: Cossidae | NO2 (not associated with Citrus fruit) |

## ANNEX 7. Oranges and mandarins Alert List

This Alert List is divided into two parts. Please refer to section 2.3 of this report for details of the categories retained in each Part.

It was not possible to further rank the pests within the two parts by their level of risk. Pests are listed by type (acari, insect) and then in alphabetical order. No pathogen was retained for the Alert List.

The Alert List was finalized at October 2016, and does not contain new information that may have become available after that date.

**CONTENTS**



## PART 1 – PESTS WITH HIGH ECONOMIC IMPORTANCE AND MORE LIKELY TO TRANSFER

### Insects

### *Amyelois transitella* (Lepidoptera: Pyralidae)

**Location of life stages on plant parts:** Larvae feed inside fruits and nuts. Eggs are on mummy nuts or new crop nuts (UC IPM, 2014). On Citrus, eggs in the navel end of injured oranges, splits and wounds of citrus fruit (such as for Navel oranges) and larvae feed in or near the core (Biosecurity Queensland, 2011). Attacks damaged, overripe and dried fruits and nuts (AQIS, 1999) but such fruits may be unnoticed and be in consignments.

**Fruit pathway:** fruits (including nuts) (NSW, 2012).

**Other pathways:** plants for planting (NSW, 2012).

**Hosts:** Polyphagous on a variety of fruits and nuts. Hosts include *Citrus, Citrus limon, Citrus x paradisi, Citrus sinensis, Carya illinoensis, Ceratonia siliqua, Coffea, Cydonia oblonga, Eriobotrya japonica, Ficus, Forchhammeria, Genipa americana, Gleditsia triacanthos, Heteromeles arbutifolia, Juglans regia, Malus*

*pumila, Phoenix dactylifera, Pistacia vera, Pithecellobium flexicaule, Prunus armeniaca, Prunus domestica, Prunus dulcis, Prunus persica, Punica granatum, Pyrus communis, Vitis vinifera, Yucca, Ziziphus* (AQIS, 1999).

**Distribution:** North America: Mexico; USA (Arizona, California, Florida, Georgia, Oklahoma, Texas, Washington); Central America: Costa Rica; South America: Brazil (Aqis, 1999), Argentina (USDA, 2015). Biosecurity Queensland (2011) mentions Canada but no other record was found.
Absent from the EU. Italy is mentioned in several publications (e.g. AQIS, 1999; USDA, 2015); this record appears to originate from an interception (Trematerra, 1988). Similarly, A. transitella entered Austria (Essl and Rabitsch, 2002), but is rated as not established. Although Lopez-Vaamonde (2010) reports these countries as 'invaded' the pest does not seem to be established. A. transitella is also recorded as present in Germany according to Fauna Europaea (de Jong et al., 2014); however, no record was found, and it may also refer to an interception. Consequently, the pest was considered absent from the EU, with an uncertainty.

**Damage:** *A. transitella* is a serious pest of some nut crops (e.g. almonds, pistachios, walnut), and also grazes on Citrus fruit, causing surface scarring that favours entry by decay-causing organisms, leading to fruit quality reduction and fruit drop. Larvae are in splits and wounds of citrus fruit, feeding in or near the core (Biosecurity Queensland, 2011). The pest is identified as the most important and damaging pest of pistacchio (UC IPM, 2015) and the most important insect pest of almonds (Agudelo-Silva et al., 1995). It causes extensive losses to nut crops in the USA, through feeding damage and contamination of nuts with frass and webbing, and it also vectors saprophytic fungi that infect crops (Ampt et al., 2015). Routine spraying is done (UC IPM 2014). On almond, it vectors *Aspergillus flavus* (Palumbo et al., 2014).

**Other information:** Intercepted in Korea on fresh oranges (first case) and walnuts (in the past) from the USA (Hong et al, 2012). *A. transitella* is a pest of concern for Australia and is subject to alerts (Biosecurity Queensland, 2011; NSW, 2012). Proposed in answer to the EPPO questionnaire on pests of concern for Citrus.

| | | |
|---|---|---|
| **Recorded impact:** High (on another crop, also vector) | **Intercepted:** Yes | **Spreading/invasive:** Yes |

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## *Citripestis sagittiferella* (Lepidoptera: Pyralidae)

**Location of life stages on plant parts:** Larvae feed in the rind and pith of the fruit, later deeper into the flesh (FERA, 2013).

**Fruit pathway:** Yes.

**Other pathways:** none identified.

**Hosts:** Rutaceae are major hosts, predominantly Citrus. *Citrus, Citrus aurantiifolia, Citrus aurantium, Citrus limon, Citrus maxima, Citrus medica, Citrus reticulata, Citrus sinensis, Citrus x paradise (*major*); Citrus hystrix, Canavalia gladiate, Cassia fistula* (wild host) (CABI CPC). There are also host records for Leguminosae (but they may refer to *Mussidia pectinicornella*, incorrectly synonymised with *C. sagittiferella* for some years) (FERA, 2013).

**Distribution:** Asia: Brunei Darussalam, Indonesia, Malaysia, Singapore, Thailand; anectodal reports for Vietnam (CABI CPC; FERA, 2013). Vietnam, Philippines (Le Quoc, 2013).

Invalid records: India, Japan, Papua New Guinea, Sri Lanka and Taiwan (due to Mussidia pectinicornella wrongly considered as a synonym) (CABI CPC).

**Damage:** *C. sagittiferella* causes premature fruit drop, or spoilage (due to tunnels and frass), entry of pathogens causing secondary rot in the fruit (FERA, 2013). It is mentioned as a minor pest of Citrus in most sources. However, there are reports from Vietnam (where the pest has been present since about 2011) of major losses of up to 80% to grapefruit and oranges at some sites (FERA, 2013). From Asian references, it is mentioned in a list of economic pests for Asia and the Pacific (for Thailand, FAO, 1987). It is one of the most important moths in Malaysia and Indonesia, especially on grapefruit at low altitude (Reuther, 1989).

**Other information:** Intercepted in the UK in 2011 (*C. aurantifolia* fruit from Malaysia), suspect findings (from Malaysia) on fruit of *Citrus latifolia* and *Citrus* sp. (Persian lime), and suspected larvae found in an orange (by the public) (FERA, 2013). Reported as spreading in Vietnam, Thailand, Indonesia, Philippines (Le Quoc, 2013). Proposed in answer to the EPPO questionnaire on pests of concern for Citrus.

| | | |
|---|---|---|
| **Recorded impact:** High | **Intercepted:** Yes | **Spreading/invasive:** Yes |

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## *Ecdytolopha aurantianum* (Lepidoptera: Tortricidae)

**Location of life stages on plant parts:** On Citrus, eggs on green or mature fruit, larvae inside fruits, pupae in the soil (Gastaminza, 2012). Females usually deposit one egg per fruit (150-200 eggs in their lifetime); larvae penetrate into the fruit, and some reach the core of citrus fruit and feed on seeds (USDA, 2003). Larvae feed occasionally on leaves and stems (Gilligan and Epstein, 2014).

**Fruit pathway:** Yes, as eggs and larvae.

**Other pathways:** Plants for planting, soil.

**Hosts:** Polyphagous, incl. *Citrus, Citrus reticulata, Citrus sinensis, Citrus x paradisiaca, Litchi chinensis, Macadamia, Musa x paradisiaca, Theobroma cacao* (CABI CPC), *Citrus limon, Citrus limonia* (as lemones, limas) (Gastaminza, 2012), *Melicoccus bijugatus* (first record, Cabrera-Asencio et al., 2012). Brown et al.

(2008) also lists *Sapindus saponaria, Psidium guajava, Averrhoa carambola, Punica granatum, Eriobotrya japonica, Prunus persica, Litchi chinensis, Macadamia integrifolia, Musa*.

**Distribution:** Central America: Costa Rica (CABI CPC), Nicaragua (Cabrera-Asencio et al., 2012); Caribbean: Trinidad and Tobago (CABI CPC), Puerto Rico (Cabrera-Asencio et al., 2012); South America: Argentina, Brazil (CABI CPC), Colombia, Peru, Ecuador, Venezuela (Cabrera-Asencio et al., 2012).

**Damage:** *E. aurantianum* causes direct damage to fruit by feeding, and causes lesions, premature drop and discoloration (CABI CPC; Gastaminza, 2012). Larval damage to fruit may lead to secondary infection by fungus and bacteria (Gilligan and Epstein, 2014). E. aurantianum is a major pest of neotropical fruits (Cabrera-Asencio et al., 2012). It has gained importance in Brazil in recent years (Cáceres, 2006). In Brazil, it became a key pest of Citrus in the 1980s (previously secondary), reaching damages in the order of 50 million USD per year in the 1990s in the State of São Paulo; losses corresponded to 1-2 boxes of fruits per plant in more intensely-attacked localities (Parra et al., 2004). It is reported as a pest of Citrus in Argentina (Sinavimo, 2016). USDA (2003) mention that it is possibly one of the most important pests of oranges in Brazil, with estimated yield losses reaching up to 50 % in Sao Paulo. It has also became a major pest of Citrus in Trinidad, causing up to 40 % losses. *E. aurantianum* is difficult to control (USDA, 2003). It causes damage to macadamia nuts (Blanco-Metzler et al., 2009). Damage on other hosts was not studied.

**Other information:** Intercepted on Citrus (from Europhyt, in Dropsa review, 2016). In the USA, intercepted on *Citrus, Byrsonima crassifolia, Litchi sinensis, Macadamia* (from South America and Central America) (commodities not mentioned; Brown, 2011); *Gymnandrosoma* sp. are also intercepted (USDA, 2003). Proposed in answer to the EPPO questionnaire on pests of concern for Citrus. The synonym Gymnandrosoma aurantianum is used in many publications (e.g. Brown et al., 2008; Brown, 2011; Cabrera-Asencio et al., 2012).

| | | |
|---|---|---|
| **Recorded impact:** High | **Intercepted:** Yes | **Spreading/invasive:** Not known |

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## *Marmara gulosa* (Lepidoptera: Gracillariidae)

**Location of life stages on plant parts:** eggs on stems/fruits of citrus and neighbouring crops, larvae mine in fruit rind or stem, pupae on twig, leaf or stem (Stelinski and Rogers, 2013).

**Fruit pathway:** Yes, as eggs or larvae.

**Other pathways:** Plants for planting, cut flowers.
Uncertain pathways: pods, nuts.

**Hosts:** Polyphagous, with hosts in 31 families; originally a native pest of *Salix* and has shifted hosts to attack many non-native plants; hosts incl. *Citrus, Gossypium, Vigna unguiculata* (as cowpeas), *Solanum melongena, Vitis* (as grape), *Capsicum, Prunus domestica* (as plum), *Cucurbita* (as pumpkin, and zucchini), ornamentals, *Prunus armeniaca, Persea americana, Citrullus lanatus* (Stelinski and Rogers, 2013), *Malus domestica, Prunus avium, Gossypium hirsutum, Actinidia chinensis, Nerium oleander, Olea europaea, Prunus persica, Prunus salicina, Capsicum annuum, Carica papaya, Juglans regia, Salix lasiolepsis* (Guerrero et al., 2012), *Phaseolus* (as beans), nuts, ornamentals (*Salix* and oleander), vegetables, weeds (UC IPM, 2013).

**Distribution:** North America: Mexico, USA (Arizona, California, Florida, and Texas); Caribbean: Cuba (Guerrero et al., 2012).

**Damage:** Larvae of *Marmara gulosa* tunnel the rind of citrus fruit; damage is cosmetic but makes the fruit unmarketable for the fresh market (Guerrero et al., 2012; Stelinski and Rogers, 2013). *Marmara gulosa* causes 5-80% damage on fruit in susceptible Citrus varieties, which are at higher risk if they are adjacent to crops in which populations build up (cotton and beans) (UC IPM, 2013). *Marmara gulosa* is economically important in California, Arizona, Northern Mexico and Cuba. In 1995, in California, one outbreak caused 80-90 % fruit loss in certain groves (Stelinski and Rogers, 2013). Damage on Citrus attributed to *Marmara salictella* in the 1980s-90s is now considered to have been due to *Marmara gulosa*. It was reported to prefer grapefruit to navel oranges, and navel oranges to lemons (Maurer et al., 1998).

