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CONTENTS ***Pests & Diseases***

Invasive Plants

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2014/045 First report of *Heterodera elachista* on maize in Italy: addition to the EPPO Alert List

The cyst nematode, *Heterodera elachista*, was originally described in Japan in 1974, and until its recent detection in Italy, it was only known to occur in Asia on rice crops (*Oryza sativa*). In October 2012, a sample of soil and roots was collected from a commercial maize field (*Zea mays* cv. 'Rixxer') in Bosco Mesola (Ferrara province, Emilia-Romagna region) and tested for the presence of nematodes. A trial with plant protection products was being carried out by a chemical company on this maize field. In this sample, roots were heavily infested by *Heterodera* sp. cysts which were also present in the soil (14 eggs and J2/ml of soil). Laboratory analysis (morphology, molecular tests) was carried out by the Institute of Plant Protection (CNR, Bari) and confirmed the presence of *H. elachista*. Tests were also carried out on potted plants of maize (*Zea mays* cv. 'PR 33') and rice (*Oryza sativa* cv. 'Baldo') to verify their host plant status. Experiments showed that both rice and maize plants allowed feeding and reproduction of *H. elachista*, and confirmed that they were suitable host plants. The results of this first finding were published by De Lucas *et al*., in summer 2013. In September 2013, the NPPO of Italy initiated an official sampling programme in the infected maize plot and its vicinity (within a radius of 500 m). It is noted that on the infested plot, maize was grown in rotation with either soybean or winter cereals every third year, and that rice has never been cultivated. Only certified maize seeds have been used and most agricultural machinery has been managed by contractors operating in nearby farms. For the moment, it has not been possible to determine a possible pathway of introduction of *H. elachista* into Italy. As requested by the NPPO, the grower has sown a crop other than maize. Monitoring is ongoing to determine the distribution of the nematode and possible control measures are being evaluated.
The pest status of *Heterodera elachista* in Italy is officially declared as: **Transient, reported in a single plot in Ferrara province. A survey is in progress to assess the actual presence and distribution of the pest.**

Heterodera elachista – Japanese rice cyst nematode

Why: The cyst nematode, *Heterodera elachista*, was originally described in Japan in 1974. Until recently, it was known to occur in Asia only, affecting upland rice crops. In October 2012, its presence was detected in Italy on a maize crop. Because this is the first time that *H. elachista* is recorded in the EPPO region and on a new and economically important host plant, the EPPO Secretariat decided to add this nematode to the EPPO Alert List.

Where: Until its discovery in Italy in 2012, *H. elachista* was known to occur in Asia only.
EPPO region: Italy (1 maize field in the province of Ferrara, Emilia-Romagna region; transient).
Asia: China (Guangxi, Hunan, Ningxia), Iran, Japan (from Northern Honshu to Kyushu).

On which plants: rice (*Oryza sativa*), and maize (*Zea mays*). In Asia, *H. elachista* has only been reported in rice crops. As is the case for most rice cyst nematodes (except *H. oryzae*), *H. elachista* cannot withstand an extended flooding period and is mainly found on upland rice or on lowland rice where there is little or no water control. Experiments carried out in Italy on potted plants of rice and maize have shown that both species were suitable host plants for *H. elachista*.

Damage: Rice plants infested by *H. elachista* can be severely stunted and chlorotic and usually produce fewer tillers. Root growth can be reduced, infested roots becoming brown or black. If soils are heavily infested rice seedlings may die. It was estimated that *H. elachista* can decrease rice yield by 7 to 19% and has the most severe impact during the later stages of plant growth.
In their paper, De Lucas *et al*. (2013) mentioned that the affected maize field in Italy presented patches of plants showing severe decline and stunting, with heavily infested plants displaying

significant proliferation of short lateral roots. Brown cysts and white lemon-shaped females could be observed on the root surface of affected plants, as well as in the soil.
H. elachista has sedentary endoparasitic habits. Cysts are persistent tanned sacs derived by the female body and contain the eggs. Cysts persist in soil for many years. Second-stage juveniles (J2) emerge from the cysts, penetrate host roots and establish a specialized feeding site (syncytium) in the central cylinder of roots (stele). They develop into swollen females, which retain the eggs and produce large egg masses. Females rupture the root cortex and protrude from the root surface. At the end of the reproductive phase, females die and become rounded dark or black cysts. *H. elachista* is morphologically close to *H. oryzae*, *H. oryzicola* and *H. sacchari*, and its identification requires the use of several techniques (e.g. morphological, biochemical, molecular). The life cycle of *H. elachista* was studied in China both in the laboratory and in a rice field. Results showed that the development of *H. elachista* is slow below 20°C, and is favoured by relatively high temperatures. At 30°C, the complete life cycle took 22 days (however, the English abstract of the paper from Zhong *et al*., 2012 does not mention whether these values are referring to air or soil temperatures).

Dissemination: Natural spread is very limited, as juveniles can only move over short distances when attracted towards roots in the soil. As in the case of other cyst nematodes, *H. elachista* can spread into new areas as cysts, carried with plants, soil or soil attached to plants, machinery or any other material.

Pathway: Plants for planting, soil, soil attached to agricultural machinery or other material.

Possible risks: Maize, and rice to a lesser extent, are economically important crops in the EPPO region. Although data is lacking about the economic impact of *H. elachista*, it cannot be excluded that this cyst nematode could have negative impacts on maize and rice yields. Data is generally lacking on possible control measures against *H. elachista*. However, it is likely that as for other cyst nematodes, control would probably rely on crop rotation with non-hosts. As cysts persist in soil for a long time and can be easily transported with soil and soil attached to plants or contaminated machinery or any other material, it is desirable to avoid any further spread of this nematode within the EPPO region.

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Panel review date - Entry date 2014-03

Additional key words: new record, Alert List **Computer codes:** HETDEL, IT

2014/046 First report of *Halyomorpha halys* in Hungary

In September 2013, *Halyomorpha halys* (Hemiptera: Pentatomidae – formerly EPPO Alert List) was found for the first time in Hungary. An adult specimen was incidentally found inside a building of the Buda Arboretum in Budapest. In October 2013, more specimens were collected by beating trees (*Acer negundo, Euonymous europaeus, Sophora japonica*) growing near an apple orchard at the locality of Péterimajor (near Budapest, 12 km away from the first finding site). The authors considered that studies on the distribution and biology of *H. halys* in agricultural, forest and urban areas in Europe are needed because of the potential threat this invasive insect may present.

Source: Vétek G, Papp V, Haltrich A, Rédi D (2014) First record of the, *Halyomorpha halys* (Hemiptera: Heteroptera: Pentatomidae), in Hungary, with description of the genitalia of both sexes. *Zootaxa* **3780**(1), 194-200.

Additional key words: new record **Computer codes:** HALYHA, HU

2014/047 New insect vectors of Elm yellows (associated with '*Candidatus* Phytoplasma ulmi')

In North America, Elm yellows is a lethal disease of American elms (*Ulmus americana*) and other elm species. This disease is associated with '*Candidatus* Phytoplasma ulmi' (EPPO A1 List), and several cicadellid species have been reported (*Scaphoideus luteolus, Philaenus spumarius* and *Allygus atomarius*) as vectors. On the campus of the Pennsylvania State University (US), it is estimated that since 2007 on a total of 400 mature elm trees, 82 have been killed by Elm yellows and Dutch elm disease. From July to September 2012, insects were collected using sweep nets and aspirators on branches of a red elm tree (*U. rubra*) showing symptoms of elm yellows, and on vegetation within a 0.5 km radius. Since 2007, this tree has repeatedly been tested and found positive for '*Ca*. Phytoplasma ulmi'. Approximately 600 cicadellid insects were collected. Transmission trials on collected insects showed that *Lepyronia quadrangularis, Philaenus spumarius* and a leafhopper belonging to the genus *Latalus* were vectors of '*Ca*. Phytoplasma ulmi'. During this study, no specimens of the main vector, *S. luteolus,* were caught. According to the authors, this is the first time that *Lepyronia quadrangularis* and *Latalus* sp. are recorded as vectors of '*Ca*. Phytoplasma ulmi'.

Source: Rosa C, Mc Carthy E, Duong K, Hoover G, Moorman G (2014) First report of the spittlebug *Lepyronia quadrangularis* and the leafhopper *Latalus* sp. as vectors of the Elm yellows associated phytoplasma, *Candidatus* Phytoplasma ulmi in North America. *Plant Disease* **98**(1), 154-155.

