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2019/001 Recruitment of the EPPO Scientific Officer on Plant Protection Products

EPPO is recruiting a full time Scientific Officer to work on development and implementation of EPPO Standards on the efficacy evaluation of plant protection products (pesticides). The appointment will be initially for a fixed term of three years but with the possibility of extension and a permanent post after five years of satisfactory service. The post will be based in Paris, with a requirement to travel. The starting salary will be P3/1 plus allowances for dependents if applicable.

Applications should be submitted by **2019-03-10**. For more information, consult the EPPO website: https://www.eppo.int/ABOUT_EPPO/special_events/job_opportunity_ppp

Source: EPPO Secretariat (2019-01).

2019/002 The XF-ACTORS Digital Research Object Portal (DROP) has been launched

Within the framework of the EU-funded project XF-ACTORS, a portal called DROP (Digital Research Object Portal) was launched in January 2019. Its aim is to provide a unique entry point to search and access information on *Xylella fastidiosa*. The portal will allow users to retrieve open research data and open access documents that are stored in various information systems. In this portal, each digital object (research data and documents) is described by a set of internationally agreed metadata. Within the next few months, scientists working on *X. fastidiosa* (whether they participate or not in the XF-ACTORS project) will be invited to reference their research data on this portal.

To access XF-DROP: **https://xfactors.eppo.int/**

For more information:
Visit the XF-ACTORS website: https://www.xfactorsproject.eu/the-xf-actors-digital-research-object-portal-launched/
Contact the Euphresco coordinator, Baldisera Giovani: bg@eppo.int

Source: EPPO Secretariat (2019-01).

Additional key words: database **Computer codes:** XYLEFA

2019/003 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.

The applications of remote sensing in plant health (PHeRS)
This project aimed to bring together experts from research organisations and companies to share knowledge on remote sensing applications in the plant health sector. The partners were interested in:

- State of the art, research needs and gaps on remote sensing methodologies in plant health, including the use of GIS and IT tools.

- Advancements of research for the qualitative and quantitative identification of host plant species (e.g. citrus, olive) and specific pests (e.g. tristeza, *Xylella fastidiosa*) by remote sensing over larger areas.

One of the main conclusions of this project was that remote sensing is a very useful tool for pest detection and surveillance over large areas, as well as for outbreak management and evaluation of the applied phytosanitary measures. The limitations of the methodology were also discussed.

Authors: D'Onghia, Anna Maria; Brown, Paul; Riccioni, Luca; Vaglio Laurin, Gaia; Beck, Pieter S.A.; Santoro, Franco
Duration of the project: from 2017-05-01 to 2018-04-30.
Link: https://zenodo.org/record/1560576#.XAWWGWhKjIV

Source: Euphresco (2019-01). https://www.euphresco.net/projects/

Additional key words: research

2019/004 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**

Haplaxius crudus (Auchenorrhyncha: Cixiidae – EU Annexes) is a vector of Coconut lethal yellowing (EPPO A1 List). During studies conducted in Brazil, the insect was caught in the state of Para in May 2016. Yellow sticky traps had been placed in coconut plantations (*Cocos nucifera* Dwarf hybrids, Dwarf, and Brazilian Green Dwarf Jiqui), among Auchenorrhyncha specimens caught, 87% were identified as *H. crudus* (Silva *et al.*, 2019). **Present, only in some areas.**

In the United Kingdom, *Plantago asiatica mosaic virus* (*Potexvirus*, PlAMV) was found for the first time in April 2018 in a symptomatic sample of Oriental hybrid lily (*Lilium* sp.). This sample had been collected from a glasshouse nursery in Southern England where a few plants were showing symptoms of rust-coloured, necrotic streaking on the leaves. These plants had been grown from bulbs originating from the Netherlands. Measures were recommended to the grower to avoid any further spread (Harju *et al.*, 2018).