**Other information:** In California, the pest was originally thought to be M. salictella, but was later described as *Marmara gulosa*; in additon citrus fruit in Mexico are attacked by a distinctly different and undescribed species of Marmara (Semet, 2010). M. salictella is recorded as a pest of citrus in some publications, but such records are thought to refer to *Marmara gulosa* (Gracilliridae.net, 2016).

| | | |
|---|---|---|
| **Recorded impact:** High | **Intercepted:** Not known | **Spreading/invasive:** Not known |

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## *Proeulia auraria* (Lepidoptera: Tortricidae)

**Location of life stages on plant parts:** eggs on leaves, larvae feed on leaves (which they roll and fold), also on flowers, growing points and externally on fruit (CABI CPC). The pest overwinters as larvae on plants (twigs, bark, mummified fruit) (ArystaLifeScience, 2003). For Citrus, larvae in Navel oranges, bore at the calyx end (Ripa and Larral., 2008).

**Fruit pathway:** yes, as larvae.

**Other pathways:** plants for planting.
Uncertain pathway: cut flowers and branches.

**Hosts:** Polyphagous, incl. *Citrus sinensis, Actinidia deliciosa, Malus domestica, Platanus orientalis, Prunus armeniaca, Prunus avium, Prunus domestica, Prunus persica, Pyrus communis, Robinia pseudoacacia, Vitis vinifera* (CABI CPC), *Vaccinium* (Blueberries Chile, 2011-2012), *Juglans regia*, also new hosts records such as *Cotoneaster, Cercis siliquastrum, Rosa, Nothofagus obliqua, Pittosporum tobira, Punica granatum, Buddleja davidii* (Cepeda and Cubillos, 2011).

**Distribution:** South America: Chile (CABI CPC).

**Damage:** Larvae are very voracious, and able to destroy large numbers of buds, to cut flowers, and to bore open galleries on fruits (at the surface, but varying in depth) (ArystaLifeScience, 2003). Wounds on fruit allow entry of pathogenic organisms causing decay (Ripa and Larral., 2008). *P. auraria* has moved to plants that are exotic to its native range, such as apple, stone fruits, grapevine (CABI CPC). Increasing severity of infestations is reported (Reyes-Garcia et al., 2014). *P. auraria* was initially considered a *Citrus* pest, but has grown in importance as a pest of *Vitis*, and is the most common *Proeulia* species in Chile (Biosecurity Australia, 2005). Increasing severity of infestations is reported (Reyes-Garcia *et al.* 2014). In Citrus orchards, it is usually present at very low density; however occasionnally (especially in Coquimbo region) very intense attacks have been reported with damage to a significant proportion of fruit especially Navel oranges (Ripa and Larral, 2008). On grapevine, it destroys buds and berries (superficial damage or complete destruction; Botrytis rots also develop inside infested bunches) and vegetative material (Biosecurity Australia, 2005).

**Other information:** In relation to transport in trade, mature larvae cannot withstand low cold storage temperatures for over 2-3 weeks; first-instar overwintering larva are hidden on plant parts and may withstand cold conditions (6-8°C) for over a month (CABI CPC). *P. auraria* has quarantine significance for at least China, Korea Republic, Taiwan and the USA. The pest was intercepted in the USA and Japan on blueberries (BlueberriesChile 2011-2012). *Proeulia* spp. have been intercepted in the USA on Citrus (Brown, 2011).

| | | |
|---|---|---|
| **Recorded impact:** High (on another crop) | **Intercepted:** Yes | **Spreading/invasive:** Not known |

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## ***Resseliella citrifrugis* (Diptera: Cecidomyiidae)**

**Location of life stages on plant parts:** eggs on stem and calyx area of the fruit or inside the mesocarp/albido; larvae burrow into the fruit, tunneling in the white tissue. Last instar larvae overwinter in fruit or in soil; there may be many larvae in one fruit (USDA, 2014).

**Fruit pathway:** Several Chinese authors state that it may spread through the transport of mature fruit, which according to USDA (2014) indicates that infested fruit can escape post-harvest culling.

**Other pathways:** plants for planting with fruit or soil, soil on its own.

**Hosts:** *Citrus*, incl. *Citrus maxima, Citrus paradisi* (USDA, 2014), grapefruit and orange (there is an uncertainty because this was a rough translation from a Chinese article where the scientific name is not indicated; Huang et al., 2001).

**Distribution:** Asia: China (Fujian, Hubei, Hunan, Guangdong, Guangxi, Guizhou, Sichuan - USDA, 2014 citing others). Has spread within China (Huang et al., 2001 - with an uncertainty, as from Chinese).

**Damage:** In China, *R. citrifugis* is an important pest of grapefruit and pummelo and is subject to control programmes. It causes serious fruit drop and can affect product yield and storage quality, with serious economic losses. Yield losses of 10-40 % or more reported. Fruit infestations of 10-70% have been reported in citrus orchards. The most damaging period is before the fruit harvest period, but the pest can also cause damage afterwards or overwinter in the fruit. (USDA, 2014 citing other).

**Other information:** USDA (2014) note that Gagné (2010) lists *R. citrifrugis* Jiang as a nomina nudum (i.e. the scientific name is not yet agreed as it was not associated with a full description). However, the pest was analysed because it is used in multiple sources on Citrus in China.

| | | |
|---|---|---|
| **Recorded impact:** High | **Intercepted:** Not known | **Spreading/invasive:** Yes (uncertain) |

**References:**

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## ***Thaumatotibia leucotreta* (Lepidoptera: Tortricidae)**

**Location of life stages on plant parts:** Larvae feed inside fruits, nuts, maize ears or cotton bolls (EPPO AL, 2011). Eggs on fruit, or on leaves, fallen fruit, smooth-surfaced tissue. Hard green citrus fruit may be infested. Larvae prefer the navel end but can burrow anywhere on the fruit. There may be one to three larvae per citrus fruit. Pupae in soil, bark crevices, fallen fruit, debris (Guerrero et al., 2012).

**Fruit pathway:** yes, as eggs or larvae.

**Other pathways:** plants for planting, soil.

**Hosts:** Polyphagous, incl. *Citrus* (Guerrero et al., 2012), other fruit (*Ananas comosus, Annona muricata, Averrhoa carambola, Diospyros kaki, Eriobotrya japonica, Juglans regia, Litchi chinensis, Macadamia ternifolia, Mangifera indica, Musa x paradisiaca, Persea americana, Prunus persica, Psidium guajava, Punica granatum, Vitis*), vegetables and field crops (*Capsicum, Gossypium, Ricinus communis, Zea mays, Abelmoschus esculentus, Phaseolus, Sorghum*) and others (*Camellia, Coffea arabica, Olea europaea, Quercus, Theobroma cacao*) (EPPO GD). Apple and pear are not hosts (Pringle et al., 2015). Most relevant hosts in EPPO PRA (2013) are considered to be *Capsicum*, *Citrus reticulata* and hybrids, *Citrus sinensis* and hybrids, *Citrus paradisi, Gossypium, Litchi chinensis, Macadamia, Mangifera indica, Prunus persica, Prunus persica var. nucipersica, Persea americana, Psidium guajava, Punica granatum, Quercus robur, Ricinus communis, Rosa, Solanum melongena, Vitis vinifera, Zea mays*.

**Distribution:** Africa: Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Congo Democratic Rep., Cote d'Ivoire, Eritrea, Ethiopia, Gambia, Ghana, Kenya, Madagascar, Malawi, Mali, Mauritius, Mozambique, Niger, Nigeria, Reunion, Rwanda, Saint Helena, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe; Asia: Israel (first found 1984) (EPPO GD).

**Damage:** Damage is caused by larvae feeding on fruit. This can cause premature ripening and fruit drop (Guerrero et al., 2012). On citrus, fruit losses as a result of *T. leucotreta* attacks range from below 2% to as high as 90% (1998 reference); on peach, in the early 1970s, it became a serious pest in the Transvaal (South Africa), where peaches were grown near citrus; percentages of infested fruit was in average of 29%, with a maximum of 55%. Significant yield losses (≥30%) have also been reported in macadamia crops (1986 reference); in Uganda on cotton, *T. leucotreta* caused 20% yield loss of early sown varieties and 42-90% yield loss of late varieties. On Capsicum, there are conflicting information on damage (EPPO, 2013).

**Other information:** Intercepted in several EU countries (EPPO GD), incl. on *Citrus paradisi* and *Citrus sinensis fruits*, rose cut flowers, etc. (EPPO AL, 2011). An outbreak was reported in the Netherlands on *Capsicum annuum* (origin unknown) and was eradicated (EPPO GD). Proposed in answer to the EPPO questionnaire on pests of concern for Citrus. At December 2015, *T. leucotreta* was under consideration for regulation in the EU (EU Standing Committee, December 2015). *T. leucotreta* is on EPPO A2 List of pests recommended for regulation.

| | | |
|---|---|---|
| **Recorded impact:** High | **Intercepted:** Yes | **Spreading/invasive:** Yes |

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## ***Zaprionus indianus* (Diptera: Drosophilidae)**

**Location of life stages on plant parts:** eggs are laid on eggs in unripe fruits (possibly referring mostly to figs, Pires et al., 2008). Larvae in fruit.

**Fruit pathway:** Yes, as eggs or larvae. There is an uncertainty on whether it attacks undamaged fruit on a number of host species (see Damage). However, it has been intercepted in the EU, incl. on *Citrus, Diospyros kaki, Mangifera indica, Psidium guajava*. Consequently, it was considered associated with Citrus fruit.

**Other pathways:** plants for planting with fruit.

**Hosts:** Highly polyphagous, 74 hosts species in 31 families, including *Citrus, Ficus carica, Phoenix dactylifera, Psidium guajava* (EPPO GD), *Malphigia emarginata, Punica granatum, Eriobotrya japonica, Dimocarpus longan* (Renkema et al., 2013), *Actinidia, Phoenix dactylifera, Vitis, Ziziphus, Musa* (Al-Jboory and Katbeh-Bader, 2012), *Annona glabra, Anacardium occidentale, Citrofortunella microcarpa, Citrus sinensis, Citrus aurantium, Citrus × paradisi, Fortunella* (van der Linde et al., 2006), Vitis (van Timmeren and Isaacs, 2014). It has adapted to new host species. In the USA and Canada where it was introduced recently, adults were trapped in a number of crops whose host status is not yet known, such as: *Prunus persica, Vaccinium* (as blueberry), *Rubus idaeus* (as raspberry), *Rubus* (as blackberry) *Fragaria* (as strawberry), *Prunus* (as plums, cherry), *Solanum lycopersicum* (Pennsylvania, Joshi et al., 2014; Canada, Renkema et al., 2013; van Timmeren and Isaacs, 2014).

**Distribution:** Africa: Benin, Cape Verde, Congo, Cote d'Ivoire, Egypt, Kenya, Madagascar, Malawi, Mauritius, Morocco, Mozambique, Niger, Nigeria, Reunion, Sao Tome & Principe, Seychelles, South Africa, Tanzania, Madeira (Portugal), Islas Canarias (Spain) (EPPO GD), Cameroon, Comoros, Gabon, Guinea, Senegal, Sudan (CABI CPC). Asia: India, Iran, Israel, Saudi Arabia (EPPO GD), Lebanon (2009; Moussa, 2009), Jordan (Al-Jboory and Katbeh-Bader, 2012), Iraq, Nepal, Oman, Pakistan (Al T'Oma and van der Linde, 2010), United Arab Emirates (CABI CPC); also unpublished report for Azerbaijan (Al T'Oma and van der Linde, 2010). South America: Argentina, Brazil (1998), Uruguay (EPPO GD); Van der Linde (2013) also maps records for Ecuador, Peru; unpublished record for Venezuela mentioned in Al T'Oma and van der Linde (2010); North America: Canada (Ontario, Quebec, first records; uncertainty if can overwinter and will establish; Renkema et al., 2013); Mexico (2002); USA (2005) (first Arizona, California, Florida, Virginia, then spread North, to e.g. Michigan, New York; Joshi et al., 2014, CABI CPC); Central America: Panama (2003); Caribbean: unpublished reports for Cayman Isl. cited in Al T'Oma et al. (2010).

Europe: uncertain record: Spain (mainland: Carles-Tolrá, 2009). No confirmation could be found, and this was considered with an uncertainty. Unreliable records : Italy and Austria (EPPO GD).