Additional key words: epidemiology **Computer codes:** LEPOQU, PHILSU, PHYPUL, SCAPLU, US

2014/048 First report of *Potato spindle tuber viroid* and *Tomato apical stunt viroid* on solanaceous ornamentals in Poland

In Poland, surveys for the presence of *Potato spindle tuber viroid* (*Pospiviroid*, PSTVd – EPPO A2 List) were carried out from 2007 to 2012 on 299 solanaceous ornamental plants, including *Solanum jasminoides, S. rantonnetii, Brugmansia* sp. and *Petunia* sp. Molecular tests confirmed the presence of PSTVd in 2 samples of *S. jasminoides* (1 collected in 2007/2008 from Zachodniopomorskie voivodeship - 1 collected in 2009 from the Lubuskie voivodeship). In addition, another pospiviroid, *Tomato apical stunt viroid* (EPPO Alert List) was detected in 1 sample of *S. rantonnetii* collected in 2012 from the Lubuskie voivodeship. Official measures were taken to eradicate these viroids from the Polish territory.
The situation of both *Potato spindle tuber viroid* and *Tomato apical stunt viroid* in Poland can be described as follows: **Transient, detected in a small number of samples from symptomless solanaceous ornamentals, under eradication.**

Source: Henning E, Pięcińska J, Hasiów-Jaroszewska B (2013) First reports of *Potato spindle tuber viroid* on *Solanum jasminoides* and of *Tomato apical stunt viroid* on *Solanum rantonnetii* in Poland. *Plant Disease* **97**(12), p 1663.

Additional key words: new record **Computer codes:** PSTVD0, TASVD0, PL

2014/049 First report of *Tomato chlorosis virus* in China

In October 2012, a severe yellowing disease was observed on tomato plants (*Solanum lycopersicum*) grown under greenhouses and plastic houses in Beijing, China. The disease incidence varied from 5 to 82% in each of 6 sites across Haidian and Daxing districts (Beijing). Large populations of whiteflies (*Bemisia tabaci*) were observed in diseased tomato crops. Leaf samples were collected from 8 symptomatic and 2 asymptomatic tomato plants in the Haidian district. Molecular tests (RT-PCR, sequencing) confirmed the presence of *Tomato chlorosis virus* (*Crinivirus*, ToCV – EPPO A2 List) in the 8 symptomatic samples. This is the first time that ToCV is reported from China. As tomato is widely grown in China, it is considered that the possible spread of ToCV may cause significant economic losses. It is stressed that further studies are needed to determine the distribution and impact of ToCV in China.
The situation of *Tomato chlorosis virus* in China can be described as follows: **Present, first found in 2012 in Beijing on tomato crops (protected cultivation).**

Source: Zhao RN, Wang R, Wang N, Fan ZF, Zhou T, Shi YC, Chai M (2013) First report of *Tomato chlorosis virus* in China. *Plant Disease* **97**(8), p 1123.

Additional key words: new record **Computer codes:** TOCV00, CN

2014/050 First report of *Cucumber vein yellowing virus* in Lebanon

In Lebanon, the presence of *Cucumber vein yellowing virus* (*Ipomovirus*, CVYV – EPPO A2 List) was detected for the first time during a national survey for virus diseases of cucurbits which was carried out from 2008 to 2009. CVYV was found in a limited number of symptomatic cucumber crops (*Cucumis sativus*) grown under protected conditions. In early spring 2013, 16 leaf samples showing vein-yellowing symptoms were collected from

Northern coastal areas (Jbeil, Amshit, Tabarja), and 11 samples showing yellowing symptoms only on older leaves were collected from the Southern coast (Jiyeh). CVYV was detected in all samples from the Northern coast and in 4 samples from the Southern coast. Comparison of sequences revealed a high variation between isolates from the Northern and Southern coasts. Surveyed cucumber plants were also tested for two criniviruses, *Cucurbit chlorotic yellows virus* and *Cucurbit yellow stunting disorder virus*, and mixed infections (double or triple) were found in some plants. It is noted that during the last 5 years, only a limited number of cucumber plants have shown CVYV symptoms, suggesting that this virus disease is sporadic in Lebanon.
The situation of *Cucumber vein yellowing virus* in Lebanon can be described as follows: **Present, found since 2008 in a limited number of greenhouse cucumber crops.**

Source: Abrahamian PE, Sobh H, Seblani R, Samsatly J, Jawhari M, Abou-Jawdah (2013) First report of *Cucumber vein yellowing virus* on cucumber in Lebanon. *Plant Disease* **97**(11), 1516-1517.

Additional key words: first record **Computer codes:** CVYV00, LB

2014/051 First report of *Pseudocercospora angolensis* in Ghana

In 2004, necrotic leaf spots (1 cm diameter) with light brown centres and dark brown margins surrounded by a yellow halo were first observed in sweet orange (*Citrus sinensis*) and mandarin (*C. reticulata*) orchards in the Eastern Region of Ghana. Fruits with raised corky lesions of up to 3 to 4 cm in diameter with yellow halos were also observed. Affected fruit had longitudinal and transversal cracks in the rind with the internal locules exposed. Juice content in diseased fruit was strongly reduced, making them unsuitable for fresh consumption or processing. The disease expanded to the Central and Ashanti regions, with incidences over 95% and estimated yield losses of about 50 to 90%. Symptomatic leaves and fruit were collected in Kade, Eastern region. Laboratory analysis (morphology, PCR, pathogenicity tests) confirmed that the citrus disease observed was caused by *Pseudocercospora angolensis* (=*Phaeoramularia angolensis* – EPPO A1 List). This is the first time that *P. angolensis* is reported from Ghana.
The situation of *Pseudocercospora angolensis* in Ghana can be described as follows: **Present, first confirmed in 2013 in the Eastern region; symptoms are also observed in the Ashanti and Central regions.**

Source: Brentu FC, Cornelius EW, Lawson LEV, Oduro KA, Vicent A (2013) First report of *Pseudocercospora angolensis* causing fruit and leaf spot of citrus in Ghana. *Plant Disease* **97**(12), p 1661.

Additional key words: first record **Computer codes:** CERCAN, GH

2014/052 First report of *Monilinia fructicola* in Chile

In autumn 2013, fruit of Japanese plum (*Prunus salicina* cvs. 'Angelino' and 'Black Kat') developed an unusual brown and soft rot after 2 months in cold storage (0°C). These fruit had been harvested from orchards located near San Francisco de Mostazal in Chile. Laboratory analysis (morphology, molecular and pathogenicity tests) confirmed the presence of *Monilinia fructicola* (EPPO A2 List) in diseased plums. As *M. fructicola* is a quarantine pest in Chile, official control measures were put into place.

The situation of *Monilinia fructicola* in Chile can be described as follows: **Present, first found in 2013, restricted to *Prunus* orchards between Santiago and Nancagua (Central Chile), under official control.**

Source: Latorre BA, Díaz GA, Valencia AL, Naranjo P, Ferrada EE, Torres R, Zoffoli JP (2014) First report of *Monilinia fructicola* causing brown rot on stored Japanese plum fruit in Chile. *Plant Disease* **98**(1), p 160.

Additional key words: new record **Computer codes:** MONIFC, CL

2014/053 New data on quarantine pests and pests of the EPPO Alert List

By searching through the literature, the EPPO Secretariat has extracted the following new data concerning quarantine pests and pests included on the EPPO Alert List. The situation of the pest concerned is indicated in bold, using the terms of ISPM no. 8.

- **New records**

In 2012, *Cherry necrotic rusty mottle virus* (unassigned member of the *Betaflexviridae* family – formerly EPPO A2 List) was detected for the first time in the Republic of Korea. The virus was detected in 3 samples of sweet cherry (*Prunus avium*) collected from 1 orchard located in Gyeonggi province. These results were also confirmed by indexing on *Prunus serrulata* cv. 'Kwanzan' (Cho *et al.,* 2014).

In Bulgaria, *Dickeya dianthicola* (EPPO A2 List) has recently been detected for the first time causing blackleg on potato (*Solanum tuberosum*). In spring 2011, unusual symptoms were observed in a single potato field near Plovdiv. On this plot, where no potato had been cultivated before, recently emerged plants showed wilting on lower leaves, followed by desiccation of leaf margins and necrosis at the stem base (blackleg). Mother tubers were partially or entirely rotted. Laboratory analysis confirmed the presence of *D. dianthicola* (Bobev *et al*., 2014). **Present, found in 1 potato field**.

A new flea beetle, *Luperomorpha xanthodera* (Coleoptera: Chrysomelidae) has been reported from several European countries (see EPPO RS 2007/195, 2012/012). *L. xanthodera* originates from the Far East and shows an invasive behaviour in its introduced range. For the moment, no severe damage has been reported, but this insect is very polyphagous. In particular, adults by feeding on flowers and leaves of many ornamental plant species may reduce their aesthetic value. In Europe, it was first reported in 2003 in the United Kingdom on roses (in garden centres). The insect was then reported on various ornamentals in Italy (2006), France (2008), the Netherlands (2008), Switzerland, Germany (2009), Hungary (2010), Austria (2011), and more recently in Poland (2012). In July 2012, *L. xanthodera* was collected (with a sweep net) in an experimental plot of *Origanum vulgare* near Warsaw. It is noted that this plot was located in the vicinity of a garden centre selling a wide range of imported horticultural plants (Kozłowski and Legutowska, 2014). **Present, first found in 2012 in 1 location (near Warsaw).**

In the Dominican Republic, symptoms resembling those of *Tomato spotted wilt virus* (*Tospovirus,* TSWV – EPPO A2 List) have been observed on greenhouse sweet pepper (*Capsicum annuum*) and tomato (*Solanum lycopersicum*) crops in Jarabacoa and Constanza since 2011/2012. The presence of TSWV in diseased plants was confirmed by serological and molecular tests. The thrips vector, *Frankliniella occidentalis* (Thysanoptera: Thripidae

– EPPO A2 List), has also been observed in infected crops (Martínez *et al*., 2014). **Present, first found in 2011/2012 on protected crops in the Northern part of the island.**

- **Detailed records**

In November 2012, the presence of *Cryphonectria parasitica* (EPPO A2 List) was detected for the first time in Andalucia, Spain. The fungus was found in an orchard in Almonaster la Real (province of Huelva), where approximately 20 chestnut trees (*Castanea sativa* cv. 'Vazqueño') were showing cankers. In 2013, 6 other outbreak sites were detected in the vicinity of the first finding (5 in Almonaster la Real, and 1 in the nearby village of Jabugo) (Bascón *et al*., 2014).

