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2016/070 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 (or formerly included) on the EPPO Alert List, and indicated in bold the situation of the pest concerned using the terms of ISPM no. 8.

- **New records**

Iris yellow spot virus (*Tospovirus*, IYSV – formerly EPPO Alert List) is reported for the first time from Ecuador. In April 2015, straw-coloured, irregularly shaped, chlorotic or necrotic lesions on leaves were observed in two onion (*Allium cepa*) fields located in the provinces of Pichincha and Tungurahua. Laboratory analysis confirmed the presence of IYSV in symptomatic leaf samples (Sivaprasad *et al*., 2016). **Present, only in some areas.**

Pseudomonas syringae pv. *aesculi* (formerly EPPO Alert List) is reported for the first time from Switzerland. In 2011, bleeding cankers were observed on 42 (out of 300) horse chestnut trees (*Aesculus hippocastanum*) in a public park in Rapperswil-Jona. In 2015, bark samples were collected from 3 symptomatic trees and tested (isolation, PCR, sequencing, pathogenicity tests). Results confirmed the presence of *P. syringae* pv. *aesculi*, together with 2 non-fluorescent *Pseudomonas* species and *Erwinia billingiae*. However, Koch's postulates were completed with 2 isolates of *P. syringae* pv. *aesculi*. It is noted that bleeding canker symptoms were moderate and they will be monitored to follow their progression (Meyer *et al*., 2016). **Present, only in some areas.**

- **Detailed records**

Little cherry virus 2 (*Ampelovirus* – EU Annexes) was detected on sweet cherry (*Prunus avium*) samples from Shandong province, China (Zong *et al*., 2015).

Laurel wilt caused by *Raffaelea lauricola* (EPPO Alert List) and its vector *Xyleborus glabratus* (Coleoptera: Curculionidae: Scolytinae) have been found in Louisiana (US) on *Sassafras albidum*. The first symptoms of wilting were observed near Bernice (Union Parish) in September 2014. Further surveys detected the disease in additional sites in Northern Louisiana (Lincoln, Clairborne and Union parishes) on sassafras (Fraedrich *et al*., 2015).

- **Diagnostics**

A polyprobe (poly-3) has been developed for the simultaneous detection by non-radioactive molecular hybridization of three different tomato pathogens: *Clavibacter michiganensis* subsp. *michiganensis* (EPPO A2 List), *Pepino mosaic virus* (EPPO A2 List) and *Mexican papita viroid*. It is considered that this technology could be a useful tool in both routine field surveys of tomato crops and production of pathogen-free planting material (Zamora-Macorra *et al*., 2015).

A new LAMP test has been developed for the detection of Grapevine flavescence dorée phytoplasma (EPPO A2 List). The whole procedure of sample preparation and testing has been designed and optimized for on-site detection and can be completed in one hour (Kogovšek *et al*., 2015).

A new LAMP test has been developed for the rapid detection of *Xanthomonas axonopodis* pv*. dieffenbachiae* (EPPO A2 List) in anthurium (Niu *et al.*, 2015).

A new real-time LAMP test has been developed in Italy for the detection of *Xylella fastidiosa* (EPPO A1 List) in host plants and insect vectors. As the DNA extraction procedure has been simplified, this test can be used in the field and has proven to be simple, rapid and low cost (Yaseen *et al*., 2015).

- **New host plants**

Field surveys were conducted in Michigan and Oregon (US) to study potential wild and ornamental host fruit of *Drosophila suzukii* (Diptera: Drosophilidae – EPPO A2 List). These studies identified new hosts or confirmed previously reported hosts including: *Cornus* sp*., Cotoneaster lacteus, Elaeagnus umbellata, Frangula purshiana, Lindera benzoin, Lonicera caerulea, Mahonia aquifolium, Morus* sp*., Phytolacca americana, Prunus avium, Prunus laurocerasus, Prunus lusitanica, Rubus armeniacus, Rubus spectabilis, Sambucus nigra, Sarcococca confusa, Solanum dulcamara, Symphoricarpos albus* (Lee *et al*., 2015).

Studies conducted in Texas (US) have shown that *Solanum elaeagnifolium* (EPPO List of Invasive Alien Plants) can be a weed host for '*Candidatus* Liberibacter solanacearum' (potato haplotypes are included in EPPO A1 List) and thus act as a reservoir for the pathogen. This underlines the importance of managing *S. elaeagnifolium* growing in the vicinity of potato fields to prevent spread of '*Ca*. L. solanacearum' (Thinakaran *et al.*, 2015).

- **Epidemiology**

Studies have showed that carrot (*Daucus carota*) seeds can transmit '*Candidatus* Liberibacter solanacearum' (potato haplotypes are included in the EPPO A1 List). It is noted that measures to prevent the movement of infected carrot seed lots would be needed (Bertolini *et al.*, 2015).

- **New pests**

In Morocco, a new root-knot nematode has been isolated from soil under wild olive trees (*Olea europaea* subsp*. europaea* var*. sylvestris*) at Cape Spartel (near Tangier). This new species has been called *Meloidogyne spartelensis* n. sp. However, pathogenicity experiments should be carried out to verify whether olive is a host plant of *M. spartelensis* (Ali *et al.*, 2015).

In China, a new root-lesion nematode has been isolated from sugarcane (*Saccharum sinensis*) in Guangxi autonomous region, and called *Pratylenchus parazeae* n. sp. As *P. parazeae* was isolated together with *P. zeae* from the same sugarcane field, further evaluation of its pathogenicity and potential economic damage is needed (Wang *et al.*, 2015).

