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2020/137 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**

In Zambia, *Curtobacterium flaccumfaciens* pv. *flaccumfaciens* (EPPO A2 List) was found for the first time in March 2019. The bacterium was detected in symptomatic soybean (*Glycine max*) plants grown in research plots in Kabwe and Mpogwe (Pawlowski and Hartman, 2019). **Present**.

In South Korea, field surveys were conducted in major production areas for strawberry in 2018-2019 to determine the incidence of aphid-transmitted viruses. *Strawberry mild yellow edge virus* (SMYEV – EU Annexes), *Strawberry mottle virus* (SMoV – EU Annexes) were detected with low infection rates of 0.7% and 1.3%, respectively. *Strawberry crinkle virus* (SCV – EU Annexes), and *Strawberry vein banding virus* (SVBV – EPPO A2 List) were not detected. No obvious symptoms were observed in the strawberry plants infected by SMYEV or SMoV (Kwon *et al.*, 2019). SMYEV and SMoV: **Present.**

- **Detailed records**

Apple stem grooving virus and apple chlorotic leaf spot virus (both listed on EU Annexes) were first found infecting loquat (*Eriobotrya japonica*) in Chongqing, China in March 2018. This is the first report of these viruses naturally infecting loquat (Liu *et al.*, 2019).

- **Eradication**

In May 2020, *Ralstonia solanacearum* race 3 biovar 2 (EPPO A2 List) was detected in *Pelargonium* in Canada (EPPO RS 2020/098). The bacterium was found in a greenhouse in Ontario. An eradication campaign was implemented and involved more than 88 facilities in 8 provinces. In July 2020, the Canadian Food Inspection Agency announced that *Ralstonia solanacearum* race 3 biovar 2 had been successfully eradicated from Canadian greenhouses. The pest status of *Ralstonia solanacearum* race 3 biovar 2 in Canada is officially declared as: **Absent, pest eradicated**.

In April 2020, *Ralstonia solanacearum* race 3 biovar 2 (EPPO A2 List) was detected on greenhouse *Pelargonium* in the USA (EPPO RS 2020/099). The bacterium was first found in a greenhouse in Michigan and then in another site. An eradication campaign was initiated, involving more than 650 facilities in 44 states, and in June 2020 USDA-APHIS announced that *Ralstonia solanacearum* race 3 biovar 2 had been successfully eradicated from US greenhouses.
The pest status of *Ralstonia solanacearum* race 3 biovar 2 in the USA is officially declared as: **Absent and eradicated from the United States**.

- **Host plants**

Tomato chlorosis virus (*Crinivirus*, ToCV – EPPO A2 List) has been detected in seedlings of *Tectona gran*dis (Lamiaceae) in Brazil. Affected plants were showing interveinal yellowing and were also infested by *Bemisia tabaci* (Borges *et al.*, 2019).

- **New pests**

Phytophthora abietivora is a new species in the genus *Phytophthora*, described from diseased Christmas trees (*Abies fraseri*) in Connecticut (USA). The pathogen caused root rots leading to death of *A. fraseri* trees (Li *et al.*, 2019).

- **Epidemiology**

Studies conducted in the Republic of Korea had shown that infected seeds of tomato (*Solanum lycopersicum*) could transmit *Tomato yellow leaf curl virus* (TYLCV - EPPO A2 List) (EPPO RS 2018/173). However, further surveys conducted by Pérez-Padilla *et al.* (2019) with the type strain (TYLCV-IL) on more than 3000 plants of seven tomato genotypes concluded that most of the virus is located externally, as contaminant of the seed coat and that TYLCV-IL is not seed transmitted in tomato.

Sources:

Borges RCF, Fontes MG, Macedo MA, Lima F, Boiteux LS, Fonseca MEN (2019) First report of tomato chlorosis virus infecting *Tectona grandis* associated with infestation of *Bemisia tabaci* Mediterranean in Central Brazil. *Plant Disease* **103**(10), 2704-2705.

Kwon S-J, Yoon J-B, Cho I-S, Yoon J-Y, Kwon T-R (2019) Incidence of aphid-transmitted strawberry viruses in Korea and phylogenetic analysis of Korean isolates of strawberry mottle virus. *Research in Plant Disease* **25**(4), 226–232 (in Korean with English abstract) https://doi.org/10.5423/RPD.2019.25.4.226

Li D-W, Schultes NP, LaMondia JA, Cowles RS (2019) *Phytophthora abietivora*, a new species isolated from diseased Christmas trees in Connecticut, USA. *Plant Disease* **103**(12), 3057-3064. https://doi.org/10.1094/PDIS-03-19-0583-RE

Liu Q, Xuan Z, Wu J, Qiu Y, Li M, Zhang S, Wu D, Li R, Cao M (2019) Loquat is a new natural host of apple stem grooving virus and apple chlorotic leaf spot virus in China. *Plant Disease* **103**(12), p 3290. https://doi.org/10.1094/PDIS-04-19-0721-PDN

NAPPO Phytosanitary Alert System. Official Pest Reports.