In China, the presence of *Tomato yellow leaf curl virus* (*Begomovirus*, TYLCV – EPPO A2 List) was first recorded in 2006 in Shanghai. Subsequent monitoring showed that TYLCV had spread to Zheijiang, Jiangsu, Shandong, Beijing and Hebei provinces, causing economic losses in tomato crops. A survey on TYLCV and its vector (*Bemisia tabaci* biotypes B and Q) conducted in 2012, detected TYLCV in 11 Chinese provinces and showed that the virus had spread to Heilongjiang, Liaoning, Shanxi, Neimenggu and Hubei provinces. The prevalence of *B. tabaci* biotype Q and its concurrent invasion in China, suggest that it has played a key role in the rapid spread of TYLCV (Pan *et al*., 2012).

'*Candidatus* Liberibacter asiaticum' (EPPO A1 List) occurs in the province of Guizhou, China (Ma *et al*., 2013).

In Honduras, '*Candidatus* Liberibacter solanacearum' (EPPO A1 List, Solanaceae haplotypes) has been detected in *Capsicum annuum* crops. Symptoms were observed in commercial fields in several departments including Francisco Morazán, Ocotepeque, El Paraíso and Olancho. Many of these fields were also infested with the psyllid vector, *Bactericera cockerelli* (Munyaneza *et al*., 2014).

- **New host plants**

In November 2012, *Chrysanthemum stem necrosis virus* (*Tospovirus*, CSNV – EPPO A1 List) was detected on *Eustoma grandiflorum* plants grown in a commercial glasshouse in Atibaia (São Paulo state), Brazil. Infected plants showed necrotic spots on leaves and stems, followed by a systemic necrosis (Duarte *et al*., 2014).

In the province of Konya, Turkey, the presence of *Erwinia amylovora* (EPPO A2 List) has been detected in *Spiraea prunifolia* grown for landscaping. Affected plants showed dying branches, necrotic leaves and blighted twigs (Bastas *et al*., 2014).

- **Diagnostics**

A new diagnostic method for *Spiroplasma citri* (EU Annexes) has been developed in California (US). The detection marker is a protein secreted by *S. citri* during the plant infection process. An antibody generated against this protein was able to distinguish infected plants (citrus and periwinkle) from healthy plants. This antiserum could then be used to detect *S. citri* with a direct tissue print assay (Shi *et al*., 2014).

- **New species**

In China, a new parasitoid species of *Monochamus alternatus* (Coleoptera: Cerambycidae – EPPO A1 List, vector of *Bursaphelenchus xylophilus*) has been described. *Callimomoides monochaphagae* sp. nov. is a solitary endoparasitoid of eggs of *M. alternatus*. As the natural parasitism rate observed was of 12.6%, it is considered that the use of *C. monochaphagae* as a biocontrol agent against *M. alternatus* should be further studied (Yang *et al*., 2014).

A new phytoplasma disease called sunflower phyllody has recently been observed on sunflower (*Helianthus annuus*) in Argentina. In 2010/2011, plants with small and yellow leaves, shortened internodes, abnormal branches, flowers transformed into small heads and capitulum with different degrees of deformations were observed in a sunflower field in Pedro Luro (Buenos Aires province). A phytoplasma species belonging to the 16SrIII group (X-disease group) was consistently found in association with sunflower phyllody (Guzmán *et al*., 2014).

- **Epidemiology**

In New Zealand, '*Candidatus* Phytoplasma australiense' (formerly EPPO Alert List) is associated with several diseases on *Fragaria ananassa* (strawberry), *Solanum tuberosum* (potato), *S. pseudocapsicum, Apium graveolens* (celery), *Rubus* hybrids (boysenberry), *Gomphocarpus fruticosus, Phormium tenax, Cordyline australis, Coprosma robusta, C. macrocarpa*. So far, the only known vector of this pathogen was *Zeoliarus atkinsoni* (Hemiptera: Cixiidae), a species considered to be monophagous on *Phormium* spp. Recent studies have shown that *Zeoliarus oppositus*, a polyphagous species, is also a vector of '*Ca*. Phytoplama australiense' (Winks *et al*., 2014).

Recent studies conducted in the USA have demonstrated that *Pseudococcus maritimus* (Hemiptera: Pseudococcidae) is able to transmit *Little cherry virus 2* (*Ampelovirus* – EU Annexes) to sweet cherry (*Prunus avium*) (Mekuria *et al*., 2013).

Source: Bascón J, Castillo S, Borrero C, Orta S, Gata A, Avilés M (2014) First report of chestnut blight caused by *Cryphonectria parasitica* in a chestnut orchard in Andalusia (Southern Spain). *Plant Disease* **98**(2), 283-284.

Bastas KK, Sahin F (2014) First report of fire blight caused by *Erwinia amylovora* on meadow-sweet (*Spirea prunifolia*) in Turkey. *Plant Disease* **98**(1), p 153.

Bobev SG, van Vaerenbergh J, Maes M (2014) First report of *Dickeya dianthicola* causing blackleg on potato (*Solanum tuberosum*) in Bulgaria. *Plant Disease* **98**(2), p 275.

Cho IS, Choi GS, Choi SK, Seo EY, Lim HS (2014) First report of *Cherry necrotic rusty mottle virus* infecting sweet cherry trees in Korea. *Plant Disease* **98**(1), p 164.

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Additional key words: new record, detailed record, new host plant, diagnostics, epidemiology

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2014/054 EPPO report on notifications of non-compliance

The EPPO Secretariat has gathered below the notifications of non-compliance for 2013 received since the previous report (EPPO RS 2013/246) and those for the beginning of 2014. Notifications have been sent via Europhyt for the EU countries and Switzerland. The EPPO Secretariat has selected notifications of non-compliance made because of the detection of pests. Other notifications of non-compliance due to prohibited commodities, missing or invalid certificates are not indicated. It must be pointed out that the report is only partial, as many EPPO countries have not yet sent their notifications. When a consignment has been re-exported and the country of origin is unknown, the re-exporting country is indicated in brackets. When the occurrence of a pest in a given country is not known to the EPPO Secretariat, this is indicated by an asterisk (*).

INTERCEPTIONS 2013 (remainder)

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Aleyrodidae	*Hygrophila polysperma*	Plants for planting	Indonesia	Belgium	1
Bemisia	*Calibrachoa*	Cuttings	Israel	France	1
Bemisia tabaci	*Amaranthus*	Vegetables	Ghana	United Kingdom	1
	Chlorophytum	Plants for planting	Sri Lanka	Netherlands	1
	Colocasia	Vegetables	India	United Kingdom	6
	Colocasia esculenta	Vegetables	India	United Kingdom	1
	Corchorus	Vegetables	Ghana	United Kingdom	2
	Corchorus olitorius	Vegetables	Nigeria	United Kingdom	3