**Damage:** *Z. indianus* is often associated with damaged or fallen rotting fruit, but it is able to invade figs (Renkema et al., 2013), Malphigia emarginata and Dimocarpus longan (Steck, 2005). There are also records

of infestation of tree-ripened *Punica granatum* and *Eriobotrya japonica* (Renkema et al., 2013). In Brazil, it caused 40% losses of fig harvest when it was introduced (Mattos Machado et al., 2005). It is reported to infest ripened peaches in Brazil (Joshi et al., 2014) and some authors (e.g. van der Linde et al., 2006) report substantial losses in *Citrus* (oranges), peach and fig in Brazil (based on Santos, 2003; the original publication could not be consulted). Crop damage is also reported in grapevine in Virginia (Markow et al., 2014 citing others). For *Vaccinium* in Mississippi, it is still uncertain whether it will damage blueberry in the field, although it is a possible concern in packing houses (Werle et al., 2012). For grapevine in Michigan, it is still unclear whether it will become a pest or will attack only damaged fruit (van Timmeren and Isaacs, 2014).

**Other information:** Intercepted in the EU on fruits of *Citrus aurantium, Citrus paradisi, Diospyros kaki* (no host record), *Mangifera indica, Psidium guajava*, and on *Passiflora edulis* (commodity not specified) (Dropsa review, using Europhyt data). *Z. indianus* is ecologically versatile. In Brazil, a single introduction in 1998, was followed by rapid spread (Mattos-Machado et al., 2005), and subsequent spread within South and North America.

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|---|---|---|
| **Recorded impact:** High (on another crop) | **Intercepted:** Yes | **Spreading/invasive:** Yes |

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## PART 2 – PESTS WITH LESSER ECONOMIC IMPORTANCE AND MORE LIKELY TO TRANSFER, OR HIGH ECONOMIC IMPORTANCE BUT LESS LIKELY TO TRANSFER

### Acari

### *Brevipalpus chilensis* (Acarida: Tenuipalpidae)

**Location of life stages on plant parts:** For citrus, low populations on fruit and under the calyx (Olivares et al., 2012). Association with citrus fruit at harvest is mentioned in Childers and Rodrigues (2011) as a possible mean of transferring Brevipalpus mites to further trees by wind or contact. This mechanism is also considered possible (with an uncertainty) for transfer once imported (although USDA, 2015 mentions that Tenuipalpidae are generally slow moving).

**Fruit pathway:** Yes, as mobile forms, with an uncertainty.

**Other pathways:** plants for planting, cut flowers and branches.

**Hosts:** Polyphagous, hosts include *Citrus limon, Citrus reticulata, Citrus sinensis, Malus domestica, Cydonia oblonga, Pyrus communis, Prunus armeniaca, Rubus idaeus, Ficus carica* (Koch and Waterhouse, 2000), *Actinidia deliciosa, Annona cherimola, Ficus benghalensis, Ligustrum sinense, Vitis vinifera* (mentioned as main hosts), and also *Antirrhinum, Chrysanthemum, Citrus aurantium, Citrus limon, Citrus sinensis, Diospyros kaki, Geranium* (CABI CPC).

**Distribution:** South America: Chile (CABI CPC). Not present in Argentina (misidentified; Regonat, 2014). Doubtful record: India (Vacante, 2015). This is considered doubtful because Mani et al. (2013, from India) mention its presence only in Chile.

**Damage:** Among fruit trees, grapevines are the most economically affected (CABI CPC). *B. chilensis* causes necrosis of tissues in leaves and buds, and leads to reduced vigour of the grapevine plants; at high density, it may cause 30-40% reduction of yield (Olivares, 2008). However, this level of damage seems to refer to past references according to USDA (2015). For Citrus, it affects lemons, oranges, clementines and, more frequently, mandarins, but without economic damage (very low levels of mites on leaves and fruit, but there are pre- and post-harvest treatments) (CABI CPC). It causes minor direct damage (in very high populations, stains on fruit), but is important because it is a quarantine pest for some countries and causes rejection of fruit at export (Ripa and Larral, 2008; Olivares et al., 2012). On kiwifruit, it scars shoots and petioles (CABI CPC), but does not cause damage. It is considered to pose a significant threat to agriculture in many countries as a high risk exotic pest introduction due to its wide host range and destructive potential. Its ability to vector plant viruses is unknown (Childers and Rodrigues, 2011).

**Other information:** Intercepted on lemons (CABI CPC). The quarantine concern through fruit exports is limited by the cold storage treatments to which citrus fruits and grapes are subjected, provided that storage at 3-4°C extends beyond 3 to 4 weeks (CABI CPC). Proposed in answer to the EPPO questionnaire on pests of concern for citrus.

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|---|---|---|
| **Recorded impact:** High (on another crop) | **Intercepted:** Yes | **Spreading/invasive:** Not known |

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## ***Eotetranychus kankitus* (Acarida: Tetranychidae)**

**Location of life stages on plant parts:** Mostly on leaves, but in severe infestations also on fruit; calyx and other cavity on fruit (USDA, 1995, for citrus).

**Fruit pathway:** Yes, associated with the fruit. It is spread by the wind, rain and animals (USDA, 1995), and was therefore considered likely to transfer.

**Other pathways:** plants for planting, cut flowers and branches.

**Hosts:** Polyphagous, incl. *Citrus, Citrus reticulata* (CABI CPC), *Alnus, Celtis sinensis, Alangium chinense, Elaeagnus bockii, Elaeagnus pungens, Litsea auriculata, Eleusine indica, Prunus armeniaca, Pyrus communis, Rosa chinensis, Rosa, Salix, Vitis vinifera* (Migeon and Dorkeld, 2006-2015), *Prunus persica* (USDA, 1995).

**Distribution:** Asia: China, India, Japan (Migeon and Dorkeld, 2006-2015).

**Damage:** High infestations may cause leaf, flower and fruit drop, and withering of branches. *E. kankitus* is a pest of *Citrus* sp. in Japan, India and China, and of *C. reticulata* in India (references from 1970s-90s); it is a dominant species for which prevention and control methods are under investigation (2012 reference) (Vacante, 2015). In part of Southern China on Citrus, it is considered very widespread and important (Li et al., 1997).

**Other information:** The effect of temperature is studied in Li et al (2014).

| | | |
|---|---|---|
| **Recorded impact:** High (uncertain) | **Intercepted:** Not known | **Spreading/invasive:** Not known |

**References:**


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USDA. 1995. Importation of Japanese Unshu Orange Fruits (Citrus reticulata Blanco var. unshu Swingle) into Citrus Producing States. Pest Risk Assessment.

Vacante V. 2015. The Handbook of Mites of Economic Plants: Identification, Bio-Ecology and Control. CABI, 21 déc. 2015 - 890 pages


## ***Eotetranychus sexmaculatus* (Acarida: Tetranychidae)**

**Location of life stages on plant parts:** Mostly on leaves (Steven, 2004; Gonzalez et al., 2010), but in severe infestations also on fruit (USDA, 1995).

**Fruit pathway:** Yes, associated with the fruit. Assumed to be as E. kankitus, spread by the wind, rain, animals (USDA, 1995), and therefore that it would be likely to transfer (with an uncertainty as this information relates to another species).

**Other pathways:** plants for planting, cut flowers and branches.

**Hosts:** Polyphagous incl. *Citrus, Citrus limon, Citrus maxima, Citrus reticulata, Citrus sinensis, Actinidia deliciosa, Diospyros kaki, Azalea, Rhododendron, Hevea brasiliensis, Persea americana, Phaseolus, Ficus, Morus, Psidium guajava, Platanus, Armeniaca mume, Fragaria x ananassa, Malus domestica, Prunus persica, Prunus, Pyracantha, Rosa, Rubus, Populus, Acer, Solanum lycopersicum, Vitis vinifera* (Migeon and Dorkeld, 2006-2015), *Carica papaya* (Gonzalez et al., 2010).

**Distribution:** Asia: China, India, Japan, Iraq, Korea Rep.; Oceania: Australia, New Zealand; North America: USA, Hawaii; South America: Peru, (Migeon and Dorkeld, 2006-2015). Caribbean: Bermuda (CABI CPC), Cuba (Gonzalez et al., 2010). For USA: Florida (CABI CPC), California (UC IPM, 2007). Present in New Zealand since the early 1950s (Steven, 2004).

**Damage:** *E. sexmaculatus* feeds on leaves, causing discoloration of tissues and leaf fall (UC IPM, 2007). In New Zealand, it is a serious pest of avocado (Jamieson and Stevens, 2007). It has caused serious problems in avocado orchards since the late 1990s, with leaf drop, and reduced productivity (Steven, 2004). In part of Southern China on Citrus, it is widespread and important (Li et al., 1997). It is mentioned amongst 'major or occasional' pests of Citrus for Central America, Florida and Gulf USA States (Peña et al., 2002).

**Other information:** Proposed in answer to the EPPO questionnaire on pests of concern for Citrus.

| | | |
|---|---|---|
| **Recorded impact:** Moderate | **Intercepted:** Not known | **Spreading/invasive:** Yes |

**References:**

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Jamieson LE, Stevens PS. 2007. Development Rates, Longevity and Fecundity of Six-Spotted Mite (Eotetranychus sexmaculatus) at Constant Temperatures. New Zealand Plant Protection 60:72-77

Li L, Wang R, Waterhouse DF. 1997. The Distribution and Importance of Arthropod Pests and Weeds of Agriculture and Forestry Plantations in Southern China. ACIAR, Canberra, Australia.

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Peña JE, Sharp JL, Wysoki M. Tropical Fruit Pests and Pollinators: Biology, Economic Importance, Natural Enemies, and Control CABI, 2002 - 430 pages.

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UC IPM. 2007. Sixspotted Spider Mite on Plumeria. Pests of Homes, Structures, People, and Pets - How to Manage Pests. UC Pest Management Guidelines. University of California Agriculture and Natural Resources

USDA. 1995. Importation of Japanese Unshu Orange Fruits (Citrus reticulata Blanco var. unshu Swingle) into Citrus Producing States. Pest Risk Assessment.

## ***Tuckerella knorri* (Acarida: Tuckerellidae)**

**Location of life stages on plant parts:** Leaves, fruit, branches (Ochoa, 1989).

**Fruit pathway:** yes.

**Other pathways:** plants for planting, cut flowers and branches.

**Hosts:** Polyphagous incl. *Citrus* (USDA, 2014), *Citrus sinensis, Citrus limon, Mangifera indica* (Ochoa, 1989), *Achras zapota, Carica papaya, Persea americana* (Lin, 1982), *Cupressus, Platycladus orientalis* (CABI CPC), *Pandanus odoratissimus* (Vacante, 2010), *Annona muricata, Camellia assamica, Litchi chinensis* (Zhang and Hong, 2010); *Mammea americana* (Cao and Leal, 2011).

**Distribution:** Asia: China, Iran, Philippines, Thailand (Vacante, 2010); Central America: Costa Rica (Ochoa, 1989); Caribbean: Cuba (Cao and Leal, 2011). Introduced to Costa Rica and Cuba from presumed origin in Asia (USDA, 2014).

**Damage:** All records of damage found relate to Costa Rica (where the pest was introduced). *T. knorri* is the most important *Tuckerella* agricultural pest in this country. On *Citrus limon* var. *mesina*, it was found infesting 30-50% of the harvest (fruit) (Ochoa, 1989). In Costa Rica, it is a serious citrus pest requiring control measures and causing significant yield reduction; it is considered as one of the "major pest threats for the California citrus industry" (USDA, 2014, citing others). It occurs in association with *Sphaceloma fawcettii* and may cause significant reduction of yield (Vacante, 2015).

**Other information:** Reported to be spreading, although uncertainty on damage to hosts (Cao and Leal, 2011).

| | | |
|---|---|---|
| **Recorded impact:** High | **Intercepted:** Not known | **Spreading/invasive:** Yes |

**References:**

CABI CPC. Crop Protection Compendium. CAB International, UK. http://www.cabi.org/cpc

Cao J, Leal JL. 2011. Ácaros tuckerélidos (Acari, Tetranychoidea, Tuckerellidae) asociados a Casuarina equisetifolia L. en La Habana. Fitosanidad. vol. 15, no. 2, abril-junio 2011. pp. 69-72.

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USDA. 2014. Importation of Citrus spp. from China into the continental United States. A Qualitative, Pathway-Initiated Pest Risk Assessment. February 7, 2014.

