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2022/052 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 8.

- **New records**

Grapevine red globe virus (*Maculavirus*, GRGV) is reported for the first time from Slovenia. The virus was detected in samples which had been collected in 2019 from grapevine plants grown for breeding purposes in the Vipavska valley (Primorska wine-growing region) (Miljanić *et al.*, 2021). **Present, not widely distributed**.

- **Detailed records**

In China, *Bactrocera dorsalis* (Diptera: Tephritidae – EPPO A1 List) was only reported in the southern part of the country, but over the last decade, it has also been reported in northern China (Henan, Shaanxi, Beijing, and Hebei) (Zhu *et al.*, 2022).

In Germany, *Elachiptera decipiens* (Diptera: Chloropidae) was found in maize (*Zea mays*) in 2015 and 2021 (EPPO RS 2021/246). The express pest risk assessment conducted in 2015 was updated in 2022 and concluded that the phytosanitary risk for Germany and for EU member states is low (JKI, 2022; NPPO of Germany, 2022).
The pest status of *Elachiptera decipiens* in Germany is officially declared as: **Present in one area, at low prevalence**.

In Colombia, *Fusarium oxysporum* f. sp. *cubense* Tropical race 4 was first reported in banana plantations in August 2019 (EPPO RS 2019/154). Further surveys were conducted, and it is considered that most of the country is free from the pathogen, except for one site in the municipality of Zona Bananera (department of Magdalena) and several zones in the municipalities of Riohacha and Dibulla (department of La Guajira). Official measures are applied (ICA, 2021).
The pest status of *Fusarium oxysporum* f. sp. *cubense* Tropical race 4 in Colombia is officially declared as: **Present, under official control**.

In Chile, *Gnomoniopsis smithogilvyi* a fungal pathogen causing brown rot of chestnut (*Castanea sativa*) has been identified for the first time. The fungus was found during studies conducted from 2018 to 2020 on chestnut fruit collected from 2 packing houses in Ñuble, receiving chestnuts from orchards in Central-Southern Chile. It is noted that in earlier studies, brown rot symptoms observed in the 1980s had been attributed to *Phomopsis castanea*, but re-examination of the isolate has shown that it was *G. smithogilvyi* (Cisterna-Oyarce *et al.*, 2022).

In Slovenia, the bacterial wilt of maize caused by *Pantoea stewartii* subsp. *stewartii* (EPPO A2 List) was first found in 2018 in 2 maize (*Zea mays*) fields in Western Slovenia (EPPO RS 2018/224), as well as in 2019 (RS 2020/129). In 2021, *Pantoea stewartii* subsp. *stewartii* was found again in four locations in the same region as in 2018 and 2019. Symptoms (pale green to grey streaks, reddening, growth reduction) were visible on a very low number of plants. These maize crops were cultivated for forage production (grains and silage). In Western Slovenia there is no maize seed production (NPPO of Slovenia, 2021-09).
The pest status of *Pantoea stewartii* subsp. *stewartii* in Slovenia is officially declared as: **Transient, actionable, under eradication, under surveillance.**

In the USA, grapevine red globe virus (*Maculavirus*, GRGV) was first found in California. During surveys conducted in grapevine (*Vitis vinifera*) nurseries in Washington state, GRGV was detected (Jarugula *et al.*, 2021).

- **Eradication**

In Poland, *Opogona sacchari* (Lepidoptera: Tineidae – EPPO A2 List) was found in February 2019 on a 'ficus ginseng' bonsai (*Ficus microcarpa*) for sale in a shop. All plants from the infested lot were destroyed. The NPPO of Poland recently informed the EPPO Secretariat that this outbreak had been eradicated (NPPO of Poland, 2022).

- **Absence**

In Australia, *Phytophthora fragariae* (EPPO A2 List) has been reported infrequently based on morphological features, and without any supporting molecular data. An isolate originally classified as *P. fragariae* was subsequently sequenced and reassigned to *P. citrophthora*. Burgess *et al.* (2021) considered that *P. fragariae* should be considered absent from Australia.

In Israel, tomato mottle mosaic virus (*Tobamovirus*, ToMMV – EPPO Alert List) was detected in tomato (*Solanum lycopersicum*) plants in 2014 in the greenhouse of a seed-producing company. Since this isolated finding, ToMMV has not been found again in Israel. The NPPO of Israel considers that ToMMV is absent from its territory (2021-12).

- **Host plants**

Tomato spotted wilt virus (*Tospovirus*, TSWV – EPPO A2 List) was detected in March 2021 in *Chamaedorea elegans* (Arecaceae, parlour palm) plants in a commercial greenhouse in Gwangju, South Korea. Affected plants showed leaf symptoms of mild mosaic and chlorotic ring spots (Lee *et al.*, 2022).

In Argentina, plum pox virus (*Potyvirus*, PPV – EPPO A2 List) was first detected in November 2004 in San Juan province and in Mendoza province in 2006. After many years of surveys and destruction of infected material, PPV is still present but with a low incidence. In spring 2018, foliar symptoms were observed on a plant of *Spiraea* sp. (Rosaceae) in a private garden located within the PPV quarantine area in San Rafael (Mendoza province). Leaves showed yellow or light green ring spots and interveinal yellowing. The presence of PPV was detected by DAS-ELISA and confirmed by conventional and qRT-PCR, as well as by grafting on indicator plants (peach GF305). It was also shown that the isolate found on *Spiraea* sp. belongs to PPV D strain (the strain which occurs in Argentina). This the first time that PPV is detected in a Rosaceae outside of the genus *Prunus* (Pigliónico *et al.*, 2021).

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Zhu Y, Qi F, Tan X, Zhang T, Teng Z, Fan Y, Wan F, Zhou H (2022) Use of age-stage, two-sex life table to compare the fitness of *Bactrocera dorsalis* (Diptera: Tephritidae) on Northern and Southern host fruits in China. *Insects* **13**(3), 258. https://doi.org/10.3390/insects13030258

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

Computer codes: DACUDO, ELACDE, ERWIST, FUSAC4, GNMPCA, GRGV00, OPOGSC, PHYTFR, TOMMV0, TSWV00, AU, CL, CN, CO, DE, IL, PL, SI

2022/053 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 and creating new datasheets. 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 2022/029), the following new and revised EPPO datasheets have been published in the EPPO Global Database:

- *Aculops fuchsiae*. https://gd.eppo.int/taxon/ACUPFU/datasheet
- *Pantoea stewartii* subsp. *stewartii*. https://gd.eppo.int/taxon/ERWIST/datasheet
- *Pissodes cibriani*. https://gd.eppo.int/taxon/PISOCI/datasheet
- *Pissodes fasciatus*. https://gd.eppo.int/taxon/PISOFA/datasheet
- *Pissodes nitidus*. https://gd.eppo.int/taxon/PISONI/datasheet
- *Pissodes zitacuarense*. https://gd.eppo.int/taxon/PISOZI/datasheet
- *Tilletia indica*. https://gd.eppo.int/taxon/NEOVIN/datasheet
- Tobacco ringspot virus. https://gd.eppo.int/taxon/TRSV00/datasheet

Source: EPPO Secretariat (2022-03).