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
***B. tabaci* (cont.)**	*Eryngium foetidum*	Vegetables (leaves)	Thailand	France	1
	Euphorbia pulcherrima	Plants for planting	Netherlands	United Kingdom	8
	Hygrophila	Cuttings	Indonesia	United Kingdom	1
	Limnophila aromatica	Vegetables (leaves)	Vietnam	France	1
	Manihot	Vegetables	Gambia	United Kingdom	2
	Nerium oleander	Plants for planting	Spain	United Kingdom	1
	Ocimum	Vegetables (leaves)	Cambodia	Sweden	3
	Ocimum basilicum	Vegetables (leaves)	Cambodia	Sweden	1
	Ocimum basilicum	Vegetables (leaves)	Cambodia	United Kingdom	1
	Ocimum basilicum	Vegetables (leaves)	India	Netherlands	1
	Ocimum basilicum	Vegetables (leaves)	Israel	United Kingdom	1
	Unspecified	Cuttings	Sri Lanka	United Kingdom	1
Bephratelloides	*Annona muricata*	Fruit	Peru	Italy	1
Bruchidae	*Orbignya oleifera, Arecaceae*	Stored products	Brazil	Germany	1
Citrus tristeza virus	*Citrus*	Plants for planting	Italy	Malta	2
	Citrus	Plants for planting	Unknown	Malta	1
Diaphania indica, Thrips	*Momordica*	Vegetables	Pakistan	Italy	1
Diptera	*Momordica*	Vegetables	India	United Kingdom	1
Guignardia citricarpa	*Citrus sinensis*	Fruit	Zimbabwe	Netherlands	3
Leucinodes orbonalis	*Solanum melongena*	Vegetables	Pakistan	Sweden	1
Liriomyza	*Apium graveolens*	Vegetables	Cambodia	Germany	2
	Apium graveolens, Coriandrum sativum	Vegetables	Malaysia	Germany	1
	Artemisia	Vegetables	Cambodia	United Kingdom	1
	Dendranthema	Cut flowers	Colombia	United Kingdom	1
	Eryngium	Cut flowers	Ecuador	United Kingdom	1
	Ocimum basilicum	Vegetables (leaves)	Jordan	United Kingdom	1
	Ocimum basilicum	Vegetables (leaves)	Spain (Canary Isl.)	United Kingdom	2
	Trigonella foenum-graecum	Vegetables (leaves)	Morocco	United Kingdom	1
Liriomyza huidobrensis	*Dianthus barbatus*	Cut flowers	Kenya	United Kingdom	1
	Eryngium	Cut flowers	Kenya	Netherlands	2
	Gypsophila	Cut flowers	Ecuador	Netherlands	1
Liriomyza sativae	*Ocimum basilicum*	Vegetables (leaves)	Cambodia*	France	1
Liriomyza trifolii	*Dianthus barbatus*	Cut flowers	Turkey	Netherlands	1
	Gypsophila	Cut flowers	Israel	United Kingdom	1
Monilinia fructicola	*Prunus persica*	Fruit	Italy	Poland	1
Plum pox virus	*Prunus persica*	Plants for planting	Moldova	Bulgaria	1
Spodoptera	*Rosa*	Cut flowers	India	United Kingdom	1
Spodoptera frugiperda	*Capsicum*	Vegetables	Dominican Rep.	Netherlands	1
Spodoptera littoralis	*Ocimum basilicum*	Vegetables (leaves)	Ethiopia	Belgium	1
	Rosa	Cut flowers	Uganda	Netherlands	2
	Rosa	Cut flowers	Zambia	Netherlands	1
Spodoptera litura	*Artemisia*	Vegetables	Cambodia	United Kingdom	1
	Brassica	Vegetables	Pakistan	Netherlands	1
Sternochetus mangiferae	*Mangifera indica*	Fruit	Sri Lanka	Italy	1
Thripidae	*Luffa*	Vegetables	Ghana	United Kingdom	2
	Luffa acutangula	Vegetables	Ghana	United Kingdom	5
	Momordica	Vegetables	Cambodia	United Kingdom	1
	Momordica	Vegetables	Dominican Rep.	United Kingdom	2
	Solanum melongena	Vegetables	Dominican Rep.	United Kingdom	1
	Solanum melongena	Vegetables	Ghana	United Kingdom	4
	Solanum melongena	Vegetables	India	United Kingdom	1

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Thripidae (cont.)	*Solanum melongena*	Vegetables	Pakistan	United Kingdom	2
Thrips palmi	*Momordica charantia*	Vegetables	Dominican Rep.	France	1
	Momordica charantia	Vegetables	Pakistan	Sweden	1
	Solanum melongena	Vegetables	India	United Kingdom	2
	Solanum melongena	Vegetables	Pakistan	United Kingdom	1
	Solanum melongena	Vegetables	Philippines	Switzerland	1
	Solanum melongena	Vegetables	Surinam	Netherlands	3
Thysanoptera	*Solanum melongena*	Vegetables	Dominican Rep.	Switzerland	1
	Solanum melongena	Vegetables	India	Switzerland	1
Xanthomonas axonopodis* pv. *citri	*Citrus hystrix*	Fruit	Malaysia	Switzerland	1
	Citrus latifolia	Fruit	Bangladesh	United Kingdom	1
	Citrus limon	Fruit	Bangladesh	United Kingdom	1

• Fruit flies

Pest	Consignment	Country of origin	Destination	nb
Anastrepha	*Mangifera indica*	Jamaica	United Kingdom	3
Bactrocera	*Capsicum frutescens*	Cambodia	Netherlands	1
	Momordica charantia	Bangladesh	Sweden	1
	Trichosanthes cucumerina	Bangladesh	United Kingdom	1
	Trichosanthes cucumerina	Sri Lanka	United Kingdom	1
Bactrocera cucurbitae	*Momordica charantia*	Sri Lanka	France	2
Ceratitis capitata	*Mangifera indica*	Brazil	France	1
Tephritidae (non-European)	*Annona*	Pakistan	United Kingdom	1
	Capsicum	Ghana	United Kingdom	2
	Luffa	Ghana	United Kingdom	1
	Mangifera indica	Ghana	United Kingdom	2
	Mangifera indica	Jamaica	United Kingdom	3
	Mangifera indica, Psidium guajava	Sri Lanka	Switzerland	1
	Momordica	India	United Kingdom	3
	Momordica	Kenya	United Kingdom	1
	Momordica	Uganda	United Kingdom	1
	Psidium guajava	India	Switzerland	1
	Psidium guajava	Pakistan	United Kingdom	2
	Psidium guajava	Sri Lanka	Switzerland	2
	Syzygium malaccense	Surinam	Netherlands	1
	Trichosanthes cucumerina	Bangladesh	United Kingdom	1
	Trichosanthes cucumerina	Sri Lanka	United Kingdom	2

• Wood

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Anoplophora glabripennis	Unspecified	Wood packing material	China	Germany	1
Apriona germari	Unspecified	Wood packing material	China	Netherlands	1
Bursaphelenchus mucronatus	Unspecified	Wood packing material (pallet)	Belarus	Lithuania	1
Bursaphelenchus xylophilus	Unspecified	Wood packing material (pallet)	Portugal	Poland	1
Cerambycidae	Unspecified	Wood packing material	China	Netherlands	1
	Unspecified	Wood packing material (crate)	India	Hungary	1
	Unspecified	Wood packing material (pallet)	Latvia	Germany	1
Insecta	Unspecified	Wood packing material	Israel	Netherlands	1
	Unspecified	Wood packing material (crate)	Russia	Lithuania	1

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Insecta (cont.)	Unspecified	Wood packing material (pallet)	China	Switzerland	1
Nematoda	Unspecified	Wood packing material	China	Finland	2
Paranthrene tabaniformis	Unspecified	Wood packing material	China	Netherlands	1
Pelodera, Rhabditis	Unspecified	Wood packing material	Belarus	Germany	1
Rhabditis	Unspecified	Wood packing material (crate)	Belarus	Lithuania	1
Scolytidae	*Entandrophragma cylindricum*	Wood and bark	Congo	Spain	1
Sinoxylon	Unspecified	Wood packing material (pallet)	Malaysia	Germany	1

INTERCEPTIONS 2014

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Agromyzidae	*Apium graveolens*	Vegetables	Cambodia	Switzerland	**4**
	Ocimum basilicum	Vegetables (leaves)	Vietnam	Switzerland	**1**
Anthonomus eugenii	*Capsicum frutescens*	Vegetables	Dominican Rep.*	Netherlands	**4**
Bemisia	*Bacopa*	Plants for planting	Sri Lanka	United Kingdom	**1**
Bemisia tabaci	*Alternanthera*	Plants for planting	Sri Lanka	United Kingdom	**1**
	Anubias	Plants for planting	Sri Lanka	United Kingdom	**2**
	Colocasia	Vegetables	India	United Kingdom	**3**
	Corchorus	Vegetables (leaves)	Ghana	United Kingdom	**2**
	Corchorus	Vegetables (leaves)	Nigeria	United Kingdom	**1**
	Corchorus olitorius	Vegetables (leaves)	Ghana	United Kingdom	**3**
	Corchorus olitorius	Vegetables (leaves)	Nigeria	United Kingdom	**2**
	Corchorus olitorius	Vegetables (leaves)	Sierra Leone	United Kingdom	**1**
	Cryptocoryne	Aquatic plants	Malaysia	United Kingdom	**1**
	Euphorbia pulcherrima	Plants for planting	Netherlands	United Kingdom	**3**
	Hibiscus sabdariffa var. *altissima*	Vegetables (leaves)	Ghana	United Kingdom	**1**
	Hygrophila	Aquatic plants	Sri Lanka	United Kingdom	**1**
	Hygrophila	Plants for planting	Singapore	United Kingdom	**1**
	Hygrophila	Plants for planting	Sri Lanka	United Kingdom	**1**
	Hygrophila corymbosa	Plants for planting	Spain (Canary Isl.)	Switzerland	**1**
	Ipomoea	Vegetables	Ghana	United Kingdom	**1**
	Ipomoea batatas	Vegetables	Ghana	United Kingdom	**4**
	Lisianthus	Cut flowers	Netherlands	United Kingdom	**1**
	Manihot	Vegetables	Ghana	United Kingdom	**1**
	Manihot esculenta	Vegetables	Ghana	United Kingdom	**1**
	Mentha	Vegetables (leaves)	Vietnam	Switzerland	**1**
	Momordica	Vegetables	Cambodia	United Kingdom	**1**
	Monarda	Vegetables	Costa Rica	Netherlands	**1**
	Nomaphila stricta	Plants for planting	Sri Lanka	United Kingdom	**1**
	Ocimum	Vegetables (leaves)	Cambodia	Sweden	**2**
	Ocimum americanum	Vegetables (leaves)	Cambodia	Sweden	**1**
	Ocimum basilicum	Vegetables (leaves)	India	Austria	**1**
	Ocimum basilicum	Vegetables (leaves)	Senegal	France	**1**
	Ocimum gratissimum	Vegetables (leaves)	Ghana	United Kingdom	**3**
	Ocimum sanctum	Vegetables (leaves)	Cambodia	Sweden	**1**
	Ocimum tenuiflorum	Vegetables (leaves)	Cambodia	Austria	**1**
	Ocimum tenuiflorum	Vegetables (leaves)	Cambodia	Sweden	**2**
	Ornithogalum	Plants for planting	Israel	Netherlands	**1**
	Piper sarmentosum	Vegetables	Cambodia	United Kingdom	**1**
	Polygonum odoratum	Vegetables (leaves)	Cambodia	United Kingdom	**1**
	Salvia officinalis	Plants for planting	Spain (Canary Isl.)	United Kingdom	**1**
	Solidago	Cut flowers	Zambia*	Netherlands	**1**
	Telfairia occidentalis	Vegetables	Ghana	United Kingdom	**1**
	Unspecified	Cuttings	Sri Lanka	United Kingdom	**1**
	Vernonia amygdalina	Vegetables (leaves)	Nigeria	United Kingdom	**2**