Strawberry mild yellow edge virus (*Potexvirus*, SMYEV - EU Annexes) was first reported in India, in Himachal Pradesh (Solan district). Strawberry (*Fragaria ananassa*) plants presented symptoms typical of viral infection in the form of mild mottling, cupping of leaflets and leaf deformation. The identity of the virus was confirmed by DAS-ELISA (Sharma *et al.*, 2018). **Present, only in some areas.**

During surveys conducted in September 2014 in Azerbaijan, tomato samples were collected from different regions. Symptomatic samples collected in Absheron peninsula (near Baku) tested positive for *Tomato yellow leaf curl virus* (*Begomovirus*, TYLCV - EPPO A2 List). High populations of *Bemisia tabaci* (EPPO A2 List) were also observed. The virus was not detected in other regions although *B. tabaci* is present in the whole country (Verdin *et al.*, 2018).

- **Detailed records**

In India, *Apriona germari* (Coleoptera: Cerambycidae - EPPO A1 List) occurs in Arunachal Pradesh (Kumawat *et al.*, 2015) and Meghalaya (Mitra *et al.*, 2016).

During a study conducted in Indiana (US) over 2 years on 50 strains associated with bacterial spot of tomato (EPPO A2 List), 78% were identified as *Xanthomonas perforans* and 12% as *X. gardneri*. *X. euvesicatoria* was detected in 1 sample and *X. vesicatoria* was not detected in any sample (Egel *et al.*, 2018).

Haplaxius crudus (Auchenorrhyncha: Cixiidae – EU Annexes) is a vector of Coconut lethal yellowing (EPPO A1 List). Its presence in Mississippi (US) was first reported in 2018. In North America, it was previously known to occur only in Florida and Texas (Hill *et al.*, 2018).

The presence of *Spodoptera frugiperda* (Lepidoptera: Noctuidae – EPPO A1 List) has been confirmed in Maharashtra, India (see EPPO RS 2018/154). The pest was found in September 2018 in several districts (Kolhapur, Pune, Sangli, Satara, and Solapur) feeding on sugarcane (*Saccharum officinarum*), and other crops such as maize, sorghum and sweet maize (respectively *Zea mays, Sorghum bicolor, Z. mays* subsp. *saccharata*). In the field, infestation levels ranged from 2% to 35%. The presence of natural enemies (*Campoletis chlorideae* (Hymenoptera: Ichneumonidae) and the entomopathogenic fungus *Nomuraea rileyi*) was observed but with a low incidence (Ankush *et al.*, 2019).

- **Epidemiology**

Bactericera maculipennis (Hemiptera: Triozidae) can harbour '*Candidatus* Liberibacter solanacearum' (EPPO A1 List, Solanaceae haplotypes). *B. maculipennis* often cohabits on weeds such as *Convolvulus arvensis* or *Lycium* sp. with the congeneric psyllid, *Bactericera cockerelli* (EPPO A1 List), the known vector of '*Ca.* L. solanacearum' haplotypes A and B in the Pacific Northwestern United States. Results of laboratory tests demonstrated that '*Ca.* L. solanacearum' can be transmitted between *B. cockerelli* and *B. maculipennis* on plants within the Convolvulaceae. However, *B. maculipennis* is not considered as a direct threat for potato (*Solanum tuberosum*) production as Liberibacter-infected *B. maculipennis* did not transmit the pathogen to potato plants (Borges *et al.*, 2017).

- **New pests and taxonomy**

The fungus causing oak wilt previously called *Ceratocystis fagacearum* (EPPO A1 List -) has been reclassified into a new genus and should now be called *Bretziella fagacearum* (de Beer *et al.*, 2017).

Using next-generation sequencing, a new *Citrivirus*, tentatively called Citrus leaf blotch virus 2 (CLBV-2) has been detected in China. This virus was found on cultivated *Citrus tamurana* and *C. junos x C. grandis* trees showing chlorotic leaf blotches (Cao *et al.*, 2018).

A mechanically transmissible virus tentatively called Melon chlorotic spot virus (MeCSV – most closely related to tenuiviruses) was isolated in Southeastern France from a melon (*Cucumis melo*) plant showing chlorotic spots and yellowing of the older leaves (Lecoq *et al.*, 2018).