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Vacante V. 2015. The Handbook of Mites of Economic Plants: Identification, Bio-Ecology and Control. CABI, 21 déc. 2015 - 890 pages

Zhang Z, Hong X. 2010. Xin Centenary and Progress in Chinese Acarology: an introduction. Zoosymposia 4: 5–10 (2010)

## Insects

### *Adoxophyes cyrtosema* (Lepidoptera: Tortricidae)

**Location of life stages on plant parts:** Eggs on leaves. Larvae feed on leaves, as well as flowers, buds and fruit (external feeding) (Peña et al., 2002; Liu, 1958; Liu, 1960). Liu (1960), for A. cyrtosema and some other citrus leafrollers in China, notes that ripening fruits are sometimes injured. For lychee and longan, the pest is associated with fruit, flowers, leaves and new growth (Biosecurity Australia, 2003).

**Fruit pathway:** Yes, as larvae.

**Other pathways:** plants for planting.
Uncertain pathways: cut flowers.

**Hosts:** Polyphagous, with 27 host plants, including *Citrus, Dimocarpus longan, Litchi chinensis* (Peña et al., 2002), *Arachis hypogaea, Juglans, Clerodendrum, Morus alba, Camellia sinensis* (Brown et al., 2008).

**Distribution:** Asia: China (Liu, 1958); Oceania: Tonga, New Hybrides (Gilligan et al., 2014), New Guinea (Brown et al., 2008).

**Damage:** *A. cyrtosema* is one of the most important insect pests of citrus and lichee in Canton and in eastern Guangdong province (Liu, 1958). In part of Southern China, it is considered as very widespread and important on *Citrus*, and important locally or only in some years on peanut (Li et al., 1997). *A. cyrtosema* is mentioned as a pest of Citrus in a number of abstracts of publications in Chinese, but details could not be read. Based on the information available, it was considered to have had a high impact on Citrus in the past, with an uncertainty.

**Other information:** Many references are in Chinese and could not be used.

| | | |
|---|---|---|
| **Recorded impact:** High (in the past, uncertain) | **Intercepted:** Not known | **Spreading/invasive:** Not known |

**References:**


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Brown JW, Robinson G, Powell JA. 2008. Food plant database of the leafrollers of the world (Lepidoptera: Tortricidae) (Version 1.0). http://www.tortricid.net/foodplants.asp.

Gilligan TM, Baixeras J, Brown JW, Tuck KR. 2014. T@RT. Online World Catalogue of the Tortricidae. Version 3.0 (December, 2014). http://www.tortricidae.com/catalogue.asp

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### *Archips argyrospilus* (Lepidoptera: Tortricidae)

**Location of life stages on plant parts:** larvae feed on leaves, buds, flowers, young fruit (Government of British Columbia 2015). On *Citrus*, occasionally on newly set or ripening citrus (UC IPM 2013), feeds on young leaves, flowers, newly set fruit and mature fruit (Capinera, 2008).

**Fruit pathway:** Yes, as larvae.

**Other pathways:** plants for planting, cut branches.

**Hosts:** Polyphagous, hosts include *Citrus, Malus domestica, Taxodium distichum* (CABI CPC), *Citrus sinensis, Vitis, Rhododendron, Platanus, Betula papyrifera* (Brown et al., 2008), *Vaccinium* (Retamales and Hancock, 2012), *Pyrus, Prunus, Cydonia, Rubus idaeus, Rubus x loganobaccus, Ribes, Juglans regia, Fraxinus, Acer negundo, Ulmus, Quercus, Populus, Salix, Rosa* (Brunner, 1993).

**Distribution:** North America: Canada, USA (CABI CPC).

**Damage:** On *Citrus, A. argyrospilus* is considered a minor pest, but it occasionally causes damage in spring by feeding on newly set fruit or on ripening Valencia and Navel oranges, or grapefruit; it may tie leaves to fruit and bore inside fruit providing entry sites for decay organisms, which may lead to fruit drop (UC IPM, 2013). On various fruit and berry crops (incl. apple, pear etc.), it bores in buds, feeds on petals, flower parts and leaves, webs petals together, rolls and ties leaves together with silk, bores deep irregular holes in small fruit resulting in large russeted scars in mature fruit (Government of British Columbia, 2015). On *Vaccinium*, larvae feed mostly on foliage but sometimes include green fruit in rolled leaves (Retamales and Hancock, 2012; Brunner, 1993).

*A. argyrospilus* has been a pest of *Citrus* for many years in California (and of apple in other areas of the USA) (Capinera, 2008). It is rare in commercial orchards in Washington, but a serious problem in some British Columbia orchards (Brunner, 1993; Government of British Columbia, 2015). On apple damage levels of 20% were observed in the absence of control methods (Deland, 1992). In the past, heavy damage was reported both in the USA and Canada, with serious outbreaks mostly on Rosaceae (especially apple and pear with 40% fruit losses in some cases), but also *Citrus* and complete defoliation of forest trees (from the end of the 1800s to 1960s) (Paradis, 1964). Serious but sporadic pest in British Columbia apple orchards (Vakenti et al. 1984). *A. argyrospilus* is also important as a contaminant of harvested *Vaccinium* fruit (Retamales and Hancock, 2012).

**Other information:** Intercepted on fresh Citrus fruit in New Zealand (Biosecurity New Zealand, 2009).

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|---|---|---|
| **Recorded impact:** High (on another crop, in the past) | **Intercepted:** Yes | **Spreading/invasive:** Not known |

**References:**


Biosecurity New Zealand. 2009. Import Risk Analysis: Fresh stonefruit from Idaho, Oregon and Washington. Draft for public consultation. MAF Biosecurity New Zealand.

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Brunner JF. 1993. Leafrollers - Pandemis leafroller Pandemis pyrusana Kearfott, Obliquebanded leafroller Choristoneura rosaceana (Harris), Fruittree leafroller Archips argyrospilus (Walker), European leafroller Archips rosanus (Linnaeus). Orchard Pest Management Online, Washington State University. http://jenny.tfrec.wsu.edu/opm/displaySpecies.php?pn=48 (accessed August 2015)

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UC IPM. 2013. Fruit tree Leafroller, Archips argyrospila. Citrus - How to Manage Pests. UC Pest Management Guidelines. University of California Agriculture and Natural Resources. http://www.ipm.ucdavis.edu/PMG/r107301911.html.

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## *Argyrotaenia sphaleropa* (Lepidoptera: Tortricidae)

**Location of life stages on plant parts:** on Citrus and other hosts, larvae feed on leaves, flowers, buds and externally on fruit (Rocca and Brown, 2013; Botton et al., 2003, SATA, 2012; USDA, 2015). No information was found on the location of pupae, but the pupae of the related species *A. velutina* and *A. citrina* are in leaves or debris on the ground. In a PRA on several *Citrus* species from Peru, USDA (2003) note that A. *sphaleropa* attacks fruit at fruit set, causing premature drop; however, Meneguim and Hohmann (2007) mention damage to newly formed or ripening *Citrus* fruit. It was therefore considered here that the pest may be associated with *Citrus* fruit at harvest, with an uncertainty.

**Fruit pathway:** Yes, as larvae, with an uncertainty.

**Other pathways:** plants for planting, soil associated with plants.
Uncertain pathways: soil, cut flowers and branches, herbs.

**Hosts:** Polyphagous on a wide range of hosts, including *Citrus, Citrus sinensis, Prunus persica, Diospyros kaki, Pyrus* (Meneguim and Hohmann, 2007), *Vaccinium corymbosum* (new host; Rocca and Brown, 2013), *Zea mays, Acacia, Medicago sativa, Chrysanthemum, Pelargonium, Malus sylvestris, Prunus, Vitis vinifera, Rosa, Mentha piperita, Capsicum annuum, Solanum lycopersicum, S. tuberosum* (Trematerra and Brown, 2004).

**Distribution:** South America: Argentina (Rocca and Brown, 2013); Brazil, Uruguay (Meneguim and Hohmann, 2007). Uncertain records (collection specimen): Colombia (Brown et al., 2008); Bolivia, Peru; Central America: Panama (Trematerra and Brown, 2004).

**Damage:** External feeding damage on leaves and fruits is recorded for *Citrus* (Meneguim and Hohmann, 2007) and other hosts, such as peach, pear, persimmon (Botton et al., 2003), apple and grapevine (SATA, 2012). Feeding on fruit decreases its value and favours fungal infections (Botton et al., 2003). The pest also causes premature fruit drop (UC IPM, 2013). Damage to Citrus was observed in Brazil, Uruguay and Peru; in Parana, Brazil, occasionnally causes outbreaks, requiring control measures (Meneguim and Hohmann, 2007). *A. sphaleropa* is a major pest in apple orchards and vineyards in Southern Uruguay, and in Brazil also on *Diospyros kaki* (limiting or impairing fruit production; Bentancourt et al., 2003) and pear (Botton et al., 2003). Damage was observed in 85% of sampled persimmon orchards in one region of Brazil (Bavaresco et al., 2005).

| | | |
|---|---|---|
| **Recorded impact:** High (on another crop) | **Intercepted:** Not known | **Spreading/invasive:** Not known |

**References:**


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USDA. 2015. Risk Assessment for the Importation of Fresh Lemon (Citrus limon (L.) Burm. f.) Fruit from Northwest Argentina into the Continental United States. August 3, 2015. Rev: 14. United States Department of Agriculture.

USDA. 2003. Importation of Fresh Commercial Citrus Fruit: Grapefruit (Citrus x paradisi Macfad.); Lime (C. aurantiifolia [Christm.] Swingle); Mandarin Orange or Tangerine (C. reticulata Blanco); Sweet Orange (C. sinensis [L.] Osbeck); Tangelo (C. x tangelo J.W. Ingram & H.E. Moore); from Peru into the United States. A Pathway-Initiated Plant Pest Risk Analysis. October, 2003

Trematerra P, Brown JW. 2004. Argentine Argyrotaenia (Lepidoptera: Tortricidae): Synopsis and descriptions of two new species. Zootaxa 574: 1–12.


## ***Biprorulus bibax* (Hemiptera: Pentatomidae)**

**Location of life stages on plant parts:** eggs on leaves, fruits or twigs; adults and nymphs feed on fruit (except first nymphal instar), stems and leaves (Schaefer and Panizzi, 2000; Mo, 2006). It feeds on immature and mature fruit (James, 1989).

**Fruit pathway:** Yes, as eggs, larvae, adults.

**Other pathways:** plants for planting.

**Hosts:** *Citrus, Citrus deliciosa, Citrus limon, Citrus reticulata, Citrus x paradisi* (CABI CPC), *Citrus aurantium, Citrus decumana, Citrus limonia, Citrus nobilis, Eremocitrus glauca, Microcitrus australasica* (Cassis and Gross, 2002). *E. glauca* and *C. australasiaca* are native hosts (Schaefer and Panizzi, 2000).

Before the mid-1980, B. bibax was confined to southern Queensland and northern and coastal New South Wales. However, it rapidly extended its geographical range in 1985-1990 to include the major citrus-growing areas in Australia (Schaefer and Panizzi, 2000).

**Distribution:** Oceania: Australia (New South Wales, Victoria, South Australia) (James, 1990), Asia: Bangladesh (DAE, 2010).
Uncertain record: 'Oceania' is mentioned in DAE (2010) (on pests in Bangladesh) in addition to Australia. No record was found for Oceania other than Australia.

**Damage:** Minor before the 1980s, *B. bibax* became a major pest of Citrus, causing damage especially to lemon and mandarins, as well as oranges. It is an important pest of Citrus in irrigated inland areas of southeastern Australia. Feeding on immature fruit may cause drop; on mature fruit it causes drying, staining, and gumming of segments; lemon harvested with considerable internal damage may appear undamaged externally; rarely internal damage on mature oranges (Schaefer and Panizzi, 2000). The pest has increased importance and complete crop losses have been observed (James, 1989). An integrated management program for *B. bibax* has been developed and is used widely in the Australian citrus industry (Schaefer and Panizzi, 2000 citing James, 1994). *B. bibax* is mentioned as a major pest of mandarin and sweet orange in Bangladesh (DAE, 2010).

**Other information:** The pest rapidly extended its range in Australia in 1985-1990 (Schaefer and Panizzi, 2000).

| | | |
|---|---|---|
| **Recorded impact:** High (in the past) | **Intercepted:** Not known | **Spreading/invasive:** Yes |

**References:**


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## ***Coscinoptycha improbana* (Lepidoptera: Carposinidae)**

**Location of life stages on plant parts:** eggs on ripening fruit (also fruit stalk), larvae in fruit, emerge from fruit and pupate close to fallen fruit (rarely in debris, leaf litter, loose soil) (Biosecurity New Zealand, 2008).