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Chrysomelidae	*Solanum virginianum*	Vegetables	Sri Lanka	Italy	**1**
Coleoptera	*Dicksonia*	Plants for planting	Australia	United Kingdom	**1**
Diptera	*Luffa*	Vegetables	Ghana	United Kingdom	**1**
	Momordica	Vegetables	Kenya	United Kingdom	**1**
Guignardia citricarpa	*Citrus macroptera*	Fruit	Bangladesh*	United Kingdom	**1**
Hirschmanniella	Ornamentals	Plants for planting	Thailand	Poland	**1**
Insecta	Unspecified	Stored products	Turkey	Spain	**1**
Lepidoptera	*Solanum virginianum*	Vegetables	Sri Lanka	Italy	**1**
Leucinodes orbonalis	*Solanum melongena*	Vegetables	Cambodia	France	**1**
	Solanum melongena	Vegetables	Sri Lanka	Italy	**1**
	Solanum melongena	Vegetables	Thailand	Belgium	**1**
	Solanum virginianum	Vegetables	Pakistan	Italy	**1**
Liriomyza	*Apium graveolens*	Vegetables	Cambodia	Germany	**1**
	Aster	Cut flowers	Colombia	United Kingdom	**1**
	Chrysanthemum	Cut flowers	Cambodia	United Kingdom	**1**
	Chrysanthemum	Cut flowers	Colombia	United Kingdom	**1**
	Coriandrum	Vegetables (leaves)	Cambodia	United Kingdom	**2**
	Coriandrum	Vegetables (leaves)	Egypt	United Kingdom	**1**
	Coriandrum sativum	Vegetables (leaves)	Cambodia	United Kingdom	**1**
	Coriandrum sativum	Vegetables (leaves)	India	United Kingdom	**1**
	Gypsophila	Cut flowers	Ethiopia	Italy	**1**
	Ocimum	Vegetables (leaves)	Thailand	United Kingdom	**1**
	Ocimum americanum	Vegetables (leaves)	Cambodia	Germany	**1**
	Ocimum basilicum	Vegetables (leaves)	Cambodia	Germany	**7**
	Ocimum basilicum	Vegetables (leaves)	Cambodia	United Kingdom	**4**
	Ocimum basilicum	Vegetables (leaves)	Israel	United Kingdom	**1**
	Ocimum basilicum	Vegetables (leaves)	Kenya	United Kingdom	**2**
	Ocimum basilicum	Vegetables (leaves)	Spain (Canary Isl.)	United Kingdom	**1**
	Ocimum basilicum	Vegetables (leaves)	Tunisia	Italy	**1**
	Ocimum basilicum	Vegetables (leaves)	Vietnam	Switzerland	**1**
	Trigonella foenum-graecum	Vegetables (leaves)	India	United Kingdom	**1**
	Trigonella foenum-graecum	Vegetables (leaves)	India	United Kingdom	**1**
Liriomyza huidobrensis	*Apium graveolens*	Vegetables	Cambodia*	Austria	**2**
	Apium graveolens	Vegetables	Cambodia*	Sweden	**1**
	Dianthus	Cut flowers	Kenya	France	**1**
	Gypsophila	Cut flowers	Ecuador	Germany	**1**
	Gypsophila	Cut flowers	Ecuador	Italy	**1**
	Gypsophila	Cut flowers	Ecuador	Netherlands	**6**
	Gypsophila	Cut flowers	Kenya	Netherlands	**1**
	Gypsophila paniculata	Cut flowers	Kenya	Netherlands	**2**
	Solidago	Cut flowers	Kenya	Netherlands	**1**
Liriomyza huidobrensis, Liriomyza sativae	*Dianthus*	Cut flowers	Kenya	Netherlands	**1**
Liriomyza sativae	*Gypsophila*	Cut flowers	Kenya	Netherlands	**1**
	Ocimum basilicum	Vegetables (leaves)	Cambodia*	Austria	**1**
	Ocimum basilicum	Vegetables (leaves)	Cambodia*	France	**3**
	Ocimum basilicum	Vegetables (leaves)	Cambodia*	Sweden	**1**
	Ocimum basilicum	Vegetables (leaves)	Tanzania*	Netherlands	**1**
Liriomyza sativae, Bemisia afer	*Ocimum basilicum*	Vegetables (leaves)	India	Austria	**1**
Liriomyza trifolii	*Apium graveolens*	Vegetables	Cambodia*	Sweden	**1**
	Apium graveolens	Vegetables	Cambodia*	Sweden	**1**
	Apium graveolens, Ocimum basilicum	Vegetables	Cambodia*	Sweden	**1**
***L. trifolii* (cont.)**	*Chrysanthemum*	Cut flowers	Colombia	Netherlands	**1**
	Dianthus	Cut flowers	Israel	Netherlands	**1**

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
	Ocimum basilicum	Vegetables (leaves)	Cambodia*	Sweden	**2**
	Ocimum basilicum	Vegetables (leaves)	Vietnam	Switzerland	**1**
	Solidago	Cut flowers	Ethiopia	Netherlands	**1**
	Solidago	Cut flowers	Kenya	Netherlands	**1**
	Solidago	Cut flowers	Zambia	Netherlands	**2**
	Solidago	Cut flowers	Zimbabwe	Netherlands	**1**
Pepino mosaic virus	*Solanum lycopersicum*	Vegetables	Netherlands	Italy	**1**
Phytophthora ramorum	*Pieris floribunda*	Plants for planting	Germany	United Kingdom	**1**
	Viburnum tinus	Plants for planting	Netherlands	United Kingdom	**1**
Potato spindle tuber viroid	*Petunia hybrids*	Cuttings	Israel	Germany	**2**
	Solanum lycopersicum	Seeds	China	Italy	**1**
Scirtothrips	*Solanum melongena*	Vegetables	Pakistan	United Kingdom	**1**
Seiridium cardinale	*Cupressocyparis leylandii*	Plants for planting	Italy	Cyprus	**1**
Spodoptera	*Rosa*	Cut flowers	India	United Kingdom	**1**
Spodoptera littoralis	*Eryngium*	Vegetables (leaves)	Zimbabwe	Netherlands	**1**
	Gypsophila paniculata	Cut flowers	Kenya	Netherlands	**1**
	Ocimum	Vegetables (leaves)	Uganda	Netherlands	**1**
	Rosa	Cut flowers	Kenya	Netherlands	**1**
	Rosa	Cut flowers	Tanzania	Netherlands	**2**
	Rosa	Cut flowers	Uganda	Netherlands	**8**
	Rosa	Cut flowers	Zambia	Netherlands	**1**
	Rosa	Cut flowers	Zimbabwe	Netherlands	**1**
Spodoptera litura	*Brassica*	Vegetables	Bangladesh	United Kingdom	**1**
	Brassica juncea	Vegetables	Bangladesh	United Kingdom	**1**
	Ocimum basilicum	Vegetables (leaves)	Cambodia	Netherlands	**1**
Sternochetus mangiferae	*Mangifera indica*	Fruit	Sri Lanka	Italy	**4**
Thaumatotibia leucotreta	*Capsicum*	Vegetables	Uganda	Netherlands	**2**
	Capsicum frutescens	Vegetables	Uganda	Netherlands	**7**
Thripidae	*Abelmoschus esculentus*	Vegetables	Ghana	United Kingdom	**1**
	Abelmoschus esculentus	Vegetables	India	United Kingdom	**1**
	Luffa	Vegetables	Dominican Rep.	United Kingdom	**1**
	Luffa	Vegetables	Ghana	United Kingdom	**7**
	Luffa acutangula	Vegetables	Ghana	United Kingdom	**31**
	Momordica	Vegetables	Cambodia	United Kingdom	**9**
	Momordica	Vegetables	Dominican Rep.	United Kingdom	**19**
	Momordica	Vegetables	India	United Kingdom	**2**
	Momordica	Vegetables	Pakistan	United Kingdom	**3**
	Solanum melongena	Vegetables	Dominican Rep.	United Kingdom	**9**
	Solanum melongena	Vegetables	Ghana	United Kingdom	**4**
	Solanum melongena	Vegetables	India	United Kingdom	**4**
	Solanum melongena	Vegetables	Mauritius	United Kingdom	**2**
	Solanum melongena	Vegetables	Pakistan	United Kingdom	**4**
Thrips	*Momordica balsamina*	Vegetables	Pakistan	Germany	**1**
Thrips palmi	*Luffa*	Vegetables	Ghana*	United Kingdom	**1**
	Momordica	Vegetables	India	United Kingdom	**1**
	Momordica	Vegetables	Pakistan	United Kingdom	**1**
	Momordica charantia	Vegetables	Cambodia*	France	**2**
	Momordica charantia	Vegetables	Cambodia*	Sweden	**1**
	Momordica charantia	Vegetables	Dominican Rep.	France	**1**
	Momordica charantia	Vegetables	Dominican Rep.	Netherlands	**1**
	Momordica charantia	Vegetables	Pakistan	Switzerland	**1**
	Solanum melongena	Vegetables	Dominican Rep.	United Kingdom	**2**
	Solanum melongena	Vegetables	Laos*	Belgium	**1**
	Solanum melongena	Vegetables	Pakistan	United Kingdom	**1**
	Solanum melongena	Vegetables	Surinam	Netherlands	**1**
Thysanoptera	*Momordica charantia*	Vegetables	Dominican Rep.	France	**1**
	Momordica charantia	Vegetables	India	Switzerland	**1**