Additional key words: publication

Computer codes: ACUPFU, ERWIST, NEOVIN, PISOCI, PISOFA, PISONI, PISOZI, TRSV00

2022/054 First record of *Bactericera cockerelli* in Colombia

In South America, *Bactericera cockerelli* (Hemiptera: Triozidae - EPPO A1 List), vector of zebra chip disease, was first reported in several provinces of Ecuador in March 2019 (EPPO RS 2019/092).
In Colombia, the presence of *B. cockerelli* was detected during official surveys in crops of potato (*Solanum tuberosum*) in the department of Nariño at the beginning of 2021. The psyllid was found in the following municipalities: Aldana, Contadero, Córdoba, Cuaspud, Cumbal, Guachucal, Guaitarilla, Gualmatán, Ipiales, Ospina, Potosí, Puerres, Pupiales, Sapuyes, Tangua, Túquerres and Yacuanquer. The identity of the pest was confirmed by the National Phytosanitary Diagnostic Laboratory. Following this detection, specific surveillance was intensified in the department of Nariño as well as in other potato producing departments. As of April 2021, *B. cockerelli* was only found in Nariño.

The pest status of *Bactericera cockerelli* in Colombia is officially declared as: **Present, under surveillance.**

Source: Instituto Colombiano Agropecuario (ICA) (2021-04-22) Reporte de *Bactericera cockerelli* (Šulc) (Hemiptera: Triozidae) en el departamento de Nariño. https://www.ica.gov.co/areas/agricola/servicios/epidemiologia-agricola/saf/notificacion-oficial/detalle-notificacion-oficial/reporte-de-bactericera-cockerelli-sulc-hemipter (accessed in March 2022).

Pictures: *Bactericera cockerelli*. https://gd.eppo.int/taxon/PARZCO/photos

Additional key words: new record **Computer codes:** PARZCO, CO

2022/055 First record of *Bactericera cockerelli* in Peru

In Peru, the presence of *Bactericera cockerelli* (Hemiptera: Triozidae - EPPO A1 List), vector of zebra chip disease, was confirmed in the province of Huancabamba (Piura region) at the end of 2021. Following this finding, additional surveys were conducted and 169 samples of plants and insects from potato-producing areas were tested for the presence of '*Candidatus* Liberibacter solanacearum' (Solanaceae haplotypes are listed in the EPPO A1 List). '*Ca* L. solanacearum' was not detected and SENASA (Servicio Nacional de Sanidad Agraria) considers that the bacterium is not present in Peru. Control measures are applied against *B. cockerelli* (insecticides, weed removal, biological control with *Tamarixia triozae*).

The situation of *Bactericera cockerelli* in Peru can be described as: **Present.**

Source: Servicio Nacional de Sanidad Agraria (SENASA) (2021-12-30) SENASA: 'Zebra chip', plaga de la papa, no está presente en el Perú https://www.gob.pe/institucion/senasa/noticias/573303-senasa-zebra-chip-plaga-de-la-papa-no-esta-presente-en-el-peru

Pictures: *Bactericera cockerelli*. https://gd.eppo.int/taxon/PARZCO/photos

Additional key words: new record **Computer codes:** LIBEPS, PARZCO, PE

2022/056 First finding and eradication of an *Apriona* sp. in the Netherlands

In November 2021, during an inspection in a tree nursery in the Province of Zuid Holland, signs of insect larval activity or possible exit holes opened up further by woodpecker activity were observed on three *Enkianthus perulatus* 'Tower style' trees. One larva was found inside one of the trees. Molecular identification concluded that the larva was *Apriona germari* (Coleoptera: Cerambycidae - EPPO A1 List). However, among *Apriona* species, only *Apriona rugicollis* (Coleoptera: Cerambycidae - EPPO A1 List) has been recorded on *Enkianthus perulatus* according to the literature, and it is now considered as a distinct species from *A. germari* (see EPPO RS 2015/110). Therefore this raised a doubt as to whether the current sequences for *A. germari* in the database used for molecular identification are indeed *A. germari* or *A. rugicollis*.

Official phytosanitary measures were applied to all possible host plants in the nursery. All deciduous trees and *Pinus* trees were inspected. All 151 *Enkianthus* plants at the company and three *Enkianthus* plants in the private garden of the owner were inspected before their destruction. No other *Apriona* specimens were found. A survey was performed at other companies, green spaces and private gardens in an area within a radius of 100 m around the nursery. In total 14 samples were taken from 13 deciduous trees and no quarantine organisms were found. Trace back investigations showed that *Enkianthus* trees had been bought via a trading company in another EU Member State. Trace forward investigations showed that *Enkianthus* plants from this nursery had been delivered between 2017 and 2021 to two other EU Member States. Relevant NPPOs were informed. Following the completion of measures at the nursery concerned, and the survey in its vicinity, eradication is confirmed.

The pest status of *Apriona* sp. in the Netherlands is officially declared as: **Absent, pest eradicated.**

Source: NPPO of the Netherlands (2021-12) Update: Eradication confirmed of finding of *Apriona* in *Enkianthus perulatus* at a tree nursery in the Netherlands (province Zuid-Holland). https://english.nvwa.nl/topics/pest-reporting/documents/plant/plant-health/pest-reporting/documents/update-pest-report-apriona-enkanthus-december-2021

Pictures: *Apriona germari*. https://gd.eppo.int/taxon/APRIGE/photos

Additional key words: eradication, absence **Computer codes:** 1APRIG, APRIGE, APRIJA, NL

2022/057 First report *Myzus mumecola* in Germany, Hungary, and Serbia

The Asian apricot aphid, *Myzus mumecola*, (Hemiptera: Aphididae) was detected for the first time in the EPPO region in Italy in 2016 (EPPO RS 2018/090, RS 2019/199), where it is considered established.

M. mumecola was first recorded in Germany in May 2020 on apricot trees (*Prunus armeniaca*) in Brandenburg. An express PRA (JKI, 2020) was conducted and concluded that this new aphid species was likely to establish in Germany, but that no significant damage was to be expected.