**Fruit pathway:** Yes, as eggs or larvae. Transport of fruit by passengers is one of the pathways suspected for introduction into New Zealand (Biosecurity New Zealand, 2008).

**Other pathways:** plants for planting. Biosecurity New Zealand (2008) also mentions it may have been transported to New Zealand by wind (although it is not known why this did not occur before).

**Hosts:** In Australia, native and exotic species from various families, such as *Schizomeria ovata, Citrus, Cassine australis, Psidium, Syzygium*. In New Caledonia, it was found on the endemic shrub *Eugenia hurlimannii* in New Zealand, it was also recorded on *Prunus persica* (Dymock, 2012), *Citrus, Citrus limon, Citrus unshui; Psidium, Acca sellowiana, Macadamia integrifolia, Eriobotrya japonica, Prunus domestica, Prunus persica, Pyrus pyrifolia, Cassine australis, Schizomeria ovata* (Biosecurity New Zealand, 2008).

**Distribution:** Oceania: Australia (native), New Zealand (first finding in 1997) (Suckling et al 2013), New Caledonia (first record) (Mille et al., 2012). In New Zealand, steadily spreading southwards (NorthernAdvocate, 2015).

**Damage:** In Australia, *C. improbana* is not a significant pest, and not a pest in commercial crops, but it is known to feed on fruit such as Citrus in home gardens (Biosecurity New Zealand, 2008). It also causes

seasonal damage to ripening guava fruit (USDA, 2015). In New Zealand, it has become a pest of soft fruit in Norfolk Island, affecting commercial peach production, and infests a range of soft fruit and nuts year-round, including citrus, peach, plum, pear and nashi, guava, macadamia and loquat (Dymock, 2012). It is considered as a serious pest of *Macadamia integrifolia* and feijoa (Acca sellowiana); the extent of damage on other commercial crops is not reported (Biosecurity NZ, 2008).

| | | |
|---|---|---|
| **Recorded impact:** Moderate (on another crop, uncertain) | **Intercepted:** Not known | **Spreading/invasive:** Yes |

**References:**


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## ***Cryptothelea variegata* (Lepidoptera: Psychidae)**

**Location of life stages on plant parts:** Psychidae are primarily defoliators, but may feed externally on fruit (USDA, 2013).

**Fruit pathway:** Possibly, as larvae. Because this is based on a statement for Psychidae generally, it is uncertain.

**Other pathways:** plants for planting.

**Hosts:** Polyphagous, incl. *Citrus, Mangifera indica, Anacardium occidentale, Camellia sinensis, Casuarina, Cinnamomum, Shorea robusta* (NBAIR, 2016), *Manihot esculenta, Ricinus communis, Albizia, Syzygium aromaticum, Cinchona, Uncaria gambir* (CABI CPC), *Castanea* (as chestnut) (Nasu et al., 2011), *Pinus, Bischofia javanica, Paulownia tomentosa, Acacia nilotica* (FAO, 2007).

**Distribution:** Asia: India (NBAIR, 2016), China, Indonesia, Malaysia, Vietnam (CABI CPC), Japan (Nasu et al., 2011). CABI CPC also mentions 'South East Asia'.

**Damage:** In Southern China on Citrus, *C. variegata* is considered as very widespread and important, and minor on coconut, coffee, jackfruit and mango (Li et al., 1997). In India, it is rated as a minor pest (NBAIR, 2016). *C. variegata* can cause damage on citrus and tea, but is much more polyphagous (Sobczyk, no date). In Sumatra, it causes significant defoliation of pines (in natural forests) and damage on crop trees e.g. *Paulownia tomentosa, Acacia nilotica* (FAO, 2007).

**Other information:** The name Eumeta variegata is used in most publications.

| | | |
|---|---|---|
| **Recorded impact:** Moderate (uncertain) | **Intercepted:** Not known | **Spreading/invasive:** Not known |

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## *Ctenopseustis obliquana* (Lepidoptera: Tortricidae)

**Location of life stages on plant parts:** For Citrus, larvae on leaves and fruit; they may web leaves to fruit, and burrow in the rind of the fruit, occasionally in the flesh, and may cause fruit drop (Hamilton, 1937). On apple, kiwi, grapefruit and plum, the maturing fruit produces corky tissue over the damage; the calyx of various fruit (especially pome fruit) may be invaded by young larvae (Green, 1979). Larvae feed on leaves, buds and fruit on a number of crops (Stevens et al., 1995; Gilligan and Epstein, 2014). This is the case for avocado (Stevens et al., 1995) and apple; on the latter young larvae may also enter the fruit through the calyx (Biosecurity Australia 2006). It is unclear if damage is observed on mature fruit, but the pest is mentioned as being present throughout the year (Hamilton, 1937), and this is not excluded here.

**Fruit pathway:** Yes.

**Other pathways:** plants for planting, cut flowers and branches.

**Hosts:** Highly polyphagous, in more than 20 families (Gilligan and Epstein, 2014), including deciduous and coniferous trees (NZFFA, 2009). Hosts include *Citrus, Diospyros kaki, Ribes, Syzygium smithii, Cyclamen, Rosa, Citrus, Veronica, Camellia japonica* (Gilligan and Epstein, 2014), *Vaccinium corymbosum* (Tomkins and Koller, 1985), *Vitis, Prunus, Malus, Vaccinium* (CABI CPC), *Actinidia, Rubus, Persea americana, Pinus, Eucalyptus, Populus, Salix* (Green and Dugdale, 1982).

**Distribution:** Oceania: New Zealand (NZFFA, 2009). Reports of introduction into Hawaii are not confirmed (Gilligan and Epstein, 2014).

**Damage:** *C. obliquana* causes damage by feeding on leaves, buds and fruit, and by webbing leaves to fruits (Gilligan and Epstein, 2014). It is a cause of rejection of fruit at export for *Vaccinium* (Tomkins and Koller, 1985) and avocado (up to 30% of the fruit because of larval damage from unsprayed orchards - Stevens et al., 1995; egg rafts are a quarantine problem on fruit for export - NZ avocado growers association, 2004). On avocado C. obliquana increases fruit drop; on unsprayed trees, up to 70% fruits can have feeding damage (for *C. herana* and *C. obliquana*; NZ avocado growers association, 2004). It is an economically important pest of apple (Shaw et al. 1994), and causes occasional damage in *Pinus radiata* (Brockerhoff et al. 2002). It is considered as a pest of kiwi (controlled; Smith and Graham, 1980). No recent information was found for Citrus. In the past it was considered as a pest of a wide variety of fruit crops, such as pome and stone fruit, kiwi, citrus, grape, feijoa, berry crops (Green, 1979), and causing occasionally considerable damage on Citrus (Hamilton, 1937).

**Other information:** Intercepted on blueberry (2 interceptions in and on fruit; USDA, 2008). Regulated in the USA for Citrus fruit (USDA fruit and vegetable manual https://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/fv.pdf).

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|---|---|---|
| **Recorded impact:** Moderate (on another crop) | **Intercepted:** Yes | **Spreading/invasive:** Not known |

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## ***Deudorix isocrates* (Lepidoptera: Lycaenidae)**

**Location of life stages on plant parts:** on pomegranate, eggs on flower or young fruit, larvae bore into fruit (Zalom et al., 2009); The caterpillars bore into ripening fruits, feed on the seeds (NBAIR, 2016). This seems to also apply to citrus.

**Fruit pathway:** yes.

**Other pathways:** plants for planting.

**Hosts:** *Punica granatum* (Zalom et al., 2009) is the main host. Others include *Citrus, Citrus sinensis, Citrus reticulata, Citrus deliciosa, Emblica officinalis, Psidium guava, Cleistanthus collinus, Sapindus* (CABI CPC and abstracts), *Tamarindus, Manilkara zapota* (NBAIR, 2016).

**Distribution:** Asia: Bangladesh, India (CABI CPC), Sri Lanka (Bambaradenyia, 2006; Zalom et al., 2009).

**Damage:** *D. isocrates* causes direct damage to fruit. Affected fruit rot and drop. The holes are often plugged by the anal segment of the caterpillar or its excreta are seen on infested fruits (NBAIR, 2016). This information seems to apply to all fruits mentioned, including citrus, but specific data on impact was found only for pomegranate. *D. isocrates* and *D. epijarbas* are important pests of pomegranate in East Asia, especially in the Indian peninsula; they may cause loss of entire crops unless the flowers are sprayed (Holland et al., 2009). Infestation on pomegranate may cause losses up to 50 % of the fruit (http://agropedia.iitk.ac.in/content/pomegranate-fruit-borer).

**Other information:** The synonym Virachola isocrates is used in NBAIR (2016) and Bambaradenyia (2006).

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|---|---|---|
| **Recorded impact:** High (on another crop, uncertain) | **Intercepted:** Not known | **Spreading/invasive:** Not known |

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## ***Diaprepes abbreviatus* (Coleoptera: Curculionidae)**

**Location of life stages on plant parts:** Eggs on leaves, larvae on roots (Weissling et al., 2012). Most references mention that adults feed on leaves (CU Lasallista, 2012; Guerrero et al., 2012; Weissling et al., 2012). However, Grafton-Caldwell et al. (2004) note that on rare occasions, adults feed on fruit (only for Citrus and papaya) and feeding on fruit is also mentioned in UC IPM (2008, which relates to Citrus).

**Fruit pathway:** Yes, as adults. Because feeding on fruit is occasional and that adults may not remain on fruit at harvest, association with fruit was considered with an uncertainty.

**Other pathways:** plants for planting, soil. In Florida, presumably introduced with ornamental plants (Weissling et al., 2012). Uncertain pathways: cut flowers and branches (if adults would remain associated with those).

**Hosts:** Highly polyphagous (Weissling et al., 2012) mentions 270 plant species. Hosts incl. *Citrus sinensis, Citrus, Coffea, Manihot esculenta, Persea americana, Saccharum officinarum, Zea mays, Cajanus cajan* (EPPO GD), vegetables, *Solanum tuberosum, Fragaria* (as strawberry), *Psidium guajava, Carica papaya* (as papaya), *Swietenia* (as mahogany), woody field-grown ornamentals, containerized ornamentals, non-cultivated wild plants (Weissling et al., 2012).

**Distribution:** North America: USA (California, Florida, Louisiana, Texas); Caribbean: Puerto Rico, Jamaica, Dominican Rep., lower Antilles (Guerrero et al., 2012), Martinique, Guadeloupe (Mauleon and Mademba-Sy, 1988). Native from the Caribbean and introduced to the USA (e.g. Florida, 1964; California, 2006) (Guerrero et al., 2012; UC IPM, 2013).

**Damage:** Larval feeding on roots causes stunting and death of plants, and consequently yield reduction; adult damage to leaves is minor (CABI CPC; McCoy and Duncan, 2015). The pest also favours entry of fungi into the roots, especially *Phytophthora* (Serrano et al., 2010). *D. abbreviatus* is considered to cause estimated annual losses of $ 75-100 million USD to Citrus production in the Caribbean and Florida (McCoy and Duncan, 2015). In the Caribbean, it is one of the most economically important pests; in Florida, it causes damage to citrus, ornamental plants, and some other crops and has infested more than 40 000 ha (100 000 acres) of Citrus orchards (Weissling et al 2012) D. abbreviatus has caused serious damage (decline) on Citrus in the French Antilles (Mauleon and Mademba-Sy, 1988).

**Other information:** Past interceptions in the USA (CABI CPC). Intercepted in California on plants, truck trailers and cargo holds of aircrafts (Grafton-Caldwell et al., 2004).

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| **Recorded impact:** High | **Intercepted:** Yes | **Spreading/invasive:** Yes |

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## *Dichocrocis punctiferalis* (Lepidoptera: Crambidae)

**Location of life stages on plant parts:** eggs on fruit, larvae bore into fruit (or on maize in ear and stems), adults feed on nectar. The pest overwinters as mature larvae in stems, fruit or under the bark of fruit trees (CABI CPC). Depending on crops, feeding on leaves and shoots is also mentioned (USDA, 2014; NBAIR, 2016).

**Fruit pathway:** Yes, as eggs or larvae. Although affected fruit are considered unlikely to be harvested or packed in USDA (2014), the pest has been intercepted on fruit (see Other information).