A new longidorid nematode has been isolated from soil associated with bonsai plants of *Lagerstroemia indica* imported from China into Italy. This new species has been called *Longidorus asiaticus* n. sp. (Trisciuzzi *et al*., 2015).

Sources:

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Additional key words: new record, detailed record, diagnostic, new host plant, epidemiology, new pest

Computer codes: CORBMI, DROSSU, IYSV00, LCHV20, LIBEPS, LIBEPS, MELGST, MPVD00, PEPMV0, PHYP64, PRATPZ, PSDMAX, RAFFLA, XANTDE, XYLBGR, XYLEFA, CH, CN, EC, IT, MA, US

2016/071 Eradication of *Anoplophora glabripennis* from the Netherlands

In July 2012, *Anoplophora glabripennis* (Coleoptera: Cerambycidae – EPPO A1 List) was found in 1 street tree (*Acer platanoides*) in a residential area of the small town of Winterswijk (EPPO RS 2012/160). This was the second outbreak of *A. glabripennis* (the first one was successfully eradicated in 2011, EPPO RS 2010/200 and EPPO RS 2011/050). In Winterswijk, the infested tree was reported by a member of the public on 2012-07-09. In this tree, 40 exit holes and 12 larvae were observed and 16 adult live beetles were caught in its immediate vicinity. Eradication measures were taken, including the destruction of potential host plants within a radius of 100 m. Following the destructive sampling of all potential hosts, no other infested plants or signs of the pest were detected. In addition, specific surveillance with tree climbers within a radius of 1000 m and restrictions on the movement of host plant material were implemented. Based on the results of destructive sampling and the absence of the pest during 4 years of specific surveys, the Dutch NPPO considers that *A. glabripennis* has been successfully eradicated.
The pest status of *Anoplophora glabripennis* in the Netherlands is officially declared as: **Absent, eradicated.**

Source: NPPO of the Netherlands (2016-04).

Pictures: *Anoplophora glabripennis*. https://gd.eppo.int/taxon/ANOLGL/photos

Additional key words: absence, eradication **Computer codes:** ANOLGL, NL

2016/072 Updated situation of *Anoplophora glabripennis* in Finland

In October 2015, 2 adult beetles of *Anoplophora glabripennis* (Coleoptera: Cerambycidae – EPPO A1 List) were found on a sidewalk by an employee of a stone import company in the city of Vantaa, Finland (EPPO RS 2015/184). Intensive surveys were carried out within a radius of 300 m around the original finding site. In total, 132 suspicious trees were marked and cut down. When suspicious trees were growing in private gardens, tree climbers were used to inspect them. As a result, 12 trees, including 8 birches (*Betula* spp.) and 4 willows (*Salix caprea*), were found to be infested by *A. glabripennis*. In addition, living larvae were found in wood packaging material located in the property of a stone importer. The infested area (approximately 10 ha) is mainly an industrial area with trees planted along roads and in inner courtyards. It also includes small forest areas that are owned by the city of Vantaa, and some private gardens. A buffer zone of 2 km radius has been delimited around the infested area. Phytosanitary measures are being taken and include the destruction of all host trees within the infested area, and restrictions on the movement of wood material from the buffer zone without specified treatment. As many private gardens are located in the buffer zone, a dedicated site has been built where people can bring their garden waste that includes potential host plants. Information about this outbreak has also been circulated to home owners and companies located in the buffer zone. The specific survey of the buffer zone will continue in 2016 (visual inspections, sniffer dogs and pheromone traps).
The pest status of *Anoplophora glabripennis* in Finland is officially declared as: **Present, under eradication.**

Source: NPPO of Finland (2016-04).

Pictures: *Anoplophora glabripennis*. https://gd.eppo.int/taxon/ANOLGL/photos

Additional key words: detailed record **Computer codes:** ANOLGL, FI

2016/073 First report of *Tuta absoluta* in Mayotte

In August 2015, the presence of *Tuta absoluta* (Lepidoptera: Gelechiidae – EPPO A2 List) was officially confirmed on the island of Mayotte (FR). The pest was initially found by a grower in a protected crop of tomato (*Solanum lycopersicum*) and aubergine (*S. melongena*). Visual inspections detected the pest in 2 other production sites (outdoor and protected tomato crops). On these 3 sites, more than 50% of the plants were infested by *T. absoluta*. In the initial phase of the control programme, approximately 5000 plants have been burnt. Later surveys were conducted, using pheromone traps on 26 sites (crops, port, airport, rubbish sites near supermarkets). Results showed that the pest is present across the whole island of Mayotte.
The pest status of *Tuta absoluta* in Mayotte is officially declared as: **Present, widespread.**

Source: NPPO of France (2016-04).

Pictures: *Tuta absoluta*. https://gd.eppo.int/taxon/GNORAB/photos

Additional key words: new record **Computer codes:** GNORAB, YT

2016/074 Updated situation of *Drosophila suzukii* in Poland

In Poland, *Drosophila suzukii* (Diptera: Drosophilidae – EPPO A2 List) was first found in 2014 (EPPO RS 2015/008). From 2012 to 2014, specific surveys with different types of traps and baits were carried out at 8 locations (Bronisze, Brzezna, Dąbrowice, Grójec, Ochla, Piskórka, Skierniewice, Września). Traps were placed in plantations of blueberries (*Vaccinium* sp.), strawberries (*Fragaria ananassa*), and raspberries (*Rubus idaeus*). Observations were also made at the wholesale market at Bronisze (near Warsaw). In 2012 and 2013, no specimens were caught. In 2014, several specimens of *D. suzukii* were caught in 2 locations, Września (Western Poland) and Brzezna (Southern Poland) but no fruit damage was observed. Considering the invasive behaviour *D. suzukii*, it is expected that the pest will continue to spread across the country. Monitoring of *D. suzukii* will continue in Poland.
The situation of *Drosophila suzukii* in Poland can be described as follows: **Present, only in some areas.**

Source: Łabanowska BH, Piotrowski W (2015) The spotted wing drosophila *Drosophila suzukii* (Matsumura, 1931) - monitoring and first records in Poland. *Journal of Horticultural Research* **23**(2), 49-57.