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
	Solanum melongena	Vegetables	India	Switzerland	**2**
Tribolium	*Triticum aestivum*	Stored products	Nigeria	Italy	**1**
Tribolium, Sitophilus	*Ceratonia siliqua*	Stored products	Morocco	Spain	**1**
Trioza	*Murraya*	Vegetables (leaves)	Uganda	United Kingdom	**1**
Xanthomonas axonopodis* pv. *citri	*Citrus aurantifolia*	Fruit	Bangladesh	United Kingdom	**1**
	Citrus latifolia	Fruit	Bangladesh	United Kingdom	**1**
	Citrus reticulata	Fruit	Pakistan	United Kingdom	**6**
Xanthomonas campestris* pv. *vesicatoria	*Lycopersicon*	Seeds	China	Italy	**1**
	Lycopersicon	Seeds	China	Italy	**1**
Xylosandrus compactus	*Mangifera indica*	Fruit	Kenya	United Kingdom	**1**

- **Fruit flies**

Pest	Consignment	Country of origin	Destination	nb
Anastrepha	*Mangifera indica*	Jamaica	United Kingdom	2
Bactrocera	*Averrhoa carambola*	Malaysia	Netherlands	1
	Capsicum frutescens	Cambodia	Netherlands	1
	Momordica	India	United Kingdom	4
	Momordica	Kenya	United Kingdom	1
	Momordica cochinchinensis	Cambodia	United Kingdom	1
	Trichosanthes	India	United Kingdom	1
	Trichosanthes cucumerina	Sri Lanka	United Kingdom	2
Bactrocera cucurbitae	*Momordica charantia*	Bangladesh	Sweden	1
Bactrocera dorsalis	*Mangifera indica*	India	France	1
	Mangifera indica	Sri Lanka	France	1
Bactrocera zonata	*Psidium guajava*	Pakistan	France	1
Tephritidae (non-European)	*Annona*	India	United Kingdom	1
	Annona	Lebanon	United Kingdom	1
	Averrhoa carambola	Malaysia	Netherlands	1
	Luffa acutangula	Ghana	United Kingdom	5
	Mangifera	Togo	Germany	1
	Mangifera indica	Brazil	United Kingdom	1
	Mangifera indica	Dominican Rep.	Switzerland	1
	Mangifera indica	Dominican Rep.	United Kingdom	2
	Mangifera indica	Jamaica	United Kingdom	4
	Mangifera indica	Kenya	United Kingdom	2
	Mangifera indica	Peru	France	1
	Mangifera indica	Peru	Netherlands	2
	Mangifera indica	Sri Lanka	Germany	1
	Mangifera indica	Sri Lanka	Italy	1
	Momordica	India	United Kingdom	3
	Momordica	Kenya	United Kingdom	7
	Momordica	Sri Lanka	United Kingdom	1
	Momordica charantia	Sri Lanka	France	1
	Psidium guajava	India	Switzerland	1
	Psidium guajava	India	United Kingdom	1
	Psidium guajava	Pakistan	France	1
	Psidium guajava	Pakistan	Sweden	1
	Psidium guajava	Pakistan	United Kingdom	1
	Psidium guajava	Sri Lanka	Switzerland	6
	Psidium guajava	Thailand	United Kingdom	1
	Syzygium	Surinam	Netherlands	1
	Ziziphus	Pakistan	France	1

- **Wood**

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Ahasverus advena, Alphitobius diaperinus, Tribolium confusum	Unspecified	Wood packaging material (pallet)	Ecuador	Lithuania	1
***Anoplophora glabripennis*, Cerambycidae**	Unspecified	Wood packaging material (pallet)	China	Austria	1
Apriona germari	Unspecified	Wood packaging material	China	Belgium	1
	Unspecified	Wood packaging material	China	Netherlands	1
Bostrichidae	Unspecified	Wood packaging material	China	France	1
Bursaphelenchus mucronatus	Unspecified	Wood packaging material	Russia	Lithuania	1
Bursaphelenchus mucronatus, Arhopalus rusticus	Unspecified	Wood packaging material (pallet)	Belarus	Lithuania	1
Bursaphelenchus mucronatus, Rhabditis	Unspecified	Wood packaging material (pallet)	Russia	Lithuania	1
Cerambycidae	Unspecified	Wood packaging material	China	Denmark	1
	Unspecified	Wood packaging material	China	Germany	1
	Unspecified	Wood packaging material (pallet)	China	Austria	1
Cerambycidae, Nematoda	Unspecified	Dunnage	Ukraine	United Kingdom	**1**
Grub holes, insect larvae	Unspecified	Dunnage	Russia	France	1
Insecta	Unspecified	Wood packaging material	Tunisia	France	1
	Unspecified	Wood packaging material (pallet)	China	Switzerland	1
	Unspecified	Wood packaging material (pallet)	India	Switzerland	1
Monochamus galloprovincialis, Rhabditis	Unspecified	Wood packaging material	Belarus	Lithuania	1
Scolytidae	*Entandrophragma cylindricum*	Wood and bark	Congo	Spain	1
Sinoxylon	Unspecified	Wood packaging material	China	Germany	1
	Unspecified	Wood packaging material (pallet)	China	Germany	1
	Unspecified	Wood packaging material (pallet)	Taiwan	Germany	1
	Unspecified	Wood packaging material (pallet)	Vietnam	Germany	2
Xylotrechus rusticus	Unspecified	Wood packaging material (crate)	China	Lithuania	1

Source: EPPO Secretariat, 2014-03.

2014/055 International Symposium on the European outbreak of *Xylella fastidiosa* in olive (Gallipoli, IT, 2014-10-21/24)

The 'International Symposium on the European outbreak of *Xylella fastidiosa* in olive', will be held in Gallipoli, Italy, on the 21st and 22nd of October 2014. It will be followed by three technical laboratory workshops at the CRSFA, Locorotondo, on the 23rd and 24th of October 2014, to address practical methodologies and techniques for the detection and monitoring of the bacterium and its vectors. This Symposium is organized by the Institute of Plant Virology (CNR, Bari), the Department of Soil, Plant and Food Science of the University of Bari, the Research Center 'Basile Caramia' (CRSFA) of Locorotondo, and the National and Regional Plant Health Services.

Gallipoli is located in the area where the main outbreak of *Xylella fastidiosa* was first reported in October 2013. The Symposium will offer a detailed overview of this emerging threat and provide participants the opportunity for exchanging information with the main international experts.

The Symposium will address the following topics:

- The quick decline syndrome of olive
- Epidemiology, ecology and management of *Xylella fastidiosa*-related diseases
- Occurrence of *Xylella fastidiosa* in Apulia and its implications
- Current actions for containment

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Source: EPPO Secretariat (2014-04).

Additional key words: conference **Computer codes:** XYLEFA, IT

2014/056 New record of *Alternanthera philoxeroides* in the Vaucluse department (France)

Alternanthera philoxeroides (Gomphrenoideae, EPPO List of Invasive Alien Plants) is an aquatic plant originating from South America which is invasive in Australia, the USA, New Zealand and numerous countries of Asia (e.g. India, Thailand). In the EPPO region it has a limited distribution and is only recorded in Italy and France.
In France, prior to this record, *A. philoxeroides* was only recorded in the Garonne river catchments (in 1961 in Gironde, in 1983 in Lot-et-Garonne, in 2002 in Tarn-et-Garonne) and in the 2000s in the Tarn river. In 2013, the species was found in Sorgues in the Vaucluse department in the river Ouvèze, a tributary of the Rhône. Although no clear invasive behavior is recorded so far, the species should be monitored considering its history of invasion elsewhere in the world.