M. mumecola was also recorded in Hungary in spring 2020. A survey was conducted by Borbely *et al*. (2021) in apricot trees (*P. armeniaca*) in six different locations in Hungary in April and May 2020 in home gardens and orchards where no pesticides were applied: Győr

and Győrszentiván in Western Transdanubia; Balatonalmádi in Central Transdanubia; Budapest Budafok and Pomáz in Central Hungary; and Gönc in Northern Hungary. *M. mumecola* was detected in all sites. It is suspected that *M. mumecola* may have arrived in Hungary in 2017/2018. Damage depends on cultivars, but the authors consider that it is an important pest. In addition, *Plum pox virus* (Potyvirus, PPV – EPPO A2 List) was detected by RT-PCR in *M. mumecola* samples from all regions.

M. mumecola was first recorded in Serbia in spring 2021 in several localities (Ljig, Smederevo, Velika Plana, Belgrade and Šid) on cultivated apricot trees. Damage was mainly recorded on trees on which no insecticides are used, and not in conventional apricot cultivation (Petrović-Obradović, 2021).

Source:
Borbely C, György Z, Szathmáry E, Marko V (2021) Apricot aphid, *Myzus mumecola* (Matsumura), a new and important pest of apricot in Hungary. *Journal of Plant Diseases and Protection* **128**(3),781-787. https://doi.org/10.1007/s41348-021-00436-z

JKI (2020) Express PRA for *Myzus mumecola*. Available at: https://pflanzengesundheit.julius-kuehn.de/en/pest-risk-analyses.html

Petrović-Obradović O (2021) Asian apricot aphid, *Myzus mumecola* (Matsumura, 1917) (Hemiptera: Aphididae), found in Serbia. *Acta Entomologica Serbica* **26**(2), 19-26.

Pictures: *Myzus mumecola*. https://gd.eppo.int/taxon/MYZUMU/photos

Additional key words: new record **Computer codes:** MYZUMU, PPV000, DE, HU, RS

2022/058 *Megalurothrips usitatus*: an emerging pest in North America, Central America and the Caribbean

Megalurothrips usitatus (Thysanoptera: Thripidae) is native to tropical Asia where it has been associated with damage to bean and other legume crops (Fabaceae). Damage is produced by direct feeding of larvae and adults on flowers, leaves and pods, and by oviposition on flowers and pods. *M. usitatus* is not known to transmit tospoviruses. Common bean (*Phaseolus vulgaris*) has been reported to be the preferred host of *M. usitatus*, but this thrips species feeds on many other cultivated plants including *Arachis hypogaea* (peanut), *Cajanus cajan* (pigeon pea), *Glycine max* (soybean), *Phaseolus lunatus* (lima bean), *Vigna unguiculata* (cowpea, black-eye pea), as well as on non-fabaceous plants. Until recently, it was only reported from Asia and Oceania, but since 2019 new records of this species have been made from North America, Central America, and the Caribbean.

- In 2019, *M. usitatus* was first found in common bean (*Phaseolus vulgaris*) fields in Cuba.
- In March 2020, *M. usitatus* was first found in the USA, in Miami-Dade county (Florida) on common bean (*P. vulgaris*).
- In March 2021, agricultural authorities reported the first occurrence of *M. usitatus* in Belize on black-eyed beans (*Vigna unguiculata*).
- In May 2021, *M. usitatus* was recorded for the first time in Jalisco state, Mexico, in common bean (*Phaseolus vulgaris*) and jicama (*Pachyrhizus erosus*) crops

A geographical distribution and a list of host plants of *M. usitatus* are now stored in the EPPO Global Database: https://gd.eppo.int/taxon/MEGTUS

Source: Anonymous (2021) *Megalurothrips usitatus* was detected in Belize. The Belize Ag Report, Spring 2021, p 13. https://ambergriscaye.com/art8/44BzeAgReport.pdf (last accessed 2022-03).
Campos MS (2021) [*Megalurothrips usitatus* Bagnall (Thysanoptera: Thripidae), an emergent pest in the common bean crop: Review]. *Revista de Protección Vegetal* **36**(2), 8 pp. http://revistas.censa.edu.cu/index.php/RPV/article/view/1145/1827 (in Spanish) (last accessed 2022-03).
SENASICA (2022-02-10) Alerta en Nayarit por plaga no registrada en México. Servicio Nacional de Sanidad, Inocuidad y Calidad (SENASICA) notas periodísticas. https://prod.senasica.gob.mx/ALERTAS/inicio/pages/single.php?noticia=13952 (last accessed 2022-03).
Soto-Adames FN (2020) *Megalurothrips usitatus* (Bagnall), Asian bean thrips, Oriental bean flower thrips or bean flower thrips. Pest Alert. Florida Department of Agriculture and Consumer Services, Division of Plant Industry 2 pp. https://www.fdacs.gov/content/download/91413/file/PESTALERT-Asianbeanthrips02137.pdf (last accessed 2022-03).

Additional key words: new record **Computer codes:** MEGTUS, BZ, CU, MX, US

2022/059 Update of the situation of *Pomacea* sp. in Spain

The apple snail *Pomacea maculata* (EPPO A2 List) was first found in Spain in July 2010 in the Ebro delta, in the province of Tarragona (Cataluña) (EPPO RS 2012/039). A new outbreak of *Pomacea* sp. (the species was not mentioned) was detected in a pond in a public garden located in the municipality of Olesa de Montserrat (province of Barcelona, in the Autonomous Region of Cataluña) in October 2021. Adults and eggs were found. Eradication measures in accordance with EU Decision 2012/697/EU have been taken. The pond was emptied and will remain empty until the eradication of the pest. All the specimens (eggs and adults) collected were destroyed. Surveys around the pond (including a nearby stream and the sewage system) did not detect the pest.

The pest status of *Pomacea* sp. in Spain is officially declared as: **Present, only in some parts of the Member State concerned, under eradication.**

Source: NPPO of Spain (2021-11).

Commission Implementing Decision of 8 November 2012 as regards measures to prevent the introduction into and the spread within the Union of the genus *Pomacea* (Perry) (2012/697/EU): http://data.europa.eu/eli/dec_impl/2012/697/oj

Pictures: *Pomacea canaliculata*. https://gd.eppo.int/taxon/POMACA/photos

Additional key words: detailed record **Computer codes:** POMASP, ES

2022/060 Update on the situation of *Phytophthora pluvialis* in the United Kingdom

In the United Kingdom, *Phytophthora pluvialis* was first recorded in Cornwall (England) in September 2021 affecting mature western hemlock (*Tsuga heterophylla*) and Douglas-fir (*Pseudotsuga menziesii*) (EPPO RS 2021/227). Further surveys have been conducted since then and the pathogen was found in other locations in England, as well as in Scotland and in Wales.