Pictures: *Drosophila suzukii*. https://gd.eppo.int/taxon/DROSSU/photos

Additional key words: detailed record **Computer codes:** DROSSU, PL

2016/075 First report of *Contarinia pseudotsugae* in Germany

Following the first records of a Douglas fir needle midge tentatively identified as *Contarinia pseudotsugae** (Diptera: Cecidomyiidae – EPPO Alert List) in Belgium and the Netherlands (EPPO RS 2016/007, 2016/008, and 2016/030), surveys were carried out in Germany. The insect was found on *Pseudotsuga* spp. in forests in Baden-Wuerttemberg (Freudenstadt, Konstanz and Heilbronn) and reported from 1 location in Rhineland-Palatinate (Ahrweiler). As only larvae were collected inside needles, the identity of the insect remains to be confirmed but the occurrence of *C. pseudotsugae* is suspected. The survey will continue in Baden-Wuerttemberg and Rhineland-Palatinate. The decision to take phytosanitary measures is awaiting results of the survey.
The pest status of *Contarinia pseudotsugae* in Germany is officially declared as: **Present, only in parts of the area.**

* The identity of the pest remains to be confirmed on adult specimens as only larvae were collected.

Source: NPPO of Germany (2016-04).

Pictures: *Contarinia pseudotsugae*. https://gd.eppo.int/taxon/CONTPS/photos

Additional key words: new record **Computer codes:** CONTPS, DE

2016/076 The presence of two species, *Contarinia pseudotsugae* and *Contarinia cuniculator* is suspected in the Netherlands

In the Netherland, the presence of a new Douglas fir needle midge, tentatively identified as *Contarinia pseudotsugae* (Diptera: Cecidomyiidae – EPPO Alert List) was detected in November 2015 (EPPO RS 2016/008). The pest was observed on numerous forest trees of *Pseudotsuga menziesii* (Douglas fir) in the provinces of Gelderland, Limburg and Noord-Brabant. During the yearly national specific survey of forest stands (conducted for *Bursaphelenchus xylophilus, Gibberella* and *Mycosphaerella*), further insect specimens were found in five provinces (Gelderland, Limburg, Noord-Brabant, Overijssel, and Utrecht). Based on gall and larval characteristics, the presence of two species, *C. pseudotsugae** and *C. cuniculator**, is now suspected. Relatively mild wilting symptoms on lower branches were observed on multiple trees (at least 10 per location) at 8 locations in natural forest stands (totalling thousands of *P. menziesii* trees). Considering the wide distribution of these Douglas fir needle midges and the fact that they probably have been present for several years, no phytosanitary measures were taken.
The pest status of *Contarinia cuniculator* and *C. pseudotsugae* in the Netherlands is officially declared as: **Present, in specific parts of the areas where host plants are grown.**

* The identity of these pests remains to be confirmed on adult specimens as only larvae were collected.

Source: NPPO of the Netherlands (2016-04).

Pictures: *Contarinia pseudotsugae*. https://gd.eppo.int/taxon/CONTPS/photos

Additional key words: new record, detailed record **Computer codes:** CONTCU, CONTPS, NL

2016/077 Identification of the agapanthus gall midge in the United Kingdom: *Enigmadiplosis agapanthi*

In the United Kingdom, a new and undescribed gall midge was found in 2014 damaging *Agapanthus* spp. flowers (EPPO RS 2015/170). The agapanthus gall midge causes flower buds to deform, discolour and fail to open. Occasionally, feeding activities of the midge can lead to the collapse of whole flower heads. This previously unknown species has now been formally described as *Enigmadiplosis agapanthi* sp. nov. (Harris *et al*., 2016). The Royal Horticultural Society has initiated a research project to elucidate the biology of this new species and identify possible management methods to limit flower damage. Since this initial discovery, further surveillance has been undertaken in the United Kingdom. Results have shown that *E. agapanthi* is established and present in several counties (i.e. Cornwall, Devon, Dorset, Essex, Hampshire, London, Somerset, Surrey, West Sussex (South England) and in West Yorkshire (North England)). There was also an unconfirmed finding in Cumbria (Northwest England). Locations in which the midge has been recorded include public and private gardens, as well as plant nurseries and garden centres. As there are no effective control options available against this pest, no containment or eradication measures are envisaged in the wider environment or on commercial premises. However, information will be provided to help limit pest populations. The origin of this introduction is unknown but it is suspected that *E. agapanthi* originates from South Africa, as an undescribed and unstudied gall midge inducing identical symptoms has been recorded there.
The pest status of *Enigmadiplosis agapanthi* in the United Kingdom is officially declared as: **Present (restricted distribution).**

Source: Harris KM, Salisbury A, Jones H (2016) *Enigmadiplosis agapanthi*, a new genus and species of gall midge (Diptera, Cecidomyiidae) damaging *Agapanthus* flowers in England. *Cecidology* **31**, 17-25.