Source: Guillaume Fried, ANSES, E-mail: guillaume.fried@anses.fr

Additional key words: first report, invasive alien plant **Computer codes:** ALRPH, FR

2014/057 Designing invasive alien plants' containment strategies

A structured approach to the development of invasive alien plant containment strategies is useful to promote the efficient use of limited resources. By employing theoretical and semi-quantitative models, conditions under which barrier zones should be established and maintained around core infestations and when eradication of outliers should be attempted were estimated. Five containment sub strategies are proposed:

- *Employ barrier zones and eradicate outliers*: evidence is required that eradication feasibility is high. This concerns for example annual grasses invading crops, as *Lolium rigidum* (Poaceae) and *Bromus diandrus* (Poaceae) in Southern Australia which are characterized by relatively low seed persistence (<3 years) and poor non-human-mediated dispersal.
- *Employ barrier zones and control outliers*: species in this category are not easily eradicable and their spread occurs through short-distance dispersal or human-mediated dispersal. Agricultural weeds having long-lived seeds and predominantly human-mediated dispersal would belong to this category, as would *Orobanche ramosa* (Orobanchaceae) which is an annual parasitic plant that produces tiny seeds and develops a highly persistent seed bank.
- *Do not employ barrier zones but eradicate outliers*: for these species, eradication feasibility is high and long-distance dispersal is both prominent and largely non-human-mediated. Examples can be found among woody growth forms, where species often have short-lived seeds and are bird-dispersed. These species are generally invaders of natural ecosystems. Examples include *Miconia calvescens* (Melastomataceae) which is highly fecund and which has seeds which are bird-dispersed and can persist for more than 15 years.
- *Do not employ barrier zones but control outliers*: these species are not easily eradicable and exhibit relatively high level of long distance-dispersal, largely through non-human mediated means. *Gymnocoronis spilanthoides* (Asteraceae, EPPO Observation list of Invasive Alien Plants) has very long lived seeds but its spread via seed dispersal is less important than that achieved through vegetative fragmentation.
- *Difficult to categorize*: some species are containable under most circumstances, but significant episodes of long distance-dispersal are triggered by major floods or storms. For example, *Parthenium hysterophorus* (Asteraceae, EPPO Alert List) is a rapidly-

maturing annual plant, capable of producing persistent seeds within 4 weeks. This species would appear not to be easily eradicable, although very small infestations have been eradicated on occasion, and has medium containment feasibility. Its spread is largely dependent on human activities, but its seeds have also been dispersed during flood events.

This study shows that semi-quantitative models can be very useful tools in support of decision-making for the management of alien plants invasions.

Source: Panetta D, Cacho O (2014) Designing weed containment strategies: an approach based on feasibility of eradication and containment. *Diversity and Distribution* DOI: 10.1111/ddi.12170.

Additional key words: invasive alien plants, management **Computer codes:** BRODI, GYNSP, LOLRI, MICCA, ORARA, PTNHY

2014/058 An updated assessment of *Cabomba caroliniana* in the Netherlands

Cabomba caroliniana (Cabombaceae, EPPO List of Invasive Alien Plants) is considered an invasive alien plant in Australia, Canada, China, India, Japan and in the USA and is also present in the EPPO region in Belgium, France, Hungary, the Netherlands and the United Kingdom. There was initially a lack of information on the probability of entry, establishment, spread and impacts of this species in the Netherlands, where its recorded distribution in this country has been classified as 'restricted range'. A report has been produced to provide further information.

The probability of entry of *C. caroliniana* in the Netherlands is largely determined by the plant trade. *C. caroliniana* is one of the most frequently imported aquarium plants in the Netherlands, representing over 30% of the total import volume, and is widely available from Dutch and Belgian online retailers and in shops. The species is discarded from aquaria or deliberately planted in natural waterways. Although the Dutch Code of conduct includes this species, retailers have not included information on the invasiveness of this species on the plant labels, and in addition this species is often mislabeled as *Cabomba aquatica*.

Between 1986 and 2013, *C. caroliniana* has been recorded growing in water bodies covering a total area of 65 km² in the Netherlands. After 2006, there has been a rapid increase in the number of records. All shallow slow flowing and still waters in the Netherlands are considered to be potentially at risk of future colonization by *C. caroliniana*. The species only reproduces vegetatively through plant fragments, and it has a strong reproductive potential. The probability of establishment of the species in the Netherlands was considered to be medium. Pathways of spread of the species are the following, ordered by importance: the plant trade, hobbyists, boats and water flow (high), aquatic weed harvesters, fishing equipment (medium) and aquatic birds (low). Concerning environmental impacts, *C. caroliniana* has been recorded in 3 Natura 2000 areas. Although the species has been recorded to have smothered native aquatic plants, in most instances there was no other macrophyte growth in areas where *C. caroliniana* became established. The plant exhibits an induced chemical response that reduces its palatability to herbivores. Regarding alteration of ecosystem functions, mass *C. caroliniana* death and decay may deplete the available dissolved oxygen, which may then cause foul-smelling water and mortality of fish and other aquatic organisms. The risk for ecological impacts was ranked as high.

Evidence of socio-economic impacts of this species are limited to one site, and the cost of management action over a single year was 350 000 euros.

Future habitat alteration due to climate change and with high concentrations of phosphate in substrate may result in local widening of *C. caroliniana*'s distribution. Overall, the distribution classification of *C. caroliniana* is expected to remain as 'restricted range'.

Source: Matthews J, Beringen R, Lamers LPM, Odé B, Pot R, van der Velde G, van Valkenburg JLCH, Verbrugge LNH, Leuven RSEW (2013) Risk analysis of the non-native Fanwort (*Cabomba caroliniana*) in the Netherlands. 46 pp.

Additional key words: invasive alien plants, risk analysis **Computer codes:** CABAQ, CABCA, NL

2014/059 An updated guide on invasive waterplants in the Netherlands

A second edition of 'Invasive waterplants in the Netherlands' has been published. The guide is directed to field inspectors (i.e. field staff of water boards and organizations that manage natural areas surveying watercourses for aquatic plants), to volunteers of botanical societies, and any other interested person. The guide presents general information (current distribution, origin, ecology, impacts and control measures) and identification keys for the following invasive alien aquatic plants: *Azolla filiculoides* (Salviniaceae, EPPO Observation List of Invasive Alien Plants), *Cabomba caroliniana* (Cabombaceae, EPPO List of Invasive Alien Plants), *Crassula helmsii* (Crassulaceae), *Egeria densa* (Hydrocharitaceae, EPPO List of IAP), *Eichhornia crassipes* (Pontederiaceae, EPPO A2 List), *Elodea nuttallii* (Hydrocharitaceae, EPPO List of IAP), *Hydrilla verticillata* (Hydrocharitaceae, EPPO List of IAP), *Hydrocotyle ranunculoides* (Apiaceae, EPPO A2 List), *Landoltia punctata* (Araceae), *Lagarosiphon major* (Hydrocharitaceae, EPPO List of IAP), *Ludwigia grandiflora* (Onagraceae, EPPO A2 List), *Ludwigia peploides* (Onagraceae, EPPO A2 List), *Lysichiton americanus* (Araceae, EPPO Observation List of IAP), *Pistia stratiotes* (Araceae, EPPO List of IAP), *Mimulus guttatus* (Phrymaceae), *Myriophyllum aquaticum* (Haloragaceae, EPPO List of IAP), *Myriophyllum heterophyllum* (Haloragaceae, EPPO List of IAP), *Pontederia cordata* (Pontederiaceae), *Sagittaria latifolia* (Alismataceae), *Salvinia molesta* (Salviniaceae, EPPO List of IAP).

Source: Van Valkenburg JLCH (2014) Invasieve waterplanten in Nederland. Veldgids. 2e editie. Nedelandse Voedsel- en Warenautoriteit, Ministerie van Economische Zaken. 48 p.

Additional key words: invasive alien plants, communication **Computer codes:** AZOFI, CABCA, CSBHE, EICCR, ELDDE, ELDNU, HYLVE, HYDRA, LGAMA, LSYAM, LUDPE, LUDUR, MIUGU, MYPBR, MYPHE, PIIST, POFCO, SAGLT, SAVMO, SPIOL, NL

2014/060 Invasive alien species in Norway

A set of semi-quantitative criteria to assess ecological impacts of alien species have been developed in Norway. Classification of alien species into impact categories combines 9 criteria, of which 3 determine the species' invasion potential and 6 the ecological effect. The criteria are the following: A-expected lifetimes, B1- spread velocity and B2- increase in occupied area, C-colonisation of habitat type, D-interactions with native threatened or rare species, E-interactions with other species, F- changes in threatened or rare habitat type, G- changes in other habitat type, H-genetic introgression, I-host for parasite or pathogen.