- England: Following extensive surveillance, further outbreaks have been found in Cornwall, Devon, Cumbria, Surrey. Three demarcated areas have been established so far: one covering parts of Cornwall and Devon, one covering parts of Cumbria, and one covering parts of Herefordshire (associated with the outbreak in Powys in Wales).
- Wales: *P. pluvialis* was first detected in Dyfi Forest (Gwynedd) in December 2021. As of 16 March 2022, it has been found at 12 sites across Wales. These include Gwynedd, Carmarthenshire, Powys, Monmouthshire and Rhondda Cynon Taf. Four demarcated areas have been defined so far.
- Scotland: *P. pluvialis* was first detected near Loch Carron in the northwest of Scotland in November 2021. A demarcated area was established on 2021-12-15. A second outbreak was found in an area near Loch Awe in Argyll in February 2022. A demarcated area will be soon established.

Official measures are applied and include the prohibition of movement of any wood, isolated bark and trees (including live trees, felled or fallen trees, fruit, seeds, leaves or foliage) of the genera *Tsuga*, *Pseudotsuga*, *Pinus* and *Notholithocarpus*, that originated within the demarcated areas. Movements and processing of material from the demarcated areas may be authorized where this can be achieved without risking the spread of *Phytophthora pluvialis*.

Source: Forestry Commission (2022-03-10) Guidance on *Phytophthora pluvialis* https://www.gov.uk/guidance/phytophthora-pluvialis

Scottish Forestry (2022) *Phytophthora pluvialis* in Scotland. https://forestry.gov.scot/sustainable-forestry/tree-health/tree-pests-and-diseases/phytophthora-pluvialis

Welsh government (2021-12-13) Press release. First case of tree disease *Phytophthora pluvialis* discovered in Wales. https://gov.wales/first-case-tree-disease-phytophthora-pluvialis-discovered-wales

Pictures: *Phytophthora pluvialis*. https://gd.eppo.int/taxon/PHYTUV/photos

Additional key words: detailed record **Computer codes:** PHYTUV, GB

2022/061 *Phytophthora pluvialis*: addition to the EPPO Alert List

Why: *Phytophthora pluvialis* was discovered in several woodlands in the United Kingdom at the end of 2021, affecting mature western hemlock and Douglas-fir trees. This is the first report of this pathogen in the EPPO region. The Panel on Phytosanitary Measures suggested that it is added to the EPPO Alert List to raise awareness of other EPPO countries.

Where: The species is considered as probably native from North-Western USA.
EPPO region: United Kingdom (England, Scotland, Wales) (under eradication).

North America: United States of America (California, Oregon, Washington).
Oceania: New Zealand.

On which plants: In the USA, *P. pluvialis* was first observed on *Pseudotsuga menziesii* and *Notholithocarpus densiflorus*. In New Zealand, it was recorded *on Pinus radiata, P. patula* and *P. strobus*. In the United Kingdom, it is causing cankers on *Tsuga heterophylla*. As *P. pluvialis* has expended its host range when introduced to new areas, some authors consider that this pathogen has the potential to infect a broader range of hosts than is currently recognized.

Damage: *P. pluvialis* is known to cause needle cast, shoot dieback, and lesions on the stem, branches, and roots of host plants. In the USA and New Zealand, *P. pluvialis* is mainly a needle pathogen. It causes red needle cast disease on *Pinus* species: symptoms start as discrete olive-coloured lesions on the needles, then turning yellow to red brown. This eventually can lead to premature defoliation of the lower crown and occasionally of the entire tree. In the United Kingdom, in addition to symptoms on needles, branch and stem cankers have been observed and resulted in severe tree decline.
A guide of symptoms observed in the United Kingdom is available on Forest Research website, and photos are available in EPPO Global Database:
https://gd.eppo.int/taxon/PHYTUV/photos

Dissemination: *P. pluvialis* has been isolated from soil, water, and tree foliage and stems. Like other Clade 3 *Phytophthora* spp., *P. pluvialis* disperses aerially over relatively short distances, via rain splash and wind-driven rain. Like other *Phytophthora* spp., it could probably be transported on footwear and vehicles from infested areas. In trade it can be transported on infested plant material. Analysis demonstrated that the epidemics in New Zealand was linked to a single introduction from Oregon. In New Zealand, the first symptoms were observed in 2008 in one area, and in 2018 its presence was recorded in both North and South Islands.

Pathways: plants for planting, wood, cut branches, needles, mulch?, soil.

Possible risks: *Pinus, Tsuga and Pseudotsuga* are widespread in the EPPO region, both in forest and in urban areas. *P. pluvialis* has already been introduced in the last decade in New Zealand and the United Kingdom, and could therefore also be introduced in other EPPO countries. *P. pluvialis* causes defoliation and severe decline on its hosts. Its host range has expanded when introduced to new areas. Climatic requirements of this pathogen are not yet fully known but it is established in cool wet climate of the Pacific Northwest USA as well as in warmer areas in New Zealand. Therefore, at least the western part of the EPPO region is at risk.

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EPPO RS 2021/227, 2022/06, 2022/061

Panel review date – Entry date 2022-03-

2022/062 Eradication of *Thekopsora minima* from Sweden

In Sweden, the blueberry rust *Thekopsora minima* (EPPO A2 List) was first found in October 2021 on *Vaccinium corymbosum* in the municipality of Ekerö (county of Stockholm), and in the municipality of Karlskrona (country of Blekinge län) (EPPO RS 2021/248). The plants were found in garden centres and had been imported from another EU Member State. Eight plants had already been sold to final users, but all plants that remained in the garden centres were destroyed. *Thekopsora minima* is now considered to be eradicated.

The pest status of *Thekopsora minima* in Sweden is officially declared as: **Absent, pest eradicated.**

Source: NPPO of Sweden (2021-12).

Pictures: *Thekopsora minima*. https://gd.eppo.int/taxon/THEKMI/photos

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

2022/063 Update of the situation of *Xylella fastidiosa* in France

In France, *Xylella fastidiosa* (EPPO A2 list) was first reported in 2015 in Corsica (EPPO RS 2015/144) and later in Provence-Alpes-Côte d'Azur region (RS 2016/193, 2019/187) and Occitanie (RS 2020/197). The subspecies present was *Xylella fastidiosa* subsp. *multiplex*. The subspecies *pauca* was identified 2016 in Menton (Alpes-Maritimes department, Provence-Alpes-Côte d'Azur region): it was first identified in one outbreak on *Polygala myrtifolia* and eradicated, but found again in the same demarcated area in 2019 on a multi secular olive tree (*Olea europaea*) (RS 2019/187). Official surveillance is conducted and control measures according to EU Regulation 2020/1201 are applied. New host plants are regularly identified.