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Additional key words: detailed record, epidemiology, new pest, new record, taxonomy

Computer codes: APRIGE, BCTCMA, CERAFA, CLBV20, LAPHFR, LIBEPS, MYNDCR, PARZCO, PLAMV0, XANTEU, XANTGA, XANTPF, AZ, BR, CN, GB, IN, US

2019/005 First report of *Spodoptera frugiperda* in Myanmar

During official surveys conducted in maize (*Zea mays*) fields from August 2018 to January 2019 in different regions of Myanmar, *Spodoptera frugiperda* (Lepidoptera: Noctuidae – EPPO A1 List) was found in Mandalay and Ayeyawaddy regions. Within infested maize fields, egg masses attached to the maize whorls could be observed, as well as larvae and feeding damage on maize leaves (windowing and shot holes). The identity of the pest was confirmed by different laboratories in Myanmar and the USA. Surveys are continuing across Myanmar to evaluate the extent of the infestation.
The pest status of *Spodoptera frugiperda* in Myanmar is officially declared as: **Present: subject to official control.**

Source: IPPC website. Official Pest Reports – Myanmar (MMR-19/6 of 2019-01-14) First detection report of the fall armyworm *Spodoptera frugiperda* (Lepidoptera: Noctuidae) on maize in Myanmar. https://www.ippc.int/en/countries/myanmar/pestreports/2019/01/first-detection-report-of-the-fall-armyworm-spodoptera-frugiperda-lepidoptra-noctuidae-on-maize-in-myanma/

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

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

2019/006 First report of *Spodoptera frugiperda* in Thailand

In December 2018, the NPPO of Thailand confirmed the first detection of *Spodoptera frugiperda* (Lepidoptera: Noctuidae – EPPO A1 List) on its territory. The insect was identified in samples which had been collected from maize (*Zea mays*) fields in the provinces of Kanchanaburi and Tak, close to the border with Myanmar. Official measures are being taken to limit the spread of the pest to other areas.
The pest status of *Spodoptera frugiperda* in Thailand is officially declared as: **Present: subject to official control.**

Source: IPPC website. Official Pest Reports – Thailand (THA-03/1 of 2018-12-19) First detection of fall armyworm on the border of Thailand. https://www.ippc.int/en/countries/thailand/pestreports/2018/12/first-detection-of-fall-army-worm-on-the-border-of-thailand/

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

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

2019/007 First report of *Spodoptera frugiperda* in Yemen

Acccording to recent information collected by FAO, *Spodoptera frugiperda* (Lepidoptera: Noctuidae – EPPO A1 List) was found for the first time in Yemen at the end of July 2018. In order to follow the spread of *S. frugiperda* in Africa and the Arabian Peninsula, FAO has set up a monitoring and early warning system which can be consulted on the Internet. This website shows compiled results of surveys checking hundreds of thousands of plants and using numerous traps.

The situation of *Spodoptera frugiperda* in Yemen can be described as follows: **Present: only in some areas (first found in July 2018).**

Source: FAO (2018-12-13) Briefing note on FAO actions on fall armyworm. http://www.fao.org/3/BS183E/bs183e.pdf
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Pictures: *Spodoptera frugiperda*. https://gd.eppo.int/taxon/LAPHFR/photos

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

2019/008 First report of *Garella (=Erschoviella) musculana* in Turkey

During research studies conducted from 2015 to 2018 in the province of Bartin (Black Sea region), *Garella* (=*Erschoviella) musculana* (Lepidoptera: Noctuidae - EPPO A2 List) was found for the first time in Turkey. Until recently, this pest of walnut (*Juglans regia*) was only known to occur in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan). The present paper also refers to recent records of *G. musculana* in India (Kashmir valley in 2011) and Ukraine (2008), as well as to its possible presence in Afghanistan and Iran (unconfirmed in both countries). As damage caused by *G. musculana* can be confused with *Zeuzera pyrina* on young shoots and with *Cydia pomonella* on walnut green husk, the impact of *G. musculana* in Turkey is unknown and needs to be further studied. Pictures of the pest and its damage have been kindly provided by the authors of this first record in Turkey and are available in the EPPO Global Database. The situation of *Erschoviella musculana* in Turkey can be described as follows: **Present, only in some areas (first found in 2015 in Bartin province).**