NPPO of the United Kingdom (2016-04).

Additional key words: new pest **Computer codes:** ENIGAG, GB

2016/078 Quarantine treatment of curry leaves (*Murraya koenigii*) infested by *Diaphorina citri*

Experiments have been conducted in the USA to evaluate the effects of hot water treatments, alone or in combination with a disinfectant, on the survival and removal (detachment from the leaves) of *Diaphorina citri* (Hemiptera: Liviidae – EPPO A1 List) nymphs on leaves of *Murraya koenigii* (=*Bergera koenigii*). Decontamination of infested curry leaves was studied at different water temperatures (0, 40, and 50°C) and treatment duration (0, 5, 10, and 20 min), with or without the addition of a disinfectant. 100% mortality of *D. citri* nymphs, with a minimal level of damage to curry leaf tissue, was obtained with a hot water treatment at 40°C for 5 min, including a disinfectant. It is concluded that such a treatment could be envisaged as a postharvest quarantine treatment of curry leaves.

Source: Anco DJ, Poole GH, Gottwald TR (2015) Postharvest quarantine treatments for *Diaphorina citri* on infested curry leaves. *Phytopathology* **99**(7), 926-932.

Pictures: *Diaphorina citri*. https://gd.eppo.int/taxon/DIAACI/photos

Additional key words: quarantine treatment **Computer codes:** DIAACI

2016/079 First report of *Xanthomonas citri* subsp. *citri* in Martinique

In Martinique (FR), *Xanthomonas citri* subsp. *citri* (EPPO A1 List) was detected in 2014 in a small citrus orchard located in the municipality of Morne Rouge. This orchard included the following citrus species: 14 grapefruit (*Citrus paradisi*), 14 mandarin (*C. reticulata*), 3 orange (*C. sinensis*), 1 lime (*C. latifolia*) trees. The owner of this orchard had contacted the official authorities in June 2014 and the presence of the bacterium was officially confirmed in July 2014 in all grapefruit, orange, and lime trees, as well as in 7 (out of 14) mandarin trees. In August 2014, eradication measures were implemented. A focus zone and a buffer zone were delimited. In the focus zone, all citrus hosts were tested and in the buffer zone, citrus trees were tested at random. All infected trees were destroyed in the orchard concerned, as well as in several private gardens. As of October 2015, no other infected trees have been detected in the municipality of Morne Rouge, and this outbreak is considered to be successfully eradicated. However, during surveillance activities carried out across the whole territory of Martinique, 2 new outbreaks were found in the municipalities of Lorrain and Saint-Pierre, in May 2015 and August 2015, respectively. Eradication measures are being implemented.
The pest status of *Xanthomonas citri* subsp. *citri* in Martinique is officially declared as: **Transient, subject to a control programme, under eradication.**

Source: NPPO of France (2015-10).

Pictures: *Xanthomonas citri* subsp. *citri*. https://gd.eppo.int/taxon/XANTCI/photos

Additional key words: new record **Computer codes:** XANTCI, MQ

2016/080 Assignment of *Pseudomonas syringae* pv. *actinidiae* biovar 4 to *Pseudomonas syringae* pv. *actinidifoliorum* pv. nov.

Following the outbreaks of bacterial canker of kiwifruit caused by *Pseudomonas syringae* pv. *actinidiae* (EPPO A2 List) in different parts of the world, studies have showed that 4 biovars could be distinguished based on their biochemical, pathogenicity and molecular characteristics. *P. syringae* pv. *actinidiae* biovars 1, 2 and 3 are associated with canker and shoot dieback on kiwifruit, whereas strains of biovar 4 are less aggressive, causing only leaf spots. Strains of biovar 1 and 2 have been detected in Japan and the Republic of Korea, respectively. Biovar 3 includes the aggressive strains that are responsible for economic damage on kiwifruit production (e.g. in Italy, France, New Zealand, Portugal, Spain).
Recent studies have been conducted in France on 72 strains of *P. syringae* pv. *actinidiae* from different origins (Australia, France, Italy, Japan, Korea, New Zealand) and including all biovars. As strains of biovar 4 were found to be substantially different from those of the other biovars, it was proposed to assign biovar 4 to a new pathovar tentatively called *Pseudomonas syringae* pv. *actinidifoliorum* pv. nov. According to the literature, *Pseudomonas syringae* pv. *actinidifoliorum* has been detected on kiwifruit (*A. deliciosa* and *A. chinensis*) in Australia, France, New Zealand and Spain.

Source: Abelleira A,, Ares A, Aguin O, Peñalver J, Morente MC, López MM, Sainz MJ, Mansilla JP (2015) Detection and characterization of *Pseudomonas syringae pv. actinidifoliorum* in kiwifruit in Spain. *Journal of Applied Microbiology* **119**(6), 1659-1671.
Cunty A, Poliakoff F, Rivoal C, Cesbron S, Fischer-Le Saux M, Lemaire C, Jacques MA, Manceau C, Vanneste JL (2015) Characterisation of *Pseudomonas syringae pv. actinidiae* (Psa) isolated from France and assignment of strains Psa biovar 4 to a de

novo pathovar: *Pseudomonas syringae* pv. *actinidifoliorum* pv. nov. *Plant Pathology* **64**(3), 582-596.