- Canada (2020-07-20) *Ralstonia solanacearum*, race 3 biovar 2 (Rs R3bv2) eradicated from Canadian greenhouses. https://www.pestalerts.org/official-pest-report/ralstonia-solanacearum-race-3-biovar-2-rs-r3bv2-eradicated-canadian
- USA (2020-06-23) *Ralstonia solanacearum* race 3 biovar 2: eradicated from US greenhouses. https://www.pestalerts.org/official-pest-report/ralstonia-solanacearum-race-3-biovar-2-eradicated-u-s-greenhouses

Pawlowski ML, Hartman GL (2020) First report of *Curtobacterium flaccumfaciens* pv. *flaccumfaciens* causing bacterial tan spot on soybean in Africa. *Plant Disease* **103**(10), p 2665. https://doi.org/10.1094/PDIS-05-19-1036-PDN

Pérez-Padilla V, Fortes IM, Romero-Rodríguez B, Arroyo-Mateos M, Castillo AG, Moyano C, De León L, Moriones E (2020) Revisiting seed transmission of the type strain of *Tomato yellow leaf curl virus* in tomato plants. *Phytopathology* **110**(1), 121-129.

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

Computer codes: ACLSV0, ASGV00, CORBFL, PHYAB, RALSSO, SMOV00, SMYEV0, TOCV00, BR, CA, CN, KR, US, ZM

2020/138 New and revised dynamic EPPO datasheets are available in the EPPO Global Database

The EPPO Secretariat is in the process of revising the EPPO datasheets on pests recommended for regulation. This project is also supported by an EU grant agreement. This revision provides the opportunity to create dynamic datasheets in the EPPO Global Database in which the sections on pest identity, host range and geographical distribution are automatically generated by the database. It is planned that these dynamic datasheets will progressively replace the PDF documents that are currently stored in the database. Since the previous report (EPPO RS 2020/113), the following revised EPPO datasheets have been published in the EPPO Global Database:

- *Agrilus anxius*: https://gd.eppo.int/taxon/AGRLAX/datasheet
- Chrysanthemum stem necrosis virus: https://gd.eppo.int/taxon/CSNV00/datasheet
- *Heterobasidion irregulare*: https://gd.eppo.int/taxon/HETEIR/datasheet
- *Pityophthorus juglandis*: https://gd.eppo.int/taxon/PITOJU/datasheet

Source: EPPO Secretariat (2020-07).

Additional key words: publication **Computer codes:** AGRLAX, CSNV00, HETEIR, PITOJU

2020/139 Recommendations to policy makers from Euphresco projects

The following research project has recently been carried out in the framework of Euphresco (network for phytosanitary research coordination and funding - hosted by EPPO). A report presenting the main objectives and results of this project, as well as recommendations made to policy makers can be viewed on the Internet.

An International Plant Sentinel Network as an early-warning system; research on future pest threats (IPSN II)

Plant health legislation is heavily reliant upon lists of known damaging organisms and Pest Risk Analyses are used to determine the potential risk that organisms pose. A vital issue for risk analysts and National Plant Protection Organizations (NPPOs) is the 'unknown' threats and the lack of knowledge regarding those new and emerging threats. The International Plant Sentinel Network project provided the proof of concept that botanic gardens can help NPPOs. Botanic garden staff, if provided with the right training, can support the work of NPPOs by monitoring plants in collections of botanic gardens and arboreta. Pest surveillance and reporting have been integrated into the normal working practices of botanic gardens of the International Plant Sentinel Network. Monitoring plants growing outside their native regions provides a valuable opportunity to increase knowledge about new pest-host relationships, thus supporting Pest Risk Analysis. In addition, botanic gardens can help to raise awareness of the general public on plant health issues.
The work of the International Plant Sentinel Network will continue after the end of the project, coordinated by the Botanic Garden Conservation International (BGCI, GB).

Authors: O'Donnell, Katherine; Kiehn, Michael; Ronse, Anne; Rasovsky, Vladislav; Starfinger, Uwe; Gargani, Elisabetta; Simoni, Sauro; Hayden, Katherine; Kats, Lora; Hartzog, Heather; Moyelett, Heather; Vettraino, Anna Maria; Pons, Xavier; Fraser, Greg; Ravn, Hans Peter; Rumsey, Abigail; McNeill, Mark; Oliva, Jonas; Eschen, René.

Duration of the project: 2017-01-01 to 2020-03-03.