**Other pathways:** plants for planting.

**Hosts:** Polyphagous. Hosts incl. *Citrus* (USDA, 2014; Li et al., 1997), *Citrus nobilis* (CABI CPC), *Carica papaya, Curcuma longa, Gossypium; Macadamia ternifolia, Morus alba, Prunus persica, Psidium guajava, Punica granatum, Ricinus communis, Zea mays, Zingiber officinale* (EPPO GD), *Averrhoa carambola, Elettaria cardamomum, Helianthus annuus, Nephelium lappaceum, Sorghum bicolor, Castanea mollissima, Diospyros, Eriobotrya japonica, Ficus carica, Malus domestica, Mangifera indica, Vitis vinifera* (CABI CPC).

**Distribution:** Asia: China, India, Indonesia, Japan, Korea Dem. Rep., Malaysia, Myanmar, Sri Lanka, Taiwan; Oceania: Australia, Papua New Guinea (EPPO GD). The pest occurs mostly in the subtropics, but it is also recorded from Hokkaido prefecture (north Japan), and northern China (Korycinska 2012).

CABI CPC includes several countries that were not listed when the distribution was studied in EPPO GD, and are therefore considered uncertain: Asia: Brunei Darussalam, Cambodia, Korea Rep., Laos, Philippines, Thailand, Vietnam (originating from one publication).

Doubtful record: Pakistan (interception only; Korycinska 2012).

Absent, intercepted only: UK is recorded in Fauna Europeae (de Jong et al., 2014), but the pest is not present (intercepted only) (Korycinska, 2012).

**Damage:** On Citrus, larval feeding causes discoloration and splitting of fruit, and fruit drop (USDA, 2014). On castor, larvae bore into shoots and capsules, which are webbed together with dark excreta; on sorghum, larval feeding leads to webbing of grains and broken grains; it sometimes bore into fruits of guava and pomegranate (NBAIR, 2016). In China, it causes serious damage to Chinese chestnut (Zu and Qin 2009), and is one of the most important insect pest on peaches in southern China and an important pest on apples in northern China (CABI CPC). In Southern China on Citrus, it is rated as important locally or only in some years (Li et al., 1997). In North Queensland, it is one of the major pests on *Nephelium lappaceum* (rambutan) and *Durio zibathinus* (durian), and 5% yield loss is also reported in Chinese maize (Korycinska, 2012). Without control measures it is able to destroy 90% of rambutan fruit clusters (Biosecurity New Zealand (2009). There is an uncertainty on the impact; however the information available tends to indicate a high impact on some hosts.

**Other information:** Intercepted on fruit from several countries in the UK (18 interceptions in 2007-2012, on *Annona squamosa, Mangifera indica, Psidium*) and in the Netherlands (Korycinska, 2012). D. punctiferalis is a very poorly defined species complex, and there is confusion in the literature over the identity of the species studied (Korycinska, 2012). The name *Conogethes punctiferalis* is used in some publications (incl. CABI CPC, Korycinska, 2012).

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| **Recorded impact:** High (on another crop, uncertain) | **Intercepted:** Yes | **Spreading/invasive:** Not known |

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## *Egira curialis* (Lepidoptera: Noctuidae)

**Location of life stages on plant parts:** eggs on leaves; larvae on leaves, flowers, fruit (UC IPM, 2013, Grafton-Cardwell et al., 2001). Although UC IPM (2013) mentions that maturing fruit is rarely attacked, Grafton-Cardwell et al. (2001) states that larvae also bore into mature fruits. Larvae drop to the ground if disturbed. No information was found on the location of pupae.

**Fruit pathway:** Yes.

**Other pathways:** Plants for planting, cut branches.

**Hosts:** Polyphagous, hosts incl. *Citrus* (UC IPM, 2013) and a wide range of deciduous trees such as *Quercus, Prunus, Purshia tridentata, Celtis reticulata* (PNW Moths, no date).

**Distribution:** North America: USA, Canada (PNW Moths, no date – British Columbia to California, East to Colorado and New Mexico).

**Damage:** on Citrus, *E. curialis* may cause economic damage by feeding on fruit. Damage can be substantial as it feeds on young fruit, and as larvae move around while feeding, attacking numerous leaves, blossoms and fruit (UC IPM, 2013). *E. curialis* has been an important economic pest of citrus in the San Joaquin Valley of California since the 1930s (Grafton-Cardwell et al., 2001). Natural enemies and current control measures are reported to reduce populations to an acceptable level (UC IPM, 2013).

**Other information:** Natural enemies and current control measures reduce populations (UC IPM, 2013).

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| **Recorded impact:** Moderate | **Intercepted:** Not known | **Spreading/invasive:** Not known |

**References:**

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## *Erthesina fullo* (Hemiptera: Pentatomidae)

**Location of life stages on plant parts:** Feed on stems, leaves or fruits (MPI, 2014).

**Fruit pathway:** Yes. However, it is also known as a hitchhiker, and may infest fruit consignments in this manner.

**Other pathways:** known hitchhiker (in containers, or amongst general cargo and used machinery and vehicles) (MPI, 2014). Timber, leaves (Padil, no date).

**Hosts:** According to MPI (2014), there is limited information on the host range of *E. fullo*, but it is known to feed on various plants. Hosts include *Citrus* (Li et al., 1997), *Mangifera indica, Diospyros kaki, Cinnamomum camphora, Hibiscus rosa-sinensis, Eucalyptus, Psidium guajava, Averrhoa carambola, Zea mays, Punica granatum, Ziziphus jujube, Prunus armeniaca, Prunus persica, Prunus pseudocerasus, Prunus salicina, Pyrus bretschneideri, Pyrus calleryana, Salix, Ailanthus altissima* (Rider, 2015). *Tectona grandis, Melia azeradach, Populus* (CABI CPC).

**Distribution:** Asia: China, Japan, Myanmar, Sri Lanka, India, Pakistan, Bangladesh (Ahmad et al., 2004), Taiwan, Vietnam (Padil, no date).

**Damage:** In Southern China on Citrus, *E. fullo* is widespread and important (Li et al., 1997). On jujube, fruit loss is caused by fruit drop (Song and Wang, 1993). It is recorded as a major pest of pine trees and hardwood trees in Taiwan, of pear in China, and of *Cinnamomum cassia* in Vietnam (Padil, no date). It has an impact on timber trees and horticultural crops (MPI, 2014).

**Other information:** Intercepted in consignments in New Zealand, and one individual found in 2014; considered absent (MPI, 2014).

| | | |
|---|---|---|
| **Recorded impact:** Moderate (uncertain) | **Intercepted:** Yes | **Spreading/invasive:** Not known |

**References:**
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## ***Leptoglossus zonatus* (Hemiptera: Coreidae)**

**Location of life stages on plant parts:** Eggs on leaves and stems. Nymphs and adults feed on leaves, flowers, fruit and seeds, and are mobile (Chi and Mizell, 2012; Buss et al., 2011). On Citrus, ripening fruit may be attacked by adults (for four Leptoglossus species; Guerrero et al., 2012).

**Fruit pathway:** Yes, as adults, possibly nymphs.

**Other pathways:** plants for planting.

**Hosts:** Polyphagous. *Solanum lycopersicum* is a preferred host, as well as *Jatropha curcas*. Other hosts mentioned are *Satsuma mandarin* (feeding host, it is unclear if it can complete its life cycle on this plant), also *Zea mays, Gossypium, Solanum melongena, Prunus persica, Carya illinoinensis, Punica granatum, Citrullus lanatus* (Chi and Mizell, 2012), *Citrus aurantiifolia, Citrus sinensis, Cucumis melo, Cucurbita, Persea americana, Psidium guajava, Sorghum bicolor* (CABI CPC), *Cyphomandra betacea* (Arnal et al., 2005).

**Distribution:** North America: Mexico (Tepole-Garcia et al., 2012; Tarango-Rivero and Gonzalez Hernández, 2009), USA (south and west, incl. Alabama, Arizona, California, Florida, Louisiana, Texas) (Chi and Mizell, 2012; Xiao and Fadamiro, 2010); Central America: through Mexico and Central America (incl. Nicaragua, Honduras) into the northern half of South America (Chi and Mizell, 2012; Xiao and Fadamiro, 2010), El Salvador (Gonzalez-Chavez, 2002). South America: Brazil (De Oliveira et al., 2004), Venezuela (PAV, 2013), Colombia (Duarte Sanchez, 2006).
In addition: Coreoidae Species File (2016), citing Packauskas (2010) (not available to the assessor) mentions Argentina, Bolivia, Costa Rica, Ecuador, Guatemala, Panama, Peru (a quick search did not allow to find specific records for these countries). "Caribbean" is indicated in King and Saunders (1984), but no specific record was found.
*L. zonatus* has spread at least within the USA (for example first recorded in Florida in 2005 – Buss et al., 2011).

**Damage:** Feeding causes deformations, spots, aborted fruit, malformed seeds (Buss et al., 2011). Feeding on fruit and seeds affects the quality and cause yield reduction (Marchiori, 2002). In the USA, *L. zonatus* has become a major pest of Citrus, especially *Satsuma mandarin*, and is considered an emerging pest on various other of crops such as maize, cotton, eggplant, peach, pecan, pomegranate, tomato, watermelon (Xiao and Fadamiro 2011; Chi and Mizell, 2012). In South America, it is a pest of various crops, and also a vector of plant trypanosomatids (de Oliveira et al., 2004). On maize in Brazil, losses of 15% were registered (Marchiori, 2002). In Colombia, damage is caused to Citrus (Duarte Chavez, 2002). In Central America (King and Saunders, 1984), it is a minor pest that can be serious on tomato. Schaefer and Panizzi (2000) mention damage on many crops, including cotton, tomato, citrus, avocado, cucurbits, sorghum, eggplant, pomegranate, passionfruit, maize, soybean.

**Other information:** The synonym *Veneza zonata* is used in some publications (e.g. Coreoidae Species File, 2016). CABI CPC contains separate entries for *Veneza zonata* and *Leptoglossus zonatus*; however, they are synonyms according to others.

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| **Recorded impact:** Moderate | **Intercepted:** Not known | **Spreading/invasive:** Yes |

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## ***Lobiopa insularis (*Coleoptera: Nitidulidae)**

**Location of life stages on plant parts:** Eggs are laid in ripe fruit, in cavities created by feeding (for strawberry; Agrolink Br, no date). Hernandez Torres (2013) mentions rotten fruit, but it seems to also attack healthy fruit (at least strawberries). Considered associated with lemon fruit in USDA (2015).

**Fruit pathway:** Yes, with an uncertainty (whether it is associated with healthy citrus fruit).

**Other pathways:** plants for planting carrying fruit.

**Hosts:** *Citrus limon* (USDA, 2015), *Citrus sinensis* (Lima and Davies, 1981), *Fragaria* (as strawberry), *Psidium guajava, Mangifera* (as mango) (Agrolink Br, nd), *Prunus persica* (Hernandez-Torres, 2013).

**Distribution:** South America: Argentina (USDA, 2015), Brazil (Fornari et al., 2013), Colombia, (Hernandez-Torres, 2013); Central America (Peck, 2006, Hernandez Torres 2013); Caribbean: Grenada, St. Kitts and Nevis (CABI CPC), Cuba, Dominica, Grenada, Guadeloupe, Puerto Rico, St. Thomas, St. Vincent (Peck, 2006), West Indies (Hernandez Torres, 2013); North America: Mexico, USA (Georgia, Florida, Alabama, Texas) (Hernandez Torres 2013). Introduced to the Canary Islands (Lason and Przewozny, 2009), so it was considered that it can be spread by trade.

**Damage:** *L. insularis* is considered an important pests of strawberry in Brazil (Fornari et al., 2013; Bortoli et al., 2012), with damage reaching 20% (Agrolink, nd). No data were found for Citrus and other hosts.

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| **Recorded impact:** Moderate (on another crop) | **Intercepted:** Not known | **Spreading/invasive:** Yes |

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## *Neosilba zadolicha* (Diptera: Lonchaeidae)

**Location of life stages on plant parts:** larvae in fruit (Uchôa-Fernandes et al., 2002). The location of eggs is unknown (inside or on fruit, or other plant parts) (Uchôa, 2012).