Pictures: *Pseudomonas syringae* pv. *actinidiae*. https://gd.eppo.int/taxon/PSDMAK/photos

Additional key words: taxonomy **Computer codes:** PSDMAF, PSDMAK

2016/081 First report of *Tomato chlorosis virus* in the Republic of Korea

Tomato chlorosis virus (*Crinivirus*, ToCV – EPPO A2 List) occurs in the Republic of Korea. It was first found in 2013 on greenhouse tomato plants in Nonsan (Chungcheongnamdo), Iksan (Jeollabukdo), Hampyeong and Hwasun (Jeollanamdo), as well as in Jeju (Jejudo). During further studies, the presence of ToCV was detected by RT-PCR in root samples collected from the following 17 weed species: *Cardamine flexuosa, Cerastium glomeratum, Chenopodium album, Conyza canadensis, Erigeron annuus, Ipomoea hederacea, Mazus pumilus, Phytolacca americana, Quamoclit coccinea, Solanum americanum, Solanum nigrum, Sonchus asper, Stellaria media, Trigonotis peduncularis, Vicia angustifolia* var. *segetalis, Vicia tetrasperma,* and *Youngia japonica*. It is noted that these weed species might serve as virus reservoirs between tomato cultivation seasons.
The situation of *Tomato chlorosis virus* in the Republic of Korea can be described as follows: **Present, only in some areas.**

Source: Kil EJ, Lee YJ, Cho S, Auh CK, Kim D, Lee KY, Kim MK, Choi HS, Kim CS, Lee S (2015) Identification of natural weed hosts of *Tomato chlorosis virus* in Korea by RT-PCR with root tissues. *European Journal of Plant Pathology* **142**(2), 419-426.

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

2016/082 First report of *Grapevine Pinot gris virus* in Canada

In Canada, a preliminary survey has been conducted in Ontario, to verify the possible presence of *Grapevine Pinot gris virus* (*Trichovirus*, GPGV). In 2014 and 2015, 77 samples were collected from 10 vineyard blocks located in the main grape-production region of Ontario. Using RT-PCR, GPGV was detected in 11 samples collected from cvs. 'Syrah', 'Cabernet Franc', 'Riesling', and 'Vidal blanc' in 5 vineyard blocks. Further molecular tests (sequencing, next generation sequencing) were carried out and confirmed the identity of the virus in the tested samples. This is the first time that GPGV is detected in Canada. It is noted that further research is needed to investigate the origin, distribution, genetic diversity, and economic impact of GPGV.

Source: Xiao H, Shabanian M, McFadden-Smith W, Meng B (2016) First report of *Grapevine Pinot gris virus* in commercial grapes in Canada. *Plant Disease* **100**(5), p 1030.

Additional key words: new record **Computer codes:** GPGV00, CA

2016/083 Update on the situation of *Potato spindle tuber viroid* in the Netherlands

The NPPO of the Netherlands recently provided updated information about the situation of *Potato spindle tuber viroid* (*Pospiviroid*, PSTVd – EPPO A2 List) on its territory.

- **Eradication of PSTVd in potato breeding material**

In March 2014, PSTVd was detected in potato (*Solanum tuberosum*) breeding material (EPPO RS 2014/088). In April 2016, the Dutch NPPO officially declared that after two years of compulsory testing of all breeding plants actively used for crossing experiments, PSTVd has successfully been eradicated. It is noted that there are no links with commercial potato cultivars and that no infections were found during the annual surveys carried out on 'regular' seed potatoes in 2014 and 2015 (approximately 800 samples/year).

- **First detection of PSTVd in *Capsicum annuum* plants for planting (seedless cultivars)**

In March 2016, the presence of PSTVd was officially confirmed in 4 greenhouses producing plants for planting of *Capsicum annuum* (several seedless cultivars). One glasshouse is located in the municipality of 'Peel en Maas' and the others in the municipality of Westland. No specific symptoms were observed on infected plants. At the 4 locations, PSTVd infections were confirmed in 8, 590, 100 and 1 616 young capsicum plants, respectively. Investigations showed that these findings were linked to propagation material. The presence of PSTVd was initially suspected by the breeding company while testing these seedless cultivars and then reported to the Dutch NPPO. The propagation material used to produce mother plants had been imported by a Dutch nursery from Israel in 2014 and 2015. Plants for planting of these cultivars were then produced and distributed to the affected companies in the Netherlands and to some other EU Member States which have been duly informed. A similar PSTVd sequence has been found in all samples taken from the 4 locations. This sequence was also very similar to those found in interceptions of *S. jasminoides*. All infected lots will be destroyed by incineration. Neighbouring lots of plants will be inspected and tested. Tracing-back and –forward studies are on-going. A specific survey will also be carried out at other sites producing capsicum fruit.

The pest status of *Potato spindle tuber viroid* in the Netherlands is officially declared as:
Outbreak in *C. annuum*, under eradication.
Transient in ornamentals (*S. jasminoides*).
One outbreak in *Dahlia* sp. in 2013, eradicated.
Two findings in potato breeding material (*S. tuberosum*) in 2014, eradicated.
Incidental finding in tomato (*S. lycopersicum*) fruit production in 2013, eradicated.

Source: NPPO of the Netherlands (2016-04).