Link: https://zenodo.org/record/3908116#.XvSnLigzbIU

Source: Euphresco (2020-06). https://www.euphresco.net/projects/

Additional key words: research

2020/140 *Anoplophora glabripennis* eradicated from Canada

In Ontario (Canada), a small outbreak of *Anoplophora glabripennis* (Coleoptera: Cerambycidae – EPPO A1 List) was detected in September 2013 in the city of Mississauga (EPPO RS 2014/022, 2015/127). Eradication measures were applied in the regulated area, covering parts of the cities of Mississauga and Toronto. They included the restriction of the movement of nursery stock, trees, lumber, wood, and wood products, including all firewood unless given prior authorization. On 2020-06-09, after five years of surveys with no detection of this plant pest, the NPPO of Canada officially declared the successful eradication of *Anoplophora glabripennis* in the cities of Mississauga and Toronto, and as a consequence from its whole territory.
The situation of *Anoplophora glabripennis* in Canada can be described as follows: **Absent, pest eradicated.**

Source: CFIA (2020-06-25) Asian longhorned beetle declared eradicated in the cities of Mississauga and Toronto. Press release. https://www.canada.ca/en/food-inspection-agency/news/2020/06/asian-longhorned-beetle-declared-eradicated-in-the-cities-of-mississauga-and-toronto.html

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

Additional key words: eradication **Computer codes:** ANOLGL, CA

2020/141 First report of *Spodoptera frugiperda* in Pakistan

In Pakistan, lepidopteran larvae were caught in March 2019 in maize (*Zea mays*) fields in various localities of Sindh and sent to the University of Agriculture of Multan for identification. Based on morphological characteristics, the pest was identified as fall armyworm, *Spodoptera frugiperda* (Lepidoptera: Noctuidae – EPPO A1 List). This is the first time that *S. frugiperda* is reported from Pakistan.
The situation of *Spodoptera frugiperda* in Pakistan can be described as: **Present, only in some areas (first found in 2019 in Sindh province).**

Source: Naeem Ullah U, Ashraf Ansari M, Iqbal N, Saeed S (2019) First authentic report of *Spodoptera frugiperda* (J.E. Smith) (Noctuidae: Lepidoptera) an alien invasive species from Pakistan. *Applied Sciences and Business Economics* **6**(1), 13.

Pictures: *Spodoptera frugiperda*. https://gd.eppo.int/taxon/LAPHFR/photos

Additional key words: new record **Computer codes:** LAPHFR, PK

2020/142 First report of *Spodoptera frugiperda* in Timor-Leste

According to the FAO website on fall armyworm, *Spodoptera frugiperda* (Lepidoptera: Noctuidae – EPPO A1 List) was officially reported in Timor-Leste in March 2020.
The situation of *Spodoptera frugiperda* in Timor-Leste can be described as: **Present.**

Source: INTERNET
FAO. Fall armyworm. Monitoring. FAW map. http://www.fao.org/fall-armyworm/monitoring-tools/faw-map/en/

Pictures: *Spodoptera frugiperda*. https://gd.eppo.int/taxon/LAPHFR/photos

Additional key words: new record **Computer codes:** LAPHFR, TL

2020/143 First report of *Spodoptera frugiperda* in Mauritania

According to the FAO website on fall armyworm, *Spodoptera frugiperda* (Lepidoptera: Noctuidae – EPPO A1 List) was officially reported in Mauritania in February 2020. The pest has been observed causing significant damage to maize (*Zea mays*) in the localities of M'Bagne (Brakna region) and Monguel (Gorgol region) in Southern Mauritania.
The situation of *Spodoptera frugiperda* in Mauritania can be described as: **Present, only in some areas.**

Source: INTERNET
FAO. Fall armyworm. Monitoring. FAW map. http://www.fao.org/fall-armyworm/monitoring-tools/faw-map/en/

Cridem (2020-03-20) Première signalisation de la chenille légionnaire d'automne en Mauritanie. http://www.cridem.org/C_Info.php?article=733991

Pictures: *Spodoptera frugiperda*. https://gd.eppo.int/taxon/LAPHFR/photos

Additional key words: new record **Computer codes:** LAPHFR, MR

2020/144 First report of *Hyphantria cunea* in Belarus

The NPPO of Belarus recently informed the EPPO Secretariat of the first record of *Hyphantria cunea* (Lepidoptera: Erebidae - formerly EPPO A2 List) on its territory. The insect was first found in June 2019 in the Gomel region (Khoiniki, Naroulia, Kalinkavichy, Brahin, Dobrush and Loyew districts). An eradication programme has been put into place.
The pest status of *Hyphantria cunea* in Belarus is officially declared as: **Present, only in some zones, the object of eradication program.**

Source: NPPO of Belarus (2020-04).