In Corsica, a containment strategy has been applied since December 2017. The bacterium was found on a large number of plant species, including native plants in the natural environment. As a result of the 2021 official survey, *X. fastidiosa* subsp. *multiplex* was found for the first time on an olive tree (*Olea europaea*) in Haute-Corse.

In Provence-Alpes-Côte d'Azur region, more than 24 000 plants were sampled since 2015 as part of the official surveillance. Eradication measures are applied, and the bacteria has a

restricted distribution, with demarcated areas in 21 municipalities in Alpes-Maritimes, and 5 municipalities in the Var department.

In Occitanie region, after the first finding in 2020, official surveys were conducted and about 5 000 plant samples from more than 200 plant species were analysed. *X. fastidiosa* subsp. *multiplex* was detected 76 infected areas in 17 municipalities in Aude department. In December 2021, *X. fastidiosa* subsp. *multiplex* was first confirmed from the Gard department on a sample of *Spartium junceum* taken from a motorway service area as part of the official surveillance programme. Eradication measures are applied.

The pest status of *Xylella fastidiosa* subsp. *multiplex* in France is officially declared as: **Present, only in some parts of the Member State concerned, under eradication, under containment, in case eradication is impossible.**

The pest status of *Xylella fastidiosa* subsp. *pauca* in France is officially declared as: **Transient, actionable, under eradication.**

Source:
Cunty A, Legendre B, de Jerphanion P, Dousset C, Forveille A, Paillard S, Olivier V (2022) Update of the *Xylella fastidiosa* outbreak in France: two new variants detected and a new region affected. *European Journal of Plant Pathology* (early view). https://doi.org/10.1007/s10658-022-02492-z
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Maps of demarcated areas in France are available at: https://shiny-public.anses.fr/Xylella_fastidiosa/
NPPO of France (2021-12, 2022-02) https://agriculture.gouv.fr/xylella-fastidiosa-une-bacterie-mortelle-pour-300-especes-vegetales

Pictures: *Xylella fastidiosa*. https://gd.eppo.int/taxon/XYLEFA/photos

Additional key words: detailed record **Computer codes:** XYLEFA, XYLEFM, XYLEFP, FR

2022/064 Update of the situation of *Xylella fastidiosa* in Portugal

In Portugal, *Xylella fastidiosa* (EPPO A2 list) was first reported in December 2018 near Porto (EPPO RS 2019/017). The subspecies present was identified as *Xylella fastidiosa* subsp. *multiplex*. Official surveillance is conducted. In 2021, as a result of official surveillance, *X. fastidiosa* was found in 2021 in the Algarve region and near Lisbon. Eradication measures according to EU Regulation 2020/1201 are applied in all cases.

- In the area around Porto, since the first detection, 19 049 samples were collected, 18 745 tested, of which 815 are pending results, 338 samples were positive, resulting in 110 infected zones being defined which are located in 9 municipalities of the Área Metropolitana do Porto (Norte region).
- In the municipality of Luz de Tavira e Santo Estevão (Algarve region), *X. fastidiosa* (subspecies undetermined) was found in July 2021 on asymptomatic *Salvia rosmarinus* plants in a nursery. An intensive survey was conducted in the infected zone, and 1 988 plants were sampled and tested from all lots of the host plants present in the place of production, as well as 1 520 host plants in the buffer zone. Insect vectors were also tested. All tests were negative for *X. fastidiosa*. All host plants listed in the EU Regulation within a radius of 50 m were destroyed after insecticide treatment.

- In the Área Metropolitana de Lisboa, *X. fastidiosa* (subspecies undetermined) was found in July 2021 on symptomatic *Salvia rosmarinus* in a public area located in the Union of parishes of Massamá e Monte Abraão (county of Sintra, Lisbon region). An infested area and a buffer zone have been established.

The pest status of *Xylella fastidiosa* in Portugal is officially declared as: **Present, only in some parts of the Member State concerned, under eradication.**

Source: NPPO of Portugal (2022-02) Maps of demarcated areas are available at: https://www.dgav.pt/plantas/conteudo/sanidade-vegetal/inspecao-fitossanitaria/informacao-fitossanitaria/xylella-fastidiosa/
EU (2020) Commission Implementing Regulation (EU) 2020/1201 of 14 August 2020 as regards measures to prevent the introduction into and the spread within the Union of *Xylella fastidiosa* (Wells *et al.*) http://data.europa.eu/eli/reg_impl/2020/1201/oj

Pictures: *Xylella fastidiosa*. https://gd.eppo.int/taxon/XYLEFA/photos

Additional key words: detailed record **Computer codes:** XYLEFA, XYLEFM, PT

2022/065 Eradication of *Pantoea stewartii* subsp. *stewartii* in Italy

The NPPO of Italy recently informed the EPPO Secretariat of the eradication of *Pantoea stewartii* subsp. *stewartii* (EPPO A2 List) on its territory. In Italy, the bacterial wilt of maize caused by *Pantoea stewartii* subsp. *stewartii* had been found in several regions but was subsequently eradicated (EPPO RS 2020/130). The pathogen was found again in 2020 and 2021 during official surveys of maize (*Zea mays*) grown for seed in Emilia-Romagna region. Eradication measures were applied in the field (RS 2021/201). Investigations were also conducted to verify that parental lines used for hybrid production were not infected, and inspections were carried out in fields with the same parental lines as well as in other maize seed crops in the region. All samples tested negative. In 16 sites a survey was conducted to investigate the presence of vectors. *Chaetocnema pulicaria*, the insect vector in USA, was not detected. 2 specimens of *Diabrotica virgifera virgifera* were found and tested negative for *P. stewartii* subsp. *stewartii*.

The pest status of *Pantoea stewartii* subsp. *stewartii* in Italy is officially declared as: **Absent, pest eradicated.**

Source: NPPO of Italy (2022-03).

Pictures: *Pantoea stewartii* subsp. *stewartii*. https://gd.eppo.int/taxon/ERWIST/photos

Additional key words: absence, eradication **Computer codes:** ERWIST, CHAEPU, IT

2022/066 First report of *Xanthomonas arboricola* pv. *pruni* in Serbia

In Serbia, *Xanthomonas arboricola* pv. *pruni* (EPPO A2 List) was first detected in 2019 on peach (*Prunus persica*) in a 13-year-old orchard located in Irig where the disease incidence was in the range of 10 to 20%. In 2020, the bacterium was also detected in apricot (*Prunus armeniaca* cvs NS4, NS Rodna, and Roxana) in a 5-year-old orchard located in Bešenovo where the disease incidence was 30 to 50%. The identity of the bacterium was confirmed by

biochemical, molecular and pathogenicity tests. The peach and apricot orchards are both located in the Fruška Gora region (Vojvodina). It is noted that in the diseased peach orchard, trees have been uprooted to eradicate the disease. Appropriate cultivation practice and surveys are being implemented to prevent further spread of the disease in Serbia.