Pictures: *Potato spindle tuber viroid*. https://gd.eppo.int/taxon/PSTVD0/photos

Additional key words: detailed record, eradication **Computer codes:** PSTVD0, NL

2016/084 First confirmed report of *Potato spindle tuber viroid* in Switzerland

The NPPO of Switzerland recently informed the EPPO Secretariat of the first official finding of *Potato spindle tuber viroid* (*Pospiviroid*, PSTVd – EPPO A2 List) on plants of *Capsicum annuum* (various seedless cultivars) on its territory. In March 2016, PSTVd was simultaneously detected (RT-PCR, sequencing) in two distinct places of production (greenhouses) located in the cantons of Zurich and Aargau. The infected capsicum plants belonged to the same lot which had been imported from a Dutch nursery in which PSTVd has recently been found (EPPO RS 2016/083). Affected plants did not show any specific symptoms. Official measures have been taken to eradicate PSTVd. All capsicum plants belonging to the infected lot have been destroyed by incineration and as a precaution, hygiene measures have also been imposed until further notice at the two production sites. Investigations are currently being carried out on other plant lots and species of *Solanum* at both places of production to verify whether mechanical transmission or transmission via irrigation water has not occurred.
The pest status of *Potato spindle tuber viroid* in Switzerland is officially declared as: **Transient, actionable, under eradication.**

Source: NPPO of Switzerland (2016-04).

Pictures: *Potato spindle tuber viroid*. https://gd.eppo.int/taxon/PSTVD0/photos

Additional key words: new record **Computer codes:** PSTVD0, CH

2016/085 New viruses of *Prunus*

A new *Luteovirus*, tentatively called Nectarine stem pitting-associated virus (NSPaV), has been detected using metagenomic analysis in nectarine trees showing symptoms of stunting in a propagation block in California, US. These 5-year old trees had been propagated from scions of 3 nectarine cultivars imported from France and grafted onto peach rootstock ('Nemaguard'). No foliar symptoms could be detected but extensive stem-pitting was observed under the bark above the graft union. Further studies are needed to verify the role of NSPaV in this stem-pitting disease of nectarine (Bag *et al.*, 2015).

Two new betaflexiviruses, tentatively called Apricot vein clearing-associated virus (AVCaV) and Caucasus prunus virus (CPrV) have been detected using deep-sequencing analysis in apricot (*Prunus armeniaca*). AVCaV was detected in one apricot tree showing vein clearing symptoms in Southern Italy. As AVCaV was detected in mixed infection with Plum bark necrosis stem pitting-associated virus, further studies are needed to verify the possible role of AVCaV in the observed symptomatology (Elbeaino *et al.*, 2014). In subsequent studies, AVCaV was detected in 2 Japanese plum trees (*P. salicina*) from a French germplasm collection and CPrV was detected in 1 almond tree (*P. amygdalus*) from Azerbaijan. It is also proposed that both AVCaV and CPrV belong to a new genus for which the name Prunevirus is proposed (Marais *et al.*, 2015).

Source: Bag S, Al Rwahnih M, Li A, Gonzalez A, Rowhani A, Uyemoto JK, Sudarshana MR (2015) Detection of a new Luteovirus in imported nectarine trees: a case study to propose adoption of metagenomics in post-entry quarantine. *Phytopathology* **105**(6), 840-846.

Elbeaino T, Giampetruzzi A, De Stradis A, Digiaro M (2014) Deep-sequencing analysis of an apricot tree with vein clearing symptoms reveals the presence of a novel

betaflexivirus. *Virus Research* **181**, 1-5.

Marais A, Faure C, Mustafayev E, Candresse T (2015) Characterization of new isolates of Apricot vein clearing-associated virus and of a new Prunus-infecting virus: evidence for recombination as a driving force in Betaflexiviridae evolution. PLOS ONE 10(6), http://dx.doi.org/10.1371/journal.pone.0129469

Additional key words: new pest **Computer codes:** 1VIRUK

2016/086 Comparison of dispersal capacity via fragmentation of submerged aquatic invasive alien plants in New Zealand

In general, in most submerged alien invasive plants (for example *Elodea canadensis* and other Hydrocharitaceae) seed production is absent due to the presence of only one gender in the introduced range. Thus, the spread of these species is restricted to the dispersal of asexual propagules where stem fragments are one of the most common dispersal units for such submerged aquatic plants. The potential stem fragmentation of three invasive alien plants to New Zealand (*E. canadensis*, *Egeria densa* (EPPO List of Invasive Alien Plants) *Lagarosiphon major*) was evaluated under different flow velocities and two different light conditions in a large flow tank. Plants were field collected and 100 apical shoots (25 cm in length) were separately planted in 8 trays for each species. For each species two trays were transferred to the flow tank for a period of 8 days when the plant shoots were between 40 – 60 cm in length at the beginning of the experiment. Prior to the start of the experiment, plants were maintained for three days in the flow tank with a water velocity of 0.05 m s^{-1} where all plants were exposed to low light conditions using an 80 % shade cloth. For high light conditions a 50 % shade cloth was used. Following three days of acclimation, flow velocity was increased by 0.1 m s^{-1} from 0.1 m s^{-1} to 0.4 m s^{-1} every two days. A 15 mm mesh was positioned downstream of the plants to collect fragments. In total, 213 fragments were produced by 2 400 plant shoots with *E. canadensis* showing higher fragmentation rates than *E. densa* and *L. major*. Light intensity had no effect on the number of fragments produced. *E. canadensis* produced the longest fragments (9.8 ± 0.7 cm) followed by *E. densa* (7.3 ± 0.8 cm) then *L. major* (3.2 ± 1.1cm). There was no effect of velocity on fragment length. The plant fragments produced during the experiment were tested for their reproductive capacity with *E. canadensis* exhibited the highest regeneration with 92 % of all fragments regenerating within four weeks. For *E. densa*, 88 % of fragments regenerated and *L. major* 50 % regeneration was observed. These data are important information to gather for the species in order to assess their risk potential and the likelihood of unintended spread.

Source: Redekop P, Hofstra D, Hussner A (2016) *Elodea canadensis* shows a higher dispersal capacity via fragmentation than *Egeria densa* and *Lagarosiphon major*. *Aquatic Botany* **130**, 45-49.