Pictures: *Hyphantria cunea*. https://gd.eppo.int/taxon/HYPHCU/photos

Additional key words: new record **Computer codes:** HYPHCU, BY

2020/145 Interceptions of *Bactrocera* species in Austria

Several specimens of *Bactrocera dorsalis sensu lato* (Diptera: Tephritidae – EPPO A1 List) were trapped during surveys conducted in Austria in 2012-2018 (EPPO RS 2019/226) and considered to be linked to the entry of larvae with infested fruits. The official survey continued in 2019, and fruit fly traps combined with highly attractive lures were used in Vienna (14 sites) and all other Austrian provinces (27 sites). Seven adult individuals belonging to the *Bactrocera dorsalis* complex were trapped at 5 out of the 14 sampled sites in Vienna in 2019 (only urban areas). Six of these adult flies belong to *Bactrocera dorsalis s.l.* and one individual belongs to *Bactrocera kandiensis* (Diptera: Tephritidae – EPPO A1 List). One

individual of *Bactrocera zonata* (Diptera: Tephritidae – EPPO A2 List) was trapped in one out of 14 sites in Vienna. All these findings are considered to be linked to the entry of larvae with infested fruits. As in previous years no specimens of *B. dorsalis, B. zonata* or *B. kandiensis* were caught in traps placed in the 27 sites of the other 8 Austrian provinces. These species were never found during surveillance of orchards.

The pest status of *Bactrocera dorsalis* in Austria is officially declared as: **Absent, confirmed by survey**.

The pest status of *Bactrocera kandiensis* in Austria is officially declared as: **Absent, confirmed by survey**.

The pest status of *Bactrocera zonata* in Austria is officially declared as: **Absent**.

Source: NPPO of Austria (2020-05).

Pictures: *Bactrocera dorsalis*. https://gd.eppo.int/taxon/DACUDO/photos

Additional key words: absence **Computer codes:** DACUDO, DACUZO, BCTRKA, AT

2020/146 *Agrilus mali*: addition to the EPPO Alert List

Why: *Agrilus mali* (Coleoptera: Buprestidae – apple buprestid) is a wood boring insect which can cause significant damage to apple trees (*Malus* spp.). It is native to the Eastern part of Asia (Northeastern China, Russian Far East and Korean peninsula). In Northeastern China, *A. mali* was considered as a sporadic pest in the major apple production areas (e.g. Shaanxi and Shandong). In 1993, it was discovered in Northwestern China, in an apple (*Malus domestica*) orchard in Xinyan county (Xinjiang province), and since then it rapidly invaded wild apple (*Malus sieversii*) forests in the Yili Valley of Tianshan Mountains. In this area, extensive mortality of *M. sieversii* has been reported. Considering the potential damage *A. mali* could cause to *Malus* species, the EPPO Panel on Phytosanitary Measures recommended to include it in the EPPO Alert List.

Where: *A. mali* originates from Asia.
EPPO region: Russia (Eastern Siberia, Far East).
Asia: China (Gansu, Guangxi, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Neimenggu, Qinghai, Shaanxi, Shandong, Sichuan, Xinjiang, Xizhang), Korea (Dem. People's Republic of), Korea (Republic of), Mongolia, Russia (Eastern Siberia, Far East).

On which plants: *A. mali* is a pest of *Malus* species, cultivated and wild. In addition to apple trees, *A. mali* has been reported on pear (*Pyrus* spp.), peach (*Prunus persica*) and cherry (*Prunus avium*) but data is generally lacking on the host status of these plant species. Studies on maturation feeding of adult beetles have shown that *Malus halliana* and *M. domestica* were suitable hosts, whereas *Pyrus betulifolia* and *Prunus persica* were not suitable.

Damage: As for other *Agrilus* species, damage is mainly caused by larval feeding. Adult beetles feed on leaves (maturation feeding) but do not cause significant damage. Larvae bore extensive galleries beneath the bark (phloem, cambium, and outer xylem tissues), thus disrupting the vascular system of the plant. Attacks by *A. mali* can lead to defoliation, branch and tree dieback, and eventually tree death. In addition, it has been observed that attacked trees were more susceptible to fungal infections (e.g. by *Valsa mali*), which may accelerate tree decline. In Russia, *A. mali* is considered as a pest of apple trees. It is also included in the quarantine list of the Eurasian Economic Union (as an A2 pest). In China, recent literature

mainly focuses on the damage caused by *A. mali* to wild apple trees in Xinjiang province. From 1993 to 2013, it is estimated that *A. mali* has damaged 40% of the area of wild apple forests and caused the death of thousands of *M. sieversii* trees in the Tianshan Mountains.
Adults are 8-10 mm long, variable in colour from bronze to metallic green. Larvae are creamy white, 18–20 mm long. In China, five larval instars have been observed. Pupae are 10 mm long, whitish yellow. Eggs are oblong, initially creamy white and then gradually becoming yellow. The life cycle of *A. mali* has been studied in Xinjiang province. *A. mali* has a univoltine life cycle and generally overwinters as young larvae inside their galleries. However, it is not known whether *A. mali* might require 2 years to complete its development in different conditions (e.g. colder climates). From late July to the beginning of September, adult females lay eggs (up to 60–70), preferably on young branches or new shoots. Larvae then start feeding and boring galleries until the next spring. The following year, from late April to late June, they start building pupation chambers in the wood. Depending on environmental conditions and tree age, pupation takes place over 2-3 months, and adult emergence occurs from the beginning of June to the end of July.
Pictures of *A. mali* are available in the EPPO Global Database:
https://gd.eppo.int/taxon/AGRLMA/photos

Dissemination: Adult beetles can fly over short distances from tree to tree. No other data is available on flying distances, but *A. mali* is not considered to be a strong flyer. Movements of infested plant material can ensure spread of the pest over long distances. In China, it is supposed that *A. mali* was introduced into Xinjiang in 1993 with infested apple seedlings from Shandong province, and then escaped to wild apple forests in the Tianshan Mountains.