The situation of *Xanthomonas arboricola* pv. *pruni* in Serbia can be described as: **Present, not widely distributed.**

Source: Iličić R, Popović T (2021) Occurrence of bacterial spot caused by *Xanthomonas arboricola* pv. *pruni* on peach and apricot in Serbia. *Plant Dis*ease **105**(3), p 697. https://doi.org/10.1094/PDIS-08-20-1817-PDN

Pictures: *Xanthomonas arboricola* pv. *pruni*. https://gd.eppo.int/taxon/XANTPR/photos

Additional key words: new record **Computer codes:** XANTPR, RS

2022/067 First report Grapevine flavescence dorée phytoplasma in Slovakia

The NPPO of Slovakia recently informed the EPPO Secretariat of the detection of Grapevine flavescence dorée phytoplasma (EPPO A2 List) on its territory. The phytoplasma was detected as part of an official survey on grapevines (*Vitis vinifera*) in a small (500 plants) vineyard in the municipality of Nové Zámky (Western Slovakia) in August 2021. An infested zone consisting of the vineyard where the positive plants had been detected and a surrounding area of 50 m around the vineyard has been defined, as well as a buffer zone of 1.5 km radius around the infested area. All infested *Vitis* plants will be destroyed as well as all symptomatic *Vitis* plants found in the infested area at the start of the growing season in 2022. Intensive monitoring will also be conducted in the buffer zone and will include sampling and testing of symptomatic and asymptomatic *Vitis* plants, as well as *Ailanthus altissima, Alnus glutinosa, Corylus avellana, Salix* sp. and *Clematis vitalba*.

The pest status of Grapevine flavescence dorée phytoplasma in Slovakia is officially declared as: **Present, under eradication.**

Source: NPPO of Slovakia (2022-03).

Pictures: Grapevine flavescence dorée. https://gd.eppo.int/taxon/PHYP64/photos

Additional key words: new record **Computer codes:** PHYP64, SK

2022/068 Eradication of *Potato spindle tuber viroid* from Poland

In Poland *Potato spindle tuber viroid* (*Pospiviroid*, PSTVd – EPPO A2 List) was first reported in 2016 in 2 lots of seed potatoes (*Solanum tuberosum*) in Melanowo and in Turzyn. Eradication measures were applied (EPPO RS 2016/175). In 2016-2019, samples were collected from the infected places of production. All laboratory tests were negative. The NPPO of Poland declared that PSTVd is eradicated from these places of production, and therefore from Poland.

The pest status of *Potato spindle tuber viroid* in Poland is officially declared as: **Absent, pest eradicated.**

Source: NPPO of Poland (2022-03).

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

Additional key words: eradication, absence **Computer codes:** PSTVD0, PL

2022/069 Update on the situation of *Citrus bark cracking viroid* in Germany

In Germany *Citrus bark cracking viroid* (CBCVd - EPPO A2 List) was first reported from two hop fields (*Humulus lupulus*) in Bavaria in July 2019 (EPPO RS 2019/165). Official surveys were conducted to determine the extent of the outbreak and official measures taken.
In 2019, CBCVd was found in 12 hop gardens (production sites) of three producers in Bavaria. A major survey was conducted in 2020 in 672 hop gardens located in ten administrative districts, and CBCVd was found in two districts in 27 hop gardens belonging to 7 producers (including 15 fields from the three producers who already had infected fields in 2019), covering a total of 93.6 ha. The infection level varied strongly between the infected fields, from one infected plant per field up to nearly 100 percent of plants being infected. It was shown that the spread of the disease was linked to the movement of infected plants and the sharing of machinery.
The survey in 2021 found infections at two further hop producers. In total CBCVd was found in 32 hop gardens covering an area of 92 ha (in 2019-2021, some hop plots were cleared resulting in a decrease of 5 ha of the infested area).
It is considered that CBCVd has been present in Bavaria for at least seven years and that eradication is no longer possible. Containment measures are applied and include: removal and destruction of infected plants (including the roots), prohibition to use hop residues from the whole production site to produce biogas, prohibition to share machinery from an infected place of production, prohibition to sell hop planting material from an infected place of production.

The pest status of *Citrus bark cracking viroid* in Germany is officially declared as: **Present, under containment.**

Source: NPPO of Germany (2022-01) Citrus bark cracking viroid – Update of an infestation on plants of *Humulus lupulus* (hop) in Bavaria. https://pflanzengesundheit.julius-kuehn.de/index.php?menuid=86&downloadid=3162&reporeid=223

Pictures: *Citrus bark cracking viroid*. https://gd.eppo.int/taxon/CBCVD0/photos

Additional key words: detailed record, containment **Computer codes:** CBCVD0, DE

2022/070 Geographical distribution and hosts of citrus chlorotic dwarf associated virus

Citrus chlorotic dwarf disease was first observed in the mid-1990s in Turkey, in citrus orchards along the southern coast (Mersin province, Eastern Mediterranean region). In the field, the first symptoms appeared on young leaves during spring. The most obvious one was the formation of a typical 'V' shaped notch on the leaves, in addition to deformation (curling, boat-shapes), chlorosis and narrowing of the leaves. Affected young trees displayed a bushy vegetation and stunted appearance, due to shortened internodes. Flowering and fruit production were also reduced. This disease has been observed on several citrus species, in particular on lemon (*Citrus limon*), pomelo (*C. maxima*), sour orange (*C. aurantium*),

mandarin (*C. reticulata*), tangelo (*C. reticulata* x *C. paradisi*). Sweet orange (*C. sinensis*) and grapefruit (*C. paradisi*) can be affected, but symptoms seem to be less severe. Initial studies showed that the disease was graft-transmissible and possibly vectored by *Parabemisia myricae* (Homoptera: Aleyrodidae). However, the transmission of the disease by *P. myricae* could not be confirmed in later studies using molecular methods. In 2012, the causal agent of this disease was identified as a new virus possibly belonging to *Geminiviridae* and tentatively called citrus chlorotic dwarf associated virus (CCDaV). Following its initial discovery in Mersin province, CCDaV was then also found in other provinces in Turkey, as well as in China and Thailand. The origin of these new findings remains unknown, but the use of infected planting material is suspected to be the main pathway for spreading the disease between continents. At field level, it is suspected that vectors probably spread the virus, but their identity could not be ascertained.