Additional key words: invasive alien plants **Computer codes:** ELDCA, ELDDE, LGAMA, NZ

2016/087 Invasive goldenrods affect abundance and diversity of grassland ant communities

Solidago gigantea and *S. canadensis (*Asteraceae, EPPO List of Invasive Alien Plants) are a major threat to semi-natural habitats in Central Europe having been introduced as garden ornamentals from North America in the first half of the nineteenth century. Their success can be attributed to their high colonisation ability, rapid growth rates and high propagule pressure (plants can produce thousands of seeds which are wind dispersed). The present study evaluated the impact of the presence of *S. gigantea* and *S. canadensis* on ant (Hymenoptera: Formicidae) populations in ten semi-natural wet grasslands located in the south-eastern part of Kraków (Poland). Ants are considered a keystone species in many natural habitats, playing an important role in modifying the physico-chemical properties of the soil. Ants are sensitive to environmental changes making them useful bioindicators of the environment. At each of the ten sites, six 5 x 5 m square plots were selected where three plots were dominated by *S. gigantea* and *S. canadensis* and three were control plots (free from the non-native species). The cover of vegetation in each plot was estimated

using the Braun-Blanquet Cover-Abundance Scale method. In each plot the total number of ant nests was recorded and the ant species present were identified. A total number of 1 087 ant nests belonging to seven species were observed during the study. *Myrmica* spp. were the most common species collected and were more numerous in the control sites compared to the invaded sites. The number of ant nests was significantly lower in invaded plots compared to the controls with more than a 50 % reduction in invaded plots. The number of ant species was also lower in invaded plots compared to the controls, with the results of a NMDS ordination plot suggesting differences in the structure of the ant community between invaded and uninvaded plots.

Source: Kajzer-Bonk J, Szpilyk D, Woyciechowski M (2016) Invasive goldenrods affect abundance and diversity of grassland ant communities (Hymenoptera: Formicidae). *Journal of Insect Conservation* **20**, 99–105.

Additional key words: invasive alien plants **Computer codes:** SOOCA, SOOGI,PL

2016/088 General public's perception of invasive plant species in Switzerland

The general public's support and participation in the prevention, management and regulation of invasive alien plants is essential to the success or failure of implementing such methodologies. However, knowledge of the issues regarding invasive alien plants, such as negative impacts and costs expended in the management of these species may vary considerably within the population. A layperson's perception of invasive species management may significantly differ to that of stakeholders working in the field of conservation or natural resource management especially when the removal of charismatic species is being discussed. The present study investigated the perception of invasive alien plants by more than 700 laypersons in Switzerland by asking the participants to complete a questionnaire in the summer of 2009. The questionnaire consisted of two parts where in part 1, the participants were asked to identify eight species from photographs using their common names (see Table below) and to characterize each species by five opposing attributes (ugly – beautiful, extraordinary – ordinary, exotic – indigenous, unfamiliar – familiar, unwanted – wanted). The second part of the questionnaire sought perceptions on different types of management, where following a short introduction on invasive alien plants, the participants were asked to choose among four different types of management:

1) no intervention,
2) no removal of aesthetically pleasing plants but removal of less appealing ones,
3) removal of only those species which incur serious problems and costs,
4) removal of all invasive plants in order to conserve unique habitats.

Almost all of the eight species were perceived as beautiful and wanted. On average, *Ludwigia grandiflora* (EPPO A2 List) was considered the most beautiful. Only 75 of the participants correctly identified at least one of the species. *Buddleja davidii* and *Heracleum mantegazzianum* (both EPPO A2 species) were most often correctly identified. *B. davidii, Solidago canadensis* (EPPO List of Invasive Alien Plants) and *Trachycarpus fortunei* were on average the species people were most unwilling to remove from established areas. There was a general consensus that invasive alien plants that incur serious costs and negative impacts should be managed.

Table. The eight species highlighted in the questionnaire

Species	Family	Form	Origin
Solidago canadensis	Asteraceae	Herbaceous perennial	N - America
Buddleja davidii	Buddlejaceae	Perennial shrub	Asia
Ambrosia artemisiifolia	Asteraceae	Herbaceous annual	N - America
Senecio inaequidens	Asteraceae	Herbaceous perennial	Africa
Trachycarpus fortunei	Arecaceae	Perennial tree	Asia
Heracleum mantegazzianum	Apiaceae	Herbaceous biennial	Central Asia
Impatiens glandulifera	Balsaminaceae	Herbaceous annual	Asia
Ludwigia grandiflora	Onagraceae	Herbaceous perennial (aquatic)	S- America

Source: Lindemann-Matthies P (2016) Beasts or beauties? Laypersons' perception of invasive alien plant species in Switzerland and attitudes towards their management. *NeoBiota* **29**, 15–33.