Pathways: Plants for planting of *Malus* spp., wood? furniture? from countries where *A. mali* occurs.

Possible risks: Apple (*Malus domestica*) is widely grown in the EPPO region, mainly for fruit production but also for ornamental purposes, and is of major economic importance. Data is lacking on the cultivation of *M. sieversii* in the EPPO region, but from a quick Internet search, this plant is available for online sale from a number of nurseries. *M. sieversii* is native to Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, and northeastern Afghanistan) and is considered to be the main progenitor of all domesticated apple species. It is an important resource for apple breeding because of its rich genetic diversity. *M. sieversii* is listed as a vulnerable species by the International Union for Conservation of Nature (IUCN). In the wild apple forests of the Tianshan, *A. mali* has shown invasive behaviour and caused severe damage. Due to the fact that *A. mali* spends most of its life cycle inside trees, control is generally difficult. Options for controlling *A. mali* are pruning of infested branches, insecticide treatments and biological control. Research is being carried out in China to identify potential biological control agents which may regulate *A. mali* populations, in particular in wild apple forests where other control options are not practical. Although more data would be needed on the economic impact of *A. mali* on cultivated apple in orchards and nurseries, and on its potential for establishment in the EPPO region (outside its native range), more attention should be paid to this pest and its introduction into apple production should be avoided.

Sources

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EPPO RS 1995/03, 2020/146

Panel review date –

Entry date 2020-07

Additional key words: Alert List

Computer codes: AGRLMA

2020/147 *Pseudomonas syringae* pv. *actinidiae* does not occur in Georgia

In Georgia, symptoms of kiwifruit canker were observed in 2013 in the municipality of Lanchkhuti and a scientific study (Meparishvili *et al.*, 2016) reported the presence of *Pseudomonas syringae* pv. *actinidiae* (EPPO A2 List – EPPO RS 2016/061). During the last five years, specific surveys have been officially conducted in Georgia. Numerous samples have been taken from kiwifruit orchards throughout the country, including the municipality of Lanchkhuti, and tested by an accredited laboratory. All tested samples gave negative results. Therefore, the NPPO of Georgia considers that *P. syringae* pv. *actinidiae* is absent from its territory.
The situation of *Pseudomonas syringae* pv. *actinidiae* in Georgia can be described as: **Absent, confirmed by survey.**

Source: NPPO of Georgia (2020-06).

Meparishvili G, Gorgiladze L, Sikharulidze Z, Muradashvili M, Koiava L, Dumbadze R, Jabnidze N (2016) First report of bacterial canker of kiwifruit caused by *Pseudomonas syringae* pv. *actinidiae* in Georgia. *Plant Disease* **100**(2), 517-517.

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

Additional key words: absence, denied record **Computer codes:** PSDMAK, GE

2020/148 *Phytophthora ramorum* eradicated from Sweden

In Sweden, *Phytophthora ramorum* (EPPO A2 List) has occasionally been found since the 2000s, but all cases have been subject to eradication measures. The last outbreak was detected in 2018 in a private garden (4 rhododendron plants) in the municipality of Klippan. Subsequent surveys conducted in Klippan did not detect *P. ramorum*, and since then no new detections have been made in Sweden.
The pest status of *Phytophthora ramorum* in Sweden is officially declared as: **Absent, pest eradicated.**

Source: NPPO of Sweden (2020-06).

Pictures: *Phytophthora ramorum*. https://gd.eppo.int/taxon/PHYTRA/photos

Additional key words: absence, eradication **Computer codes:** PHYTRA, SE

2020/149 A new canker disease of *Abies sibirica* caused by a *Corinectria* species in Central Siberia (RU)

Since 2006, a new canker disease of *Abies sibirica* (Siberian fir) has been observed in the Eastern Sayan Mountains in Central Siberia, Russia. Affected trees showed stem and branch cankers, cambium necrosis, and dieback of branches and twigs, followed by the development of round, red fungal fruiting bodies. The disease was mainly found on relatively young trees, and often resulted in their death. From 2006 to 2010, the disease remained confined to the same area, but then started to spread northwards and by 2017, it was estimated that it had spread over a distance of more than 450 km. Fungal isolates could be obtained from symptomatic tissues of *A. sibirica*, and phylogenenetic analyses showed that the most commonly isolated ones belonged to one (or possibly two species) of *Corinectria*, and were

distinct from other known *Corinectria* species. Pathogenicity tests with 2 isolates were also carried out on saplings and seedlings of *A. sibirica*, as well as on seed and seedlings of *Picea abies*. Results showed that these isolates were able to kill *A. sibirica* saplings and seedlings. In addition, they were able to reduce growth and kill some *Picea abies* seedlings. It is concluded that further research is needed to describe *Corinectria* species associated with this new canker disease of *A. sibirica*, as well as to better understand its origin and ecology and estimate its potential to invade new geographic areas, in particular in Europe.