- **Turkey**

Following the initial record of CCDaV in Mersin province, further studies conducted in 2016-2017 in 4 major citrus-growing regions (Western Mediterranean region, coastal Aegean region, Southern Marmara region and Eastern Black Sea region) showed that CCDaV has spread to new areas in the Eastern Mediterranean region (Adana, and Hatay provinces). CCDaV was also found in a few citrus trees growing in the garden of a hotel in Belek (Antalya province, Mediterranean region).

- **China**

In 2015, CCDaV was reported for the first time from Dehong prefecture (Yunnan province). It was noted that symptoms of leaf mosaic, distortion, shortened internodes, and reduced fruit production had been observed since 2008 on Eureka lemon (*C. limon*). During further studies conducted from 2017 to 2019 in 145 citrus orchards located in 11 major citrus-growing provinces, CCDaV was found in Yunnan (73 positive samples out of 704), Guangxi (60/195) and Guangdong (1/136), but not in the other studied provinces. The virus was detected in Eureka lemon (*C. limon*), Tahiti lime (*C. latifolia*) and pomelo (*C. maxima*).

- **Thailand**

In 2019, symptoms of the disease were first observed in Nakhon on pomelo (C. *maxima (=C. grandis*) cv. Ruby Green). Molecular tests confirmed the presence of CCDaV.

A geographical distribution and a list of host plants of CCDaV are now stored in the EPPO Global Database: https://gd.eppo.int/taxon/CCDAV0

Source: Catara AF, Bar-Joseph M, Licciardello G (2021) Exotic and emergent citrus viruses relevant to the Mediterranean Region. *Agriculture* **11**, 839. https://doi.org/10.3390/agriculture11090839

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Additional key words: distribution **Computer codes:** CCDAV0, CN, TH, TR

2022/071 *Sporobolus cryptandrus* in the EPPO region: addition to the EPPO Alert List

Why
Sporobolus cryptandrus (Poaceae) is known from isolated populations in the EPPO region. Several locations are recently reported from Hungary where it can form monospecific stands. Further information is sought on the spread and impacts of *S. cryptandrus* in the EPPO region.

Geographical distribution
EPPO region: Austria, France, Germany, Hungary, Italy, Netherlands, Russia, Slovenia, Spain, Switzerland, Ukraine, United Kingdom.
North America: Canada (native), United States of America (native), Mexico (native).
Oceania: Australia (New South Wales and Tasmania).
South America: Argentina.

Morphology
Plants perennial not rhizomatous.

Mature plants range from 27 to 100 cm tall. Plants are typically erect but may also be decumbent. The collar has a conspicuous tuft of white hairs which may be up to 0.4 cm long. Leaf blades are 0.2 to 0.6 cm wide and 7 to 25 cm long. The inflorescence is a panicle, 15 to 40 cm long and 2.4 to 13 cm wide, initially contracted and spike-like, but opening with maturity into a pyramidal shape as the inflorescence escapes the subtending sheath. Spikelets contain a small, single brown to purplish floret.

Biology and Ecology
Sporobolus cryptandrus is an invasive perennial C4 grass species which is drought tolerant. The species mainly spreads through seed.

Habitats
Sporobolus cryptandrus often grows on dry sandy soils. In Hungary, *S. cryptandrus* is recorded in a number of different habitats including urban areas (car parks, road verges, and tramlines), disturbed or degraded areas of open sand grassland, ploughed fire buffer zones, old field sites of various ages and species composition, grassland used for livestock feeding and, the species was recorded encroaching into natural open sandy grassland.

Pathways for movement
Wind dispersed seed can ensure natural spread of the species. There is no clear evidence for pathways for movement over long distances. However, propagules may be spread via contaminated growing substrate (sand or soil) and as a contaminant of used machinery and equipment.

Impacts
Sporobolus cryptandrus can have a negative impact on the species richness and abundance of native vegetation. *S. cryptandrus* can produce an abundance of small seeds (up to 10 000 seeds per panicle) which can form a persistent seed bank (over 3 000 seeds per m^2). This facilitates establishment of the species in new areas and complicates the control of the species as the seed bank will need to be exhausted to achieve successful control.

Control
There is no specific information on control. Any management method should exhaust the persistent seedbank.

Sources
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Additional key words: invasive alien plant, alert list **Computer codes:** SPZCR

2022/072 First report of *Heracleum mantegazzianum* in Lithuania

Heracleum mantegazzianum (Apiaceae: EPPO List of Invasive Alien Plants) is invasive in managed and unmanaged ecosystems, being a threat to biodiversity, eroding riverbanks, decreasing recreational resources, causing economic losses and posing a health risk to humans as the sap can cause skin blistering on contact. The species is widespread throughout the EPPO region. In 2020, *H. mantegazzianum* was observed in the natural environment in Lithuania. In this country, *H. mantegazzianum* was first identified in the Joniškis district, near Bertaučiai Village in abandoned mesic grassland. This population occupied approximately 720 m^2 area. A second population (approximately 600 m^2) was found on the opposite side of the road, at the edges of a small woodland and on slopes of the gravel road embankment. At approximately 0.5 km west of the first record, a third large population (approximately 2 200 m^2) was found on the edge of a shrub habitat. *H. mantegazzianum* should be managed and eradicated in the areas where it occurs. Repeated management measures will be required to eradicate populations with all individuals treated. Repeated measures are also needed for several years to exhaust the seedbank. The EPPO National regulatory control system Standard PM 9/9(2) *Heracleum mantegazzianum, H. sosnowskyi* and *H. persicum* provides detailed guidance on procedures to monitor, contain and eradicate this *Heracleum* species.

Source: Gudžinskas Z, Kazlauskas M (2022). The first record of *Heracleum mantegazzianum* Sommier & Levier (Apiaceae) in Lithuania. *BioInvasions Records* **11** (in press)
EPPO (2020) PM 9/9(2) *Heracleum mantegazzianum, H. sosnowskyi* and *H. persicum*. *EPPO Bulletin* **50**, 515-524.

Pictures: *Heracleum mantegazzianum*. https://gd.eppo.int/taxon/HERMZ/photos

Additional key words: invasive alien plants, new record **Computer codes:** HERMZ, LT

2022/073 First report of *Wolffia columbiana* and *W. globosa* in France

Two species of *Wolffia* have been recorded from France in 2020, namely *Wolffia columbiana* and *W. globosa* (Araceae). *W. columbiana* was discovered in the north of France in the Hauts-de-France region, and *W. globosa* was discovered in the south of the territory in the Occitanie region. *Wolffia columbiana* is native to North America and *W. globosa* is native to Asia. In France there is also one native species in this genus; *W. arrhiza*. The genus *Wolffia* comprises of 11 species of minute floating aquatic plants and distinguishing the three species is not easy. *W. globosa* was first discovered in Bulgaria in 2010 and more recently in Germany in 2020 and *W. columbiana* was recorded in Germany and the Netherlands in 2013 and more recently in Italy and Belgium. In France, the non-native *Wolffia* species have contrasting suitability to resistance to cold temperatures. *W. columbiana* can withstand temperatures as low as -12°C whereas *W. globosa* can only tolerate temperatures down to 1°C.