Additional key words: invasive alien plants **Computer codes:** AMBEL, BUDDA, HERMZ, IPAGL, LUDUR, SENIQ, SOOCF, TRRFO, CH

2016/089 Impacts of invasive alien plants in Saudi Arabia

Saudi Arabia contains a variety of ecosystems ranging from high altitude mountains (up to 3050 m asl), valleys, meadows, salt pans, deep sands, lava areas and drainage canals. Invasive alien plants have a profound impact on both natural ecosystems and agricultural regions in Saudi Arabia, reducing crop yields and displacing native plant species. In the present study, over 1 000 stands from 10 major habitats in four regions in Saudi Arabia were surveyed for preliminary observations on the impact of invasive alien plants. Species were identified along with an estimate of their cover. In total, 48 exotic plant species were identified during this study, with 6 species (see table below) being identified as major invaders. *Prosopis juliflora* was identified as the most prominent invasive alien plant in lowland habitats. Interestingly, *P. juliflora* has been prioritised as a species with a high priority for a PRA under the LIFE project: Mitigating the threat of invasive alien plants in the EU through pest risk analysis to support the EU Regulation 1145/2014. In Saudi Arabia, mountain and river ecosystems have the highest value in terms of endemic biological diversity but it is these habitats that have the highest cover of alien invasive plants. Careful management of invasive populations coupled with biosecurity measures are needed to mitigate the current and potential future impacts of invasive alien plants in Saudi Arabia.

Table. Six major invasive alien plant species in Saudi Arabia

Species	Family	Form	Origin
Argemone ochroleuca	Papaveraceae	Herbaceous annual	C - America
Nicotiana glauca	Solanaceae	Perennial tree/bush	S - America
Opuntia stricta var. dillenii	Cactaceae	Herbaceous perennial	N & S America
Opuntia ficus-indica	Cactaceae	Herbaceous perennial	N America
Prosopis juliflora	Mimosoideae	Perennial tree/bush	N & S America
Trianthema portulacastrum	Aizoaceae	Herbaceous perennial	C & S America/ Africa

Source: Thomas J, El-Sheikh MA, Alfarhan AH, Alater AA, Sivadasan M, Basahi M, Al-Obaid S (2016) Impact of alien invasive species on habitats and species richness in Saudi Arabia. *Journal of Arid Environments* **127**, 53-65.

Additional key words: invasive alien plants, management **Computer codes:** ARGOC, NIOGL, OPUDI, OPUFI, PRCJU, TRTPO, SA

2016/090 Host range testing casts doubt on the suitability of *Epiblema strenuana* as a biological control agent for *Parthenium hysterophorus* in Africa

Parthenium hysterophorus (Asteraceae: EPPO A2 List) is an annual or short-lived perennial plant species native to Central and South America and one of the most invasive problematic weeds in many regions of the world. In Africa, *P. hysterophorus* is a major weed of natural and semi-natural areas, arable land, orchard and forests. *P. hysterophorus* was targeted for biological control in South Africa in 2003, where *Puccinia xanthii* var. *parthenii-hysterophorae* (Pucciniaceae), *Listronotus setosipennis* (Curculionidae), *Zygogramma bicolorata* (Chrysomelidae) and *Smicronyx lutulentus* (Curculionidae) have been released against the pest since 2010. *Epiblema strenuana* (Lepidoptera: Tortricidae) was imported into quarantine in South Africa for evaluation as a potential control agent. The moth is widespread and damaging on *P. hysterophorus* in Australia and China but was rejected as a control agent for the weed in India due to development on *Guizotia abyssinica* (Asteraceae: Heliantheae) during laboratory testing. Although *G. abyssinica* is not cultivated in South Africa, it is in East Africa (*G. abyssinica* is an important commercial oil crop in some countries in the region) and there are concerns that the species could spread to this region. Under quarantine no-choice testing, *E. strenuana* only developed on one of five Ethiopian cultivars of *G. abyssinica* tested, though there was significant larval feeding damage on all cultivars. In multiple-choice testing, none of the Ethiopian cultivars supported development of the lifecycle and larval damage was significantly lower compared to the same cultivars under no-choice tests. In 2012, South African researchers deprioritised *E. strenuana* as a potential biological control agent at least until its host range and potential impacts were further evaluated through field trials in Australia.

Source: McConnachie AJ (2015) Host range tests cast doubt on the suitability of *Epiblema strenuana* as a biological control agent for *Parthenium hysterophorus* in Africa. *BioControl* **60**, 715-723.

Pictures: *Parthenium hysterophorus*. https://gd.eppo.int/taxon/PTNHY/photos

Additional key words: invasive alien plants, management **Computer codes:** EPIBST, GUIAB, LISRSE, PTNHY, PUCCXP, SMICLU, ZYGGBI, AU, ET, ZA

2016/091 Online survey on the management of cactus species

The Global Working Group on the Management of Cactus Species has developed an online survey aimed to collect information on the management of cactus invasions. This survey is part of a new research project where the outputs will include listing available management practices, detailing barriers for management and identifying future research projects needed for the management of cactus invasions all over the world. People working with and/or affected by or interested in cactus invasions are invited to complete the survey by visiting http://academic.sun.ac.za/cib/projects/cactuswg/survey.asp.

Source: Global Working Group on the Management of Cactus Species
Website: http://academic.sun.ac.za/cib/projects/cactuswg/survey.asp

Additional key words: invasive alien plants

2016/092 LIFE project: Mitigating the threat of invasive alien plants in the EU through pest risk analysis to support the EU Regulation 1145/2014

EPPO and the Centre of Ecology and Hydrology is pleased to announce the launch of our new LIFE project website (http://www.iap-risk.eu) which will act as a portal to disseminate information including updates, datasheets, pest risk assessments and papers produced by the project. At present you can read about the background to the project and learn more about the organizations conducting the work. In addition, under 'the project' tab you can read in detail the objectives of the project and the work packages which will be implemented in order to achieve the results. In addition to the projects' website you can also follow us on Twitter, for news and information on invasive alien plants, via the account name detailed below.

Project website: http://www.iap-risk.eu
Twitter account: @RobtannerRt

Source: EPPO Secretariat (2016-04).

Additional key words: invasive alien plants