Source: Pavlov I, Vasaitis R, Litovka YA, Stenlid J, Jankovsky L, Timofeev A, Menkis A (2020) Occurrence and pathogenicity of *Corinectria* spp. – an emerging canker disease of *Abies sibirica* in Central Siberia. *Scientific Reports* **10**, 5597. https://doi.org/10.1038/s41598-020-62566-y

Additional key words: new pest **Computer codes:** CRNCSP, RU

2020/150 *Monilinia fructicola* found on *Prunus salicina* in Turkey

In Turkey, *Monilinia fructicola* (EPPO A2 List) was detected on *Prunus salicina* (Japanese plum) during surveys conducted in 2018 in Izmir and Çanakkale provinces (Aegean region). Observed symptoms included necrotic lesions and rots on mature fruits. The identity of the fungus was confirmed by morphological and molecular methods (PCR, sequencing), as well as by pathogenicity tests. The EPPO Secretariat previously had no information on the presence of *M. fructicola* in Turkey, nor on that fact that *Prunus salicina* is a host. It is noted that in the orchards where *M. fructicola* was found, quarantine measures were rapidly taken to prevent any further spread of the disease.
The situation of *Monilinia fructicola* in Turkey can be described as follows: **Present, only in some areas (Aegean region).**

Source: Uysal-Morca A, Kinay-Teksür P (2020) Brown rot caused by *Monilinia fructicola* on Japanese plums in Turkey. *Journal of Plant Pathology* **102**, p 589. https://doi.org/10.1007/s42161-019-00473-6

Pictures: *Monilinia fructicola*. https://gd.eppo.int/taxon/MONIFC/photos

Additional key words: new record, host plant **Computer codes:** MONIFC, TR

2020/151 Plum pox virus strain W found in Kazakhstan

In Kazakhstan, a survey on plum pox virus (*Potyvirus*, PPV – EPPO A2 List) was conducted in July 2014 in the region of Almaty, in stone-fruit collection orchards (*Prunus domestica* and *P. armeniaca*), in nurseries and in private gardens. Leaf samples (75) were collected from symptomatic and asymptomatic trees in 5 areas, and then tested by RT-PCR. Out of the 75 collected samples, 24 were infected by PPV-D and 1 sample was found to be infected by PPV-W. This sample had been collected from a plum (*P. domestica*) tree growing in a private garden and showing strong chlorotic ring patterns on the leaves. This is the first time that PPV-W is reported from Kazakhstan. So far, this strain had only been reported from Canada (a single record), Latvia, Russia and the Ukraine.

Source: Dallot S, Karychev R, Dolgikh S, Thébaud G, Jacquot E, Decroocq (2019) First report of *Plum pox virus strain* W in Kazakhstan, on *Prunus domestica*. *Plant Disease* **103**(10), p 2702. https://doi.org/10.1094/PDIS-02-19-0351-PDN

Pictures: *Plum pox virus*. https://gd.eppo.int/taxon/PPV000/photos

Additional key words: detailed record **Computer codes:** PPV000, KZ

2020/152 *Trianthema portulacastrum* in the EPPO region: addition to the EPPO Alert List

Why
Trianthema portulacastrum has been spreading in tropical and subtropical areas worldwide. The species is considered to have a wide native range including the Americas, Asia and Africa. It is a C_4 weed in fodder crops, in summer crops (such as soybean, cotton, rice, peanut and tomato) and in horticulture. Considering the potential economic impact of the species it has been decided to add it to the EPPO Alert List. Further information on the presence of the species in Mediterranean countries would be needed to make an assessment of the species in the EPPO region.

Geographical distribution
EPPO region: Israel, Jordan.
Asia: Cambodia, China, India, Indonesia, Iran, Myanmar, Nepal, Pakistan, Philippines, Qatar, Sri Lanka, Saudi Arabia, Thailand, Vietnam.
Africa: Côte-d'Ivoire, Egypt, Ethiopia, Gambia, Ghana, Kenya, Mali, Mozambique, Niger, Nigeria, Senegal, Sudan, Tanzania, Togo, Yemen.
North America: Mexico, USA.
Central and South America: Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Nicaragua, Peru, Puerto Rico, Venezuela.
Oceania: Australia.