Migratory birds which pick up the plants on their feet and in their feathers can be vectors for spread, and it can also be spread as a contaminant of aquatic plants in trade. The latter is the probable pathway for entry into the EPPO region. In France, both non-native species show signs of invasive potential and may threaten the native *W. arrhiza*. The authors provide a key to distinguish the species present in Europe.

Source: Lecron JM, Fisson P, Fried G, Lierout M, Niebler F, Verloove F (2021) Deux nouvelles espèces de wolffies en France mètropolitaine: *Wolffia columbiana* H. Karst. et *W. globosa* (Roxb.) Hartog & Plas (Araceae). *Bulletin de la Société botanique du Centre-Quest* **52**, 129-136.

Additional key words: invasive alien plants **Computer codes:** WOLCO, WOLGL, WOLAR, FR

2022/074 Invasive alien plants along waterways in Serbia

The colonization of invasive alien plants has strongly affected European riparian areas over the past decades. The Danube Basin area is characterized by high levels of invasion and, in addition to the basin of the Po River, it has one of the highest level of occurence of invasive alien plants in Europe. The total length of all waterways in Serbia is 65 980 km. All rivers in Serbia belong to three main drainage basins. The Danube catchment area, belonging to the Black Sea drainage basin, covers 92.5% of the territory, the Adriatic Sea drainage basin occupies 5.4% of the territory and the Aegean Sea drainage basin covers 2.2% of the total area of Serbia. Surveys were conducted between 2013-2016 (July to September) in 250 field sites covering all river catchments in Serbia. Table 1 presents 25 of the most frequently identified invasive alien plants along waterways in Serbia.

Table 1. 25 frequently identified invasive alien plants along waterways in Serbia.

Species	Family	Form	Native range
Abutilon theophrasti	Malvaceae	Annual herb	Asia
Acer negundo	Sapindaceae	Tree	N. America
*Ailanthus altissima**	Simaroubaceae	Tree	Asia
Amaranthus retroflexus	Amaranthaceae	Annual herb	N. America
*Ambrosia artemisiifolia**	Asteraceae	Annual herb	N. America
*Amorpha fruticosa**	Fabaceae	Deciduous shrub	N. America
*Asclepias syriaca**	Apocynaceae	Rhizomatous perennial	N. America
*Broussonetia papyrifera***	Rosales	Tree	Asia
Datura stramonium	Solanaceae	Perennial shrub	C. and S. America
Echinochloa crus-galli	Poaceae	Annual grass	Asia
Echinocystis lobata	Cucurbitales	Annual vine	N. America
Eleusine indica	Poaceae	Annual grass	Asia/Africa
Erigeron annuus	Asteraceae	Annual herb	N. America
Erigeron canadensis	Asteraceae	Annual herb	N. America
Fraxinus pennsylvanica	Oleaceae	Tree	N. America
*Helianthus tuberosus**	Asteraceae	Perennial herb	N. America
*Parthenocissus quinquefolia**	Vitaceae	Perennial vine	N. America
Paspalum distichum	Poaceae	Annual grass	Americas

Species	Family	Form	Native range
Phytolacca americana	Phytolaccaceae	Perennial herb	N. America
*Fallopia ×bohemica**	Polygonaceae	Rhizomatous perennial	
Robinia pseudoacacia	Fabaceae	Tree	N. America
*Solidago gigantea**	Asteraceae	Rhizomatous perennial	N. America
Sorghum halepense	Poaceae	Annual grass	Africa/Asia
Symphyotrichum spp.	Asteraceae	Annual herb	N. America
Xanthium orientale subsp. *italicum*	Asteraceae	Annual herb	C. and S. America

* EPPO List of Invasive Alien Plants; ** EPPO Observation List

Source: Anđelković AA, Pavlović DM, Marisavljević DP, Živković MM, Novković MZ, Popović SS, Cvijanović DL, Radulović SB (2022) Plant invasions in riparian areas of the Middle Danube Basin in Serbia. *NeoBiota* **71**, 23–48.

Additional key words: invasive alien plants

Computer codes: ABUTH, ACRNE, AILAL, AMARE, AMBEL, AMHFR, ASCSY, BRNPA, DATST, ECHCG, ECNLO, ELEIN, ERIAN, ERICA, FRXPE, HELTU, PRTQU, PASDS, PHTAM, REYBO, ROBPS, SOOGI, SORHA, 1ZMYG, XANSI, RS

2022/075 Potential global distribution of the Japanese raisin tree *Hovenia dulcis*

The Japanese raisin tree (*Hovenia dulcis*: Rhamnaceae) is native to East Asia (China, Japan, the Korean peninsula, Thailand and Vietnam) and is reported as an invasive alien plant in South America (Southern Brazil, Northern Argentina and some areas of Paraguay) and Tanzania. In Southern Brazil, the species invades protected areas where there are indications of negative impacts through the displacement of native plant species. Reproduction of *H. dulcis* is ensured by seed which are spread by small mammals. It is a fast-growing species which can grow in a range of environmental conditions, and it has been introduced into all continents (except Antarctica) as an ornamental species. The potential current and future (taking into consideration climate change) global distribution of *H. dulcis* was modelled using the current known global distribution and climatic variables from WorldClim (www.worldclim.org). Beyond the already invaded area in South America, the largest suitable regions for *H. dulcis* outside its native range under current projections are in the South-Eastern USA. Additionally, other regions appear suitable for the establishment of the species such as the west coast of the USA (states of California, Oregon, and Washington), the Adriatic Coast in the EPPO region (i.e., Albania, Croatia, Bosnia and Herzegovina, and Greece), East Africa (i.e., Ethiopia, Kenya, Uganda, and Tanzania), East Coast of Madagascar, East Coast of Australia (i.e., states of New South Wales, Queensland, Victoria and Tasmania), and New Zealand. For future scenarios of climate change, the potential area of distribution tends to have an overall small reduction. However, suitability increases in more northern areas of the EPPO region.

Source: Bergamin RS, Gama M, Almerão M, Hofmann GS, Anastácio PM (2022) Predicting current and future distribution of *Hovenia dulcis* Thunb. (Rhamnaceae) worldwide. *Biological Invasions*. https://doi.org/10.1007/s10530-022-02771-0

Additional key words: invasive alien plants

Computer codes: HOVDU