**Fruit pathway:** yes, at least as larvae.

**Other pathways:** plants for planting with fruit.

**Hosts:** Polyphagous, hosts include *Citrus reticulata* (Lopes et al., 2008), *Citrus jambhiri, Terminalia catappa, Strychnos pseudoquina, Byrsonima orbignyana, Inga laurina, Ficus insipida, Syzygium jambos, Psidium kennedyanum, Ximenia americana, Passiflora aleyronea, Passiflora edulis, Alibertia edulis, Genipa americana, Pouteria glomerata, Pouteria ramiflora, Pouteria torta, Physalis angulata, Psittacanthus acinarius,* (Uchôa, 2012), *Prunus persica* (Montes et al., 2010), *Byrsonima crassifolia, Annona crassiflora, Annona muricata, Psidium guajava, Metrodorea flavida, Citrus sinensis, Artocarpus communis, Pouteria macrophylla, Solanum gilo, Capsicum* (Strikis et al., 2011).

**Distribution:** South America: Brazil (Adaime et al., 2012), Colombia (Galeano-Olaya and Canal, 2012).

**Damage:** *N. zadolicha* is reported among the species of *Neosilba* of importance in South America (Riquelme, 2012). In Mato Grosso do Sul (Brazil), the number of adults of *Neosilba* reared from Citrus fruits in sites surveyed was much higher than that of *Anastrepha* and *Ceratitis capitata*, suggesting economic importance of *Neosilba* as a primary pest in citrus fruits (Uchoa-Fernadez et al 2002); among those, *N. zadolicha* was identified to species level (Uchoa-Fernandez et al, 2003). *N. zadolicha* is also an occasional pest of *Byrsonima crassifolia* (tropical fruit) (Adaime et al., 2012). *N. zadolicha* is the frugivorous pest with the highest economic impact to tangerines in Matinhas, Brazil (above *C. capitata*). It does not make deep punctures in fruit as *C. capitata*, and if they do, these are not visible to the 'naked eye' (Lopes et al., 2008).

**Other information:** A number of *Neosilba* species were identified during this screening, such as *N. batesi, N. glaberrima, N. inesperata,* and *N. pendula*. They were thought to be secondary pests, attacking fruit damaged by other pests, although some species of *Neosilba* originally thought to be secondary have been shown to be primary pests. In Sao Paulo, Brazil, *Neosilba* spp. were collected on *C. sinensis, C. aurantium, C. reticulata*, 'Murcott' tangor, *Fortunella* sp., and *C. limonia* (Raga et al., 2004), and *Neosilba* was shown as primary invaders on citrus (Raga et al., 2004, Souza-Filho et al., 2009). Only for *N. zadolicha* was there evidence of impact as a primary pest that led to its addition to this Alert List. Information is lacking on other species, although they are considered as a possible emerging threat. The identification of *Neosilba* appears to be complex, and they seem to be identified mostly to genus level in most of the studies found. Many new species were described only recently, including some with still unknown hosts; a key to 40 species is given in Galeano-Olaya and Canal, 2012).

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| **Recorded impact:** Moderate (uncertain) | **Intercepted:** Not known | **Spreading/invasive:** Not known |

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## *Nipaecoccus viridis* (Hemiptera: Pseudococcidae)

**Location of life stages on plant parts:** often hidden, e.g. under sepals of citrus fruits, and can easily be transported on exported plant commodities (CABI CPC).

**Fruit pathway:** yes, not mobile.

**Other pathways:** plants for planting.

**Hosts:** Highly polyphagous, hosts incl. *Citrus* (incl. *aurantium, reticulata*), *Mangifera indica, Asparagus, Chrysanthemum, Carica papaya, Cucumis, Pyrus communis, Rosa, Solanum, Vitis, Persea americana, Gossypium, Coffea* (Garcia Morales et al., 2016).

**Distribution:** Africa: Algeria, Angola, Benin, Burkina Faso, Comoros, Cote d'Ivoire, Egypt, Eritrea, Kenya, Madagascar, Malawi, Mali, Mauritius, Niger, Nigeria, Senegal, Seychelles, South Africa, Sudan, Tanzania, Togo, Uganda, Zimbabwe; Caribbean: Bahamas; North America: Mexico, USA; Asia: Afghanistan, Bangladesh, Cambodia, China, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Malaysia, Nepal, Oman, Pakistan, Philippines, Saudi Arabia, Sri Lanka, Taiwan, Thailand, Vietnam; Oceania: Australia, Guam, Kiribati, New Caledonia, Northern Mariana Islands, Papua New Guinea, Solomon Islands, Tuvalu (EPPO GD). Found in Florida for the first time in 2009 (Stocks and Hodges, 2010).

**Damage:** On citrus, feeding on twigs causes deformation. The pest may stunt trees, produces honeydew, and on fruit may cause deformation, discoloration and drop. In India, 5% damage was observed in two vineyards in Bangalore. In Hawaii, it was long considered the most destructive mealybug. On Citrus, losses are mostly due to fruit drop (which may reach 50% for Navel oranges in South Africa) and quality issues due to fruit deformation (CABI CPC citing references from the 1970s). In Southern China on Citrus, it is considered as very widespread and important (Li et al., 1997). It is an agricultural pest in Asia, attacking food, forage, ornamental and fiber crops, and a pest of stored potatoes. It often causes considerable damage (Stocks and Hodges, 2010).

**Other information:** Intercepted in the USA including on Citrus fruit (Evans and Dooley, 2013; USDA, 2015), and in the Korea Rep. on Citrus (commodity not mentioned) (Suh et al., 2013).

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| **Recorded impact:** High (uncertain) | **Intercepted:** Yes | **Spreading/invasive:** Not known |

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## ***Paracoccus burnerae* (Hemiptera: Pseudococcidae)**

**Location of life stages on plant parts:** branches, leaves, fruit (Johnson, 2010).

**Fruit pathway:** yes, not mobile.

**Other pathways:** plants for planting, cut plant part (e.g. asparagus).
Uncertain pathways: cut flowers.

**Hosts:** Polyphagous, incl. *Citrus sinensis* (CABI CPC), *Citrus aurantium, Nerium oleander, Asparagus, Gossypium, Hibiscus, Musa ensete, Psidium guajava, Olea europaea, Passiflora edulis, Coffea arabica, Polysphaeria multiflora, Solanum tuberosum* (Garcia Morales et al., 2016).

**Distribution:** Africa: Angola, Ascension Island, Comoros, Kenya, Namibia, Reunion, Saint Helena, Seychelles, South Africa, Zambia, Zimbabwe; Asia: India, Iran (Garcia Morales et al., 2016), Yemen (Marotta et al., 2001). The pest has spread within Africa (Johnson, 2010). Absent, intercepted only: UK; CABI CPC mentions the UK (unconfirmed record from datamining); however, the abstract concerned mentions interception of *P. burnerae* on oranges from South Africa (Malumphy, 1993). The pest is considered absent from the EU.

**Damage:** Data on impact was found for South Africa. *P. burnerae* is mentioned amongst the three most important citrus mealybug in South Africa (Garcia Morales et al., 2016, citing others Hattingh, 1993; Johnson & Giliomee, 2010). It became more prevalent during the early 1990s, and is outcompeting Planococcus citri in some parts of South Africa (Johnson, 2010). It is a serious pest of citrus, but is also a quarantine pest for citrus fruit imported from South Africa, affecting exports of Citrus fruits (Johnson and Gillomee, 2012; Acton, 2013).

**Other information:** *P. burnerae* is a vector of banana streak virus (Muturi et al., 2013). It has been intercepted in France on Citrus fruits (Plant Health Laboratory LSV, ANSES, France), in the UK on oranges (Malumphy, 1993). It has also been intercepted in the USA from several countries, mostly on *Citrus*, also *Nephelium* and *Pyrus* (Miller et al., 2014; Evans and Dooley, 2013). Proposed in answer to the EPPO questionnaire on pests of concern for Citrus.

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| **Recorded impact:** High (also vector) | **Intercepted:** Yes | **Spreading/invasive:** Yes |

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## ***Paracoccus marginatus*** **(Hemiptera: Pseudococcidae)**

**Location of life stages on plant parts:** Feeds on leaves, fruit and stem (Walker et al., 2006).

**Fruit pathway:** yes, not mobile.

**Other pathways:** plants for planting, cut flowers.

**Hosts:** Highly polyphagous with more than 55 host plants in over 25 genera, including *Citrus, Carica papaya, Hibiscus, Persea americana, Gossypium, Solanum lycopersicon, Solanum melongena, Capsicum, Phaseolus, Pisum, Mangifera indica, Prunus* (as cherry), *Punica granatum* (Walker et al., 2006), *Annona squamosa, Coffea, Gardenia, Jatropha curcas, Manihot esculenta, Plumeria, Citrus sinensis, Dahlia pinnata, Rosa* (CABI CPC).

**Distribution:** Asia: Bangladesh, Cambodia, India, Indonesia, Malaysia, Maldives, Oman, Philippines, Sri Lanka, Taiwan, Thailand; Africa: Benin, Ghana, Mauritius, Réunion, Tanzania, Togo; North America: Mexico, USA (Florida, Hawaii); Caribbean; Antigua and Barbuda, Bahamas, Barbados, British Virgin Islands, Cayman Islands, Cuba, Dominican Rep., French West Indies, Grenada, Guadeloupe, Haiti, Montserrat, Netherlands Antilles, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Sint Maarten, US Virgin Islands; Central America: Belize, Costa Rica, Guatemala, South America: French Guiana; Oceania: Guam, Northern Mariana Islands, Palau. The pest has extended its range within the Americas, and has been introduced to Asia and Africa (CABI CPC), and is still spreading (Walker et al., 2006).

**Damage:** *P. marginatus* causes deformation of new growth, leaf yellowing, leaf curl, early fruit drop, fruit covered by the pest and wax secretions (CABI CPC), chlorosis, plant stunting, leaf deformation, early leaf and fruit drop, honeydew, and plant death (Walker et al., 2006). Its importance has recently increased; it causes damage especially on cassava, papaya, hibiscus, annona (CABI CPC), also avocado, citrus, cotton, tomato, eggplant, peppers, beans and peas, sweet potato, mango, cherry, and pomegranate (Walker et al., 2006). On papaya, heavy infestations rendered papaya fruits inedible, and high infestation levels were observed in Rajasthan, India, in many gardens (>80% damage, mat of mealybug on leaves, all leaves damaged, new shoots fully covered with mealybugs, fruit fall and blackening of fruits with full mealybug cover on fruits) (Mani et al., 2012). No specific data were found for Citrus.

**Other information:** There have been many interceptions in the USA, from many origins (mainly on papaya and hibiscus) (Miller et al., 2014).

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| **Recorded impact:** High (on another crop) | **Intercepted:** Yes | **Spreading/invasive:** Yes |

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## ***Platynota flavedana*** **(Lepidoptera: Tortricidae)**

**Location of life stages on plant parts:** on Citrus, eggs on leaves, larvae in webbing tunnels, usually beneath the sepals of young fruits but also between leaves drawn together with silk, and pupae within the webbing (Strangways-Dixon, 1967).

**Fruit pathway:** Yes, as larvae.

**Other pathways:** plants for planting, cut flowers.

**Hosts:** Polyphagous incl. *Acer, Helianthus, Dianthus caryophyllus, Rhododendron, Gossypium, Fragaria, Rosa, Citrus, Prunus persica, Malus, Rubus* (Brown et al., 2008; Gilligan and Epstein, 2014; VirginiaFruit, 2016).

**Distribution:** North America: USA (Eastern part - Gilligan and Epstein, 2014; Maine to North Carolina and west to Minnesota and Arizona - VirginiaFruit, 2016); Caribbean; Jamaica (EPPO GD). Unconfirmed records from Hispaniola (Dominican Republic and Haiti) (Korycinska et al., 2014 citing others).

**Damage:** In Jamaica, it is an important but sporadic pest of Citrus; in heavy attacks large numbers of young Citrus fruits, each bearing a scar or hole in the area shielded by the sepals, are found beneath the trees (Strangways-Dixon, 1967). Larvae may cause economic damage by feeding on blossoms or fruit, and often web leaves together with blossoms and immature fruit (Gilligan and Epstein, 2014). The second generation generally causes most injury (Virginia Fruit, 2016). In Eastern USA, it is an important pest in apple production (Carde and Minks, 1995). On strawberry, it causes weakening of plants. Peach orchards in Indiana had damage rates above 2%. Roses in a greenhouse were attacked by larvae of *P. flavedana*, together with another unidentified tortricid: together, they were causing "considerable damage" to leaves and flowers in New Jersey (extract from Korycinska et al., 2014). The current impact of the pest is not clear.

**Other information:** Korycinska et al. (2014) concluded that "continued exclusion would seem the best option for the UK". *P. flavedana* was present on the EPPO Alert list from 1998 to 2002, but it was deleted as alert had been given and no further concern had been raised.