By combining invasion potential (small, restricted, moderate, high), and ecological effect (no known, minor, medium, major), the species is then placed into one of the five impact categories: severe, high, potentially high, low, or no known impact.
Following these criteria, 2320 species have been assessed in Norway (all types of organisms considered). The alien plants falling in the severe impact category are listed in the table below, with information on their area of origin and their indicative distribution in the EPPO region (according to the NOBANIS and DAISIE databases).

Species	**Origin**	**Distribution in EPPO region as alien**
Acer pseudoplatanus (Sapindaceae)	Europe, Caucasus	BE, EE, IE, GB, LT, NL, NO, PT (Azores, Madeira), SE
Achillea nobilis (Asteraceae)	Eurasia	DK, EE, LV, LT, NO, SE
Allium schoenoprasum subsp. *schoenoprasum* (Amaryllidaceae)	Cosmop.	NO
Amelanchier alnifolia (Rosaceae)	N-Am.	DE, DK, EE, FI, NO, SE
Amelanchier lamarckii (Rosaceae)	N-Am.	BE, DK, FI, FR, DE, GB, IT, NL, NO, SE
Amelanchier spicata (Rosaceae)	N-Am.	AT, DE, DK, EE, FI, LV, LT, NO, PL, SE, RU
Arabis caucasica (Brassicaceae)	Caucasus	AT, BE, CH, CZ, DE, DK, FR, IE, NO, PT (Madeira), SE
Arctium tomentosum (Asteraceae)	Eurasia	CZ, DK, FI, GL, NO, SE
Barbarea vulgaris (Brassicaceae)	Eurasia, N-Af.	DK, NO, SJ
Berberis thunbergii (Berberidaceae)	Asia	AT, DE, DK, FI, GB, LV, NL, NO, SE
Calystegia sepium subsp. *spectabilis* (Convolvulaceae)	Asia	NO
Campanula latifolia var. *macrantha* (Campanulaceae)	Eur.	DK, NO
Cerastium tomentosum (Caryophyllaceae)	S-Eur.	AT, BE, DE, DK, EE, GB, IE, NL, NO, SE
Clematis alpina (Ranunculaceae)	Eurasia	NO
Cornus sericea (Cornaceae)	N-Am.	BE, DE, CH, GB, IE, LV, NL, PL, RU
Corydalis solida (Papaveraceae)	Eurasia, Af.	DK, NO, SE
Cotoneaster bullatus (Rosaceae)	Asia	DK, IE, NO, SE
Cotoneaster dielsianus (Rosaceae)	Asia	AT, DE, DK, GB, NO, SE
Cotoneaster divaricatus (Rosaceae)	Asia	AT, DE, DK, GB, EE, NO, SE
Cotoneaster horizontalis (Rosaceae)	Asia	AT, BE, DK, IE, LT, NL, NO, PL, SE
Cotoneaster lucidus (Rosaceae)	Asia	DK, EE, FI, GB, LV, NO, PL, SE
Cotoneaster multiflorus (Roasaceae)	Asia	DK, GB, NO, SE
Cotoneaster salicifolius (Roasaceae)	Asia	BE, GB, IE, IT, NO
Elodea canadensis (Hydrocharitaceae)	N-Am.	Very widespread
Elodea nuttalli (Hydrocharitaceae, EPPO List of Invasive Alien Plants)	N-Am.	Widespread
Epilobium ciliatum subsp. *ciliatum* (Onagraceae)	Asia, Am.	NO
Epilobium ciliatum subsp. glandosum (Onagraceae)	N-Am.	NO
Fallopia x bohemica (Polygonaceae, EPPO List of IAP)	Asia	Widespread
Fallopia japonica (Polygonaceae, EPPO List of IAP)	Asia	Widespread
Fallopia sachalinensis (Polygonaceae, EPPO List of IAP, EPPO List of IAP)	Asia	Widespread
Festuca rubra commutata (Poaceae)	Eur.	NO
Geum macrophyllum (Rosaceae)	Asia, N-Am.	BE, DK, GB, IS, NL, NO, RU, SE

Species	Origin	Distribution in EPPO region as alien
Heracleum mantegazzianum (Apiaceae, EPPO List of IAP)	Asia (Caucasus)	Widespread
Heracleum persicum (Apiaceae, EPPO A2 List)	Asia	DK, FI, IS, NO, SE, TR
Impatiens glandulifera (Balsaminaceae, EPPO List of IAP)	Asia	Widespread
Impatiens parviflora (Balsaminaceae)	Asia	Widespread
Laburnum alpinum (Fabaceae)	Eur.	GB, NO, SE
Laburnum anagyroides (Fabaceae)	Eur.	Widespread
Lamiastrum galeobdolon subsp. *galeobdolon* (Lamiaceae)	Eurasia	NO
Larix decidua (Pinaceae)	Eur.	DK, EE, LT, NL, NO, SE
Lepidium latifolium (Brassicaceae)	Eurasia, Af.	AT, BE, ES (Baleares), IE, LV, LT, NO, SE
Linaria repens (Plantaginaceae)	Eur.	Widespread
Lonicera caerulea (Caprifoliaceae)	N-Hemis	FI, NO, SE
Lotus corniculatus var. *sativus* (Fabaceae)	Eurasia, Af.	NO
Lupinus nootkatensis (Fabaceae)	N-Am.	FI, IS, NO, SE
Lupinus perennis (Fabaceae)	N-Am.	NO, SE
Lupinus polyphyllus (Fabaceae)	N-Am.	Widespread
Malus x domestica (Rosaceae)	Hort.	Widespread
Melilotus albus (Fabaceae)	Eurasia, Af.	Widespread
Myrrhis odorata (Apiaceae)	Eur.	Widespread
Odontites verna subsp. *serotina*	Eurasia	NO
Pastinaca sativa var. *hortensis* (Apiaceae)	Eurasia	NO
Phedimus hybridus (Crassulaceae)	Eurasia	NO, SE
Picea sitchensis (Pinaceae)	N-Am.	DK, EE, FR, GB, IS, IE, NO, PL, SE
Pinus mugo (Pinaceae)	Eur.	NO
Pinus strobus (Pinaceae)	N-Am.	CZ, DK, NO, PL, RU, SE
Populus x berolinensis (Salicaceae)	Hort.	DE, DK, EE, FR, GB, IT, LV, PL
Populus balsamifera (Salicaceae)	N-Am.	DE, DK, EE, FI, GB, LT, LV, NO, PL, RU, SE
Ribus rubrum (Grossulariaceae)	Eur.	Widespread
Rosa rugosa (Rosaceae, EPPO List of IAP)	Asia	Widespread
Salix x fragilis (Salicaceae)	Hort.	?
Salix euxina (Salicaceae)	Eurasia	NO
Solidago canadensis (Asteraceae, EPPO List of IAP)	N-Am.	Widespread
Sorbus intermedia (Rosaceae)	Eur.	DE, GB, IE, LV, NO, SE
Sorbus mougeotii (Rosaceae)	Eur.	DK, NO
Thymus praecox (Lamiaceae)	Eur.	NO
Tsuga heterophylla (Pinaceae)	N-Am.	DK, FR, GB, NO, SE
Vinca minor (Rauvolfioideae)	Eurasia	Widespread
Vincetoxicum rossicum (Apocynaceae)	Eur.	NO
Viola odorata (Violaceae)	Eurasia, Af.	Widespread

Source: Gederaas L, Moen TL, Skjelseth S, Larsen LK (eds.) (2012) Alien species in Norway – with the Norwegian Black List 2012. The Norwegian Biodiversity Information Centre, Norway. 212 pp.

Delivering Alien Invasive Species Inventories for Europe (DAISIE), database. http://www.europe-aliens.org/

European Network on Invasive Alien Species, NOBANIS database. http://www.nobanis.org/

Additional key words: invasive alien plants, list

Computer codes: ACHNO, ACRPP, ALLSC, AMEAL, AMELM, AMESP, ARCCA, ARFTO, BARVU, BEBETH, CERTO, CLVAL, CTTDI, CTTDV, CTTHO, CTTLU, CTTML, ELDNU, EPICG, FESNI, GEUMA, HERMZ, HERPE, IPAGL, IPAPA, LABAL, LABAN, LAXDE, LEPLA, LINRP, LONCO, LUPNO, LUPPE, LUPPO, MYHOD, PIESI, PIUMU, PIUST, POLCU, POPBA, POPBE, REYBO, REYSA, RIBPU, ROSRG, SAXFR, SOOCA, SOUIT, SOUMO, THYPR, TSUHE, VINMI, VNCRO, VIOOD, NO

2014/061 Publication of the book 'Plant invasions in protected areas'

The book 'Plant invasions in protected areas' provides a comprehensive global review of all aspects of alien plants invasions in protected areas. It describes general elements concerning the impacts, processes and opportunities for action. It also provides case studies for mapping the threats such as African protected areas, Australia's Kakadu National Park, United States national Parks, the Western Indian Ocean islands, the Galapagos. Management experiences are also provided from prevention to restoration.

Source: Foxcroft L, Pyšek P, Richardson DM, Genovesi P (Eds) (2013) Plant Invasions in Protected Areas. Invading Nature, Springer Series in Invasion Ecology 7, Germany. 656 pp.

Additional key words: invasive alien plants, publication