Morphology
Annual, succulent, usually glabrous.
Stems: prostrate or decumbent, diffusely branched, to 10 mm; young branches with lines of minute hairs proximal to petioles.
***Leaves*:** unequal pairs alternating along stem; stipules dilated at base; petiole usually equalling blade; blade elliptic to orbiculate, to 4 cm, apex obtuse, often notched, or apiculate.
***Inflorescences*:** flowers usually solitary, sessile, in axils of smaller leaves (bracts) of some pairs, partly covered by sheathing stipule of bracts; bracteoles connate, 1-1.5 mm, apex acute.
***Flowers*:** calyx 3-5 mm; calyx lobes purple or white adaxially, lanceolate, 2.5 mm; stamens 5-10.
Capsules: cylindric, sometimes curved, 4-5 mm, corky, basal portion appearing embedded in stem, apical portion containing 1 seed; apical wings 2, prominent, erect, crestlike.
Seeds: 4 to 15 seeds per capsule, dull reddish brown to black, ridged, 1.5-2 mm.

Biology and Ecology
An extended germination period is reported from wet and irrigated habitats in East-Asia. The bisexual flowers are insect pollinated. Seeds are dispersed by water (hydrochory) and near the parent plant (autochory). Seeds may be dormant for few months.

Habitats
Ruderal habitats gardens, roadside, lakes, riverbanks, creeks, coastal areas, agricultural habitats.

Pathways for movement
There are reports of spice seed imports being contaminated with *T. portulacastrum*. It might therefore be associated with grain importation, as well as with water and soil movement.

Impacts
Significant yield losses attributed to the weed have been reported in maize, soybean, peanut and mung bean. In Israel, in the Galilee Valleys yield reduction in summer crops (peanut, tomato and watermelon) has been observed. In Saudi Arabia, the species is regarded as a highly invasive species.

Control
Chemical methods, both pre- and post-emergence can be used against the species. For mechanical methods, the plant should be controlled at the seedling stage. Hand weeding and hoeing can be used (in maize, pearl millet and cowpea fields) and also inter - row mechanical cultivation (in cotton and sugarcane). Sorghum, sunflower, brassicas and mulberry are considered effective competitors that can inhibit the germination of *T. portulacastrum*.

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Additional key words: invasive alien plant, alert list **Computer codes:** TRTPO, IL, JO

2020/153 First report of *Eriochloa villosa* in Austria

Eriochloa villosa (Poaceae: EPPO Observation List) is a tall annual C_4 grass originating from Asia. In the EPPO region the species has been recorded from the Czech Republic, Hungary, Romania and eastern Russia (where it is native) and the Ukraine. In addition, casual occurrences are recorded in Belgium, France, and the United Kingdom. The species is an agricultural weed in several states in the USA where it has been shown to reduce crop yields. *E. villosa* was detected for the first time on the territory of Austria close to the border of the Czech Republic. The species was found in Unterretzbach in sugar beet (on the field edge). The site is located in one of the driest areas of Austria. In the wider surroundings of this locality (approximately 500 m away from the border), no further populations of the species were found on the Austrian side. At present, in Austria, *E. villosa* is restricted to crop fields cultivated with summer crops (maize, sunflower, oil-pumpkin and sugar beet). *E. villosa* is an example of a weed that is still rare in Central Europe. However, with the increasing number of records it can be assumed that the species will most likely expand its

range in Austria and in other Central European countries. The species should be monitored within these areas and if needed studies undertaken to evaluate potential impacts.

Source: Follak S, Schwarz M, Essl F (2020) First record of *Eriochloa villosa* (Thunb.) Kunth in Austria and notes on its distribution and agricultural impact in Central Europe. *BioInvasions Records* **9**, 8-16.

Additional key words: new record, invasive alien plants **Computer codes**: ERBVI, AT

2020/154 First report of *Amaryllis belladonna* in Tunisia

Amaryllis belladonna (Amaryllidaceae) is native to the Western Cape region of South Africa and has been widely cultivated as an ornamental species. The species has been introduced in the USA (California), the Caribbean, Australia, and New Zealand. In Italy, the species is considered to be locally naturalised. In Sejnanem (Governorate of Bizerta), Northern Tunisia, in 2016, a population of over 100 individuals of *A. belladonna* was observed growing in the natural environment over an area of 100 m^2. In this area, 120 m above sea level, *A. belladonna* was recorded growing together with several thermo-xerophilous herbs and grasses forming the undergrowth of a plantation of *Cupressus sempervirens*.

Source: Mokni RE, Pasta S, Pacifico D (2020) *Amaryllis belladonna* L. (Amaryllidaceae, Amaryllidoideae), first record as naturalized geophyte in Tunisia and continental North Africa. *Haccquetia* **19**/2, 331-336.