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| **Recorded impact:** Moderate | **Intercepted:** Not known | **Spreading/invasive:** Not known |

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## ***Praelongorthezia praelonga*** **(Hemiptera: Ortheziidae)**

**Location of life stages on plant parts:** Most publications mention leaves (USDA, 2015; CU Lassallista, 2012), also branches, flowers and trunks in high populations (Kondo et al., 2013). In addition, its spread mechanism may favour association with the fruit (see Other information). The association with fruit is considered uncertain.

**Fruit pathway:** yes, not mobile, with an uncertainty.

**Other pathways:** plants for planting, cut flowers and branches.

**Hosts:** Hosts in 32 families (Malumphy, 2014), including *Citrus, Citrus sinensis, Coffea, Malpighia glabra, Solanum melongena* (CABI CPC), *Citrus reticulata, Mangifera, Cocos nucifera, Lonicera, Curcubita pepo,*

*Gossypium, Hibiscus, Carica, Saccharum, Rosa, Coffea, Fortunella, Capsicum, Theobroma cacao* (Garcia Morales et al., 2016).

**Distribution:** Caribbean: Antigua and Barbuda, Barbados, Curaçao, Dominica, Grenada, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Trinidad and Tobago (CABI CPC), British Virgin Islands, Puerto Rico, Saint Croix, US Virgin Islands (Garcia Morales et al., 2016 onwards), UK Virgin Islands, Guadeloupe; Martinique; (Kondo et al., 2013); South America: Brazil, Guyana, Suriname (CABI CPC), Argentina, Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Venezuela (Garcia Morales et al., 2016); North America: USA (Virginia) (USDA, 2012), Mexico (Garcia Morales et al., 2016); Central America (Kondo et al., 2013): Panama (Garcia Morales et al., 2016). Africa: Congo Dem. Rep. (Kondo et al., 2013), Congo (Mbete et al., 2011); Reunion (Garcia Morales et al., 2016). Introduced into Afrotropical region in the early 2000s (Kondo et al., 2013).

**Damage:** On Citrus, *P. praelonga* causes defoliation, weakening of trees, fruit drop over 50%, fruit that remain acid and with a low sugar content, and in severe cases the fruits are smaller and cannot be sold; the pest also favours the development of sooty moulds (Fundecitrus, no date). In Brazil, it is the main soft scale on Citrus (Schinor et al., 2011). On acerola (Malpighia), it causes severe damage and death of plants (Rabelo Barbosa et al., 2007). In Argentina, it is reported to also affect fruit (Spanish NPPO). Damage on other hosts was not looked at.

**Other information:** In severe attacks, the pest may occur on plants under the host tree. It spreads readily through orchards with harvesting material, clothes, people, vehicles, wind, spray jet; it is important to make inspections before harvesting and spraying (Fundecitrus, no date). Kondo et al. (2013) mentions that healthy fruit should be picked before infested ones to avoid spreading the pest (within orchards). *P. praelonga* has been intercepted in the USA on Cajanus, Croton, Kalanchoe, Mentha, Rosmarinus (Evans and Dooley, 2013). Proposed in answer to EPPO questionnaire on pests of concern for Citrus.

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| **Recorded impact:** High | **Intercepted:** Yes | **Spreading/invasive:** Yes |

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## ***Prays endocarpa* (Lepidoptera: Yponomeutidae)**

**Location of life stages on plant parts:** eggs and larvae on fruit, pupae on fruits, stems or the edges of leaves (UK plant health service, unpublished PRA citing others). Larvae feed on the fruit rind (never enter endocarp) (EFSA, 2008).

**Fruit pathway:** yes, as eggs, larvae or pupae.

**Other pathways:** plants for planting.

**Hosts:** Citrus sinensis, Citrus (EPPO GD), and other Rutaceae, including *Aegle marmelos* (EFSA, 2008).

**Distribution:** Asia: India, Indonesia, Malaysia, Philippines, Singapore, Sri Lanka (EPPO GD), Vietnam (Vang, 2011), Thailand (French PRA, 2003); Oceania: Guam, Northern Mariana Islands (EPPO GD).

**Damage:** In most of its current range, *P. endocarpa* is considered a minor pest of citrus (Hill,1983), but it is noted as an occasional pest in Malaysia and Thailand, and a key pest of oranges in Indonesia (French PRA, 2003). It is also mentioned as a pest of pomelo in Vietnam (Vang, 2011). In Indonesia, mandarins are not affected, but oranges and lemons may be severely attacked. In Thailand, it attacks grapefruit and limes. Lignified galls form around the site of larval activity. Generally the eating quality is not affected. If lignification extends into the fruit pulp, the fruit becomes unsuitable for direct consumption although the juice can still be used. Premature fruit fall may result from severe infestations (UK plant health service, unpublished PRA citing others).

**Other information:** Proposed in answer to the EPPO questionnaire on pests of concern for Citrus.

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| **Recorded impact:** Moderate | **Intercepted:** Not known | **Spreading/invasive:** Not known |

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## ***Prays endolemma* (Lepidoptera: Yponomeutidae)**

**Location of life stages on plant parts:** young fruits, mature fruits and flowers (French PRA for *P. endocarpa*, 2003; Ubaub and Ocampo, 2012a). Eggs are laid at the surface of the fruit, and larvae bore into the rind (Ubaub and Ocampo, 2012b). In some cases feeding may reach the pulp, and the fruit be infested by other pests such as fruit flies (Ubaub and Ocampo, 2012a).

**Fruit pathway:** Yes, with an uncertainty. In Ubaub and Ocampo (2012a), larvae were not present in the fruit in the development stages before harvest. It is not clear if this applies at the location studied or throught the distribution of the pest.

**Other pathways:** plants for planting.

**Hosts:** *Citrus* (French PRA, 2003), *Citrus maxima* (Ubaub and Ocampo, 2012a), *Citrus sinensis, Citrus aurantiifolia, C. medica, C. hystrix, C. decumana* (Ubaub and Ocampo, 2012b).

**Distribution:** Asia: Philippines (Ubaub and Ocampo, 2012a). No other record was found.

**Damage:** *P. endolemma* is a key pest of citrus in the Philippines (French PRA, 2003). It is mentioned as a major pest of *Citrus maxima* (Ubaub and Ocampo, 2012a, for one region). Severely damaged fruit may fall and those with moderate damage may remain on the tree until harvest (Ubaub and Ocampo, 2012a). The quality of the fruit is affected mostly because of damage to the rind (Ubaub and Ocampo, 2012b). No data was found for other Citrus species.

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| **Recorded impact:** Moderate | **Intercepted:** Not known | **Spreading/invasive:** Not known |

**References:**

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## ***Proeulia chrysopteris* (Lepidoptera: Tortricidae)**

**Location of life stages on plant parts:** larvae feed on buds, flowers, leaves, fruits and shoots, and overwinter on bark; eggs are laid on leaves (CABI CPC; Cubillos Vallejos, 2011). On orange, larvae bore into the rind and may reach the pulp (Cubillos Vallejos, 2011).

**Fruit pathway:** yes, as larvae.

**Other pathways:** plants for planting, cut flowers and branches.

**Hosts:** Polyphagous, hosts incl. *Citrus sinensis*, *Acer*, *Diospyros* (Koch and Waterhouse, 2000), *Vaccinium corymbosum, Corylus avellana* (new hosts in Cubillos Vallejos, 2011), *Vitis vinifera, Actinidia deliciosa, Malus domestica, Prunus armeniaca, Prunus domestica, Prunus persica, Pyrus communis* (CABI CPC), *Euonymus, Cotoneaster, Lonicera japonica, Prunus cerasifera, Viburnum, Platanus orientalis, Rosa* (Cubillos Vallejos, 2011), *Pinus radiata, Pinus, Eriobotrya japonica, Prunus avium, Juglans regia, Acer buergerianum, Ulmus* (Cepeda and Cubillos, 2011).

**Distribution:** South America: Chile (Cepeda and Cubillos, 2011).

**Damage:** *P. chrysopteris* is native to Chile, and has moved from natural habitats into crop systems, including exotic species of berries and ornamental trees. Direct damage is due to larvae feeding on buds, leaves, flowers and fruit; fruits are cut and pierced with large galleries. On oranges, larvae bore into the rind and may reach the pulp; on apple, fruits may be emptied; on kiwi, fruit pedicels are attacked; on grapevine, it is harmful to buds (Cubillos Vallejos, 2011). *P. chrysopteris* has infested kiwifruit orchards in less than a decade. It is considered as a secondary or incidental pest problem in fruit trees, but the whole genus is considered as an emergent pest problem of fruit trees and vineyards (CABI CPC). It is occasionally important, especially on apple, and is of quarantine importance on kiwi as larvae are present at the time of harvest (Cubillos Vallejos, 2011). It is a significant pest of table grapes (Biosecurity Australia, 2005). No specific data was found for Citrus.

**Other information:** The pest is of quarantine concern to some countries, such as the USA, China, Korea Rep, Japan, Mexico (CABI CPC). *Proeulia* spp. have been intercepted in the USA on Citrus (Brown, 2011), and in the USA and Japan on blueberry (BlueberriesChile, 2011-2012).

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| **Recorded impact:** Moderate (on another crop) | **Intercepted:** Yes (as genus) | **Spreading/invasive:** Not known |

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## ***Pseudococcus maritimus* (Hemiptera: Pseudococcidae)**

**Location of life stages on plant parts:** On any part of plants, incl. leaves, fruit, roots (McKenzie, 1967). No specific information was found for Citrus, but the pest was intercepted on Citrus fruit (see Other information).

**Fruit pathway:** Yes.

**Other pathways:** Plants for planting.

**Hosts**: Highly polyphagous, incl. *Citrus, Vaccinium, Malus, Vitis, Persea, Passiflora, Pyrus, Rubus* (Garcia Morales et al., 2016), *Diospyros kaki* (Koch and Waterhouse, 2000). In Poland, found indoors on *Abutilon striatum, Citrus grandis, Passiflora auriculata, P. quadrangularis, S. arboricola*; additionally *Pyrus* and *Prunus armeniaca* are mentioned (Goszczyński and Golan 2011).

**Distribution:** North America: Canada, Mexico, USA; South America: Argentina, Brazil, Chile, Colombia, French Guiana; Caribbean: Guadeloupe, Puerto Rico; Central America: Guatemala (Garcia Morales et al., 2016); Asia: Armenia, Indonesia (Garcia Morales et al., 2016), China (Biosecurity NZ, 2009a; Abudujapa and Sun, 2007); Europe: Poland (indoors only, in greenhouses, offices) (Goszczyński and Golan 2011).
Uncertain records: Madeira (possibly misidentification) (Garcia Morales et al., 2016): 'former-USSR' (CABI CPC). Garcia Morales et al. (2016) indicate that the pest seems confined to the New World and has frequently been misidentified as *Pseudococcus affinis*.
Doubtful records: CABI CPC mentions unconfirmed records for Hungary and the Netherlands. The pest is not present in Hungary (Kozar et al., 2013). No record found for the Netherlands.

**Damage:** *P. maritimus* is not an important pest of Citrus in Southern China according to Li et al. (1997). No other reference was found for Citrus. On grapevine, feeding damage is primarily on leaves, and the pest also causes honeydew and sooty moulds on fruit (Biosecurity New Zealand 2009b). In vineyards it is the primary mealybug pest in North America (Daane et al. 2012) and one of the five important mealybugs in Brazil (da Silva et al. 2014). In China, it is present on grapevine and control methods are mentioned (Biosecurity NZ, 1999a; Abudujapa and Sun, 2007). It is also a vector of grapevine leafroll-associated virus-3 (GLRaV-3) (Grasswitz and James 2008). Since the 1970s *P. maritimus* has become an increasingly severe pest of pear and apple in the USA, and it is a pest of pear and apricot in California (Biosecurity New Zealand 2009a).

**Other information**: *P. maritimus* was intercepted in the USA (29 times in 1995-2012) (Miller et al., 2014), in the Korean Republic on Citrus fruit, Vitis fruit and Schefflera (Suh et al., 2013), in New Zealand on table grapes, apricot and pear fruit (Biosecurity New Zealand 2009a & b), and in Israel on Malus fruits (Dropsa Review, 2016).

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| **Recorded impact:** High (on another crop, also vector) | **Intercepted:** Yes | **Spreading/invasive:** Yes |

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