Additional key words: new record, invasive alien plants **Computer codes:** AMYBE, TN

2020/155 *Solanum carolinense* in Austria

Solanum carolinense (Solanaceae) is a rhizomatous perennial herb native to the USA which was accidentally introduced to Austria over 20 years ago. There are two varieties of the species, *S. carolinense* var. *carolinense* and *S. carolinense* var. *floridianum*. The latter is restricted to Florida and Georgia (USA). *S. carolinense* var. *carolinense* has been introduced to many regions of the world (EPPO region, New Zealand, and Japan for example) via contaminated soybean seeds and livestock fodder. In Austria, the distribution of *S. carolinense* is restricted to the southern part of the country and it is still considered to be a rare species: 36 records with occurrences in 0.3 % of all grid cells in Austria (where each grid cell is 33 km^2). The highest number of occurrences are confined to the surroundings of the town of Leibnitz in southern Styria. A number of records are from crop fields (maize, soybean and oil-pumpkin). However, there are a small number of records of the species in ruderal habitats. Although the species has not spread rapidly in Austria, the increased number of records within grid cells indicate an incipient spread. The author highlights that *S. carolinense* is an example of an emerging weed in Austria. Spread on a local scale is increasing, and it is likely to spread in Austria and beyond. Awareness raising amongst farmers is needed and a management strategy should focus on control and containment, coupled with machinery cleaning to limit contamination.

Source: Follak S (2019) Distribution and small-scale spread of the invasive weed *Solanum carolinense* in Austria. *EPPO Bulletin*, DOI: 10.1111/epp.12644

Additional key words: invasive alien plants **Computer codes:** SOLCA, AT

2020/156 Alien flora across European coastal dunes

In Europe, human activities in coastal areas, coupled with increased urbanization has led to increased habitat loss and an increased number of invasive alien plants in these regions. Most species are unintentionally dispersed by visitors, but a small number of species are intentionally planted on dunes for ornamental purposes. Using data from the European Vegetation Archive (EVA), the current study set out to assess the level of invasion across coastal dunes in Europe. In total 23 446 vegetation plots were evaluated from four coastal regions (Atlantic, Baltic, Black Sea and Mediterranean). 133 neophytes, representing 7 % of the total number of species in the datasets, were present in the vegetation plots. Four species (*Erigeron canadensis* (Asteraceae), *Xanthium orientale* (Asteraceae), *Oenothera biennis* (Onagraceae) and *Oenothera oakesiana* (Onagraceae)), all native to the Americas accounted for 44 % of all neophyte occurrences. The richness of neophyte species was higher overall in stable dune grasslands compared to shifting dune systems. The Atlantic region had the highest number of neophytes whereas the Black Sea dunes had the highest frequency of occurrences. The study highlights that invasive plant management in dune systems should be a priority.

Source: Giulio S, Acosta ATR, Carboni M, Campos JA, Chytry M, Loidi J, Pergl J, Pyšek P, Isermann M, Janssen JAM, Rodwell JS, Schaminee JHJ, Marceno C (2020) Alien flora across European coastal dunes. *Applied Vegetation Science*, DOI: 10.1111/avsc.12490.

Additional key words: invasive alien plants Computer codes: ERICA, OEOBI, OEOOA, XANOR

2020/157 Public awareness and invasive alien plants

Successful management of invasive alien plants requires that the public are aware of their negative impacts on the natural environment and support management measures. In Portugal, there are over 1 750 alien species that have been reported as having negative impacts and among these, 667 are plant species alien to Portugal. A target audience was established that had access to the internet and some level of environmental awareness or interest. Using an online questionnaire, this audience was asked questions to determine their knowledge and perceptions of invasive alien plants. Additional information was collected on the respondent's occupation and the audience was divided into those that had had some formal training in environmental areas compared to informal education about invasive alien plants. In total there were 735 responses to the survey and those with formal training, showed an increased knowledge on invasive alien plants. When respondents were asked to identify the species and the status of 5 plants species, 3 native species (*Ilex aquifolium* (Aquifoliaceae), *Quercus robur* (Fagaceae) and *Ulex europaeus* (Fabaceae)) and 2 non-native species (*Oxalis pes-caprae* (Oxalidaceae) and *Acacia dealbata* (Fabaceae)) both EPPO List of Invasive Alien Plants, the results were variable. *I. aquifolium*, *Q. robur* and *A. dealbata* were the species most correctly identified. Generally, the respondents supported the removal of invasive alien plants. The results of this work highlight that when information is disseminated on invasive alien plants and their impacts, this can lead to better informed stakeholders.

Source: Cordeiro B, Marchante H, Castro P, Marchante E (2020) Does public awareness about invasive plants pay off? An analysis of knowledge and perceptions of environmentally aware citizens in Portugal. *Biological Invasions* **22**, 2267-2281.

Additional key words: new record, invasive alien plants **Computer codes**: ACADA, ILEAQ, OXAPC, QUERO, ULEEU