Source: Yıldız Y, Yıldırım İ, Bostancı C, Aydoğan O (2018) [*Erschoviella musculana* Erschoff 1874, a new record and a new walnut pest in Turkey]. *Journal of Bartin Faculty of Forestry* **20**(2), 296-302 (in Turkish). http://dergipark.gov.tr/download/article-file/475282

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Pictures: *Garella musculana*. https://gd.eppo.int/taxon/ERSHMU/photos

Additional key words: new record **Computer codes:** ERSHMU, TR

2019/009 First report of *Garella (=Erschoviella) musculana* in Bulgaria

In Bulgaria, *Garella musculana* (Lepidoptera: Noctuidae - EPPO A2 List) was found in late June 2018 in the village of Botevo, Varna province (approximately 25 km north-west of Varna). This finding was made by a visiting entomologist during his stay in this village, where approximately 10 unusual moths were found among insect specimens caught in light traps or observed attracted by light on an adjacent illuminated wall. The identity of the insect could then be confirmed morphologically. Further investigations revealed that *G. musculana* had in fact been observed earlier by another entomologist but that this first record had not been published. In September 2016, a single male specimen of *G. musculana* had been observed at the Byala Beach Resort, Varna province (40 km south of Varna). At that time, the presence of a single moth in a coastal locality could have been interpreted as a wandering individual but the more recent finding of several specimens in the village of Botevo indicates that *G. musculana* is probably established in Bulgaria.
The situation of *Erschoviella musculana* in Bulgaria can be described as follows: **Present, only in some areas (first found in 2016 in Varna province).**

Source: Beaumont HE (2018) The occurrence of *Garella musculana* (Erschov, 1874) (Lep.: Nolidae) in eastern Bulgaria. *Entomologist's Records and Journal of Variation* **130**(6), 315-316.

Pictures: *Garella musculana*. https://gd.eppo.int/taxon/ERSHMU/photos

Additional key words: new record **Computer codes:** ERSHMU, BG

2019/010 First report of *Cydalima perspectalis* in Ireland

In Ireland, *Cydalima perspectalis* (Lepidoptera: Crambidae – formerly EPPO Alert List) was first found during a routine inspection of mature boxwood plants (*Buxus* spp.) on a plant nursery in September 2018 in the Leinster region of Ireland. Subsequent inspections of mature plantations in public areas around Dublin, confirmed the presence of larvae and pupae at multiple locations on mature boxwood plantations. Observations suggest that the pest may have been present for some time, and has gone undetected until now. To date, observations of this insect are limited to the greater Dublin area; however inspections in areas outside of the greater Dublin area have not yet been conducted. Considering the establishment and spread of this pest throughout Europe to date, its spread throughout Ireland is probable, however as boxwood is primarily an ornamental plant in Ireland, the spread will mainly be limited to residential and ornamental gardens.

Source: NPPO of Ireland (2018-12).

Pictures: *Cydalima perspectalis*. https://gd.eppo.int/taxon/DPHNPE/photos

Additional key words: new record **Computer codes:** DPHNPE, IE

2019/011 *Crisicoccus pini* (Hemiptera: Coccidae): addition to the EPPO Alert

Why: In September 2015, *Crisicoccus pini* (Hemiptera: Coccidae – Kuwana pine mealybug) was found for the first time in Italy causing damage to *Pinus pinaster* and *P. pinea* trees in the city of Cervia (Ravenna province, Emilia-Romagna region). In this city, infested pine trees were randomly distributed both along the roads and in private gardens. Considering the severity of damage observed and the fact that this mealybug of Asiatic origin could threaten pine trees, the Panel on Phytosanitary Measures suggested that *C. pini* should be added to the EPPO Alert List.

Where: *C. pini* originates from Asia and was first described in Japan. It has been introduced into California (US), and there is an isolated record from the District of Columbia (US). In the EPPO region, before being found in Italy in 2015, *C. pini* had been recorded in 2006 in Monaco on *P. pinaster* trees growing in the Japanese garden of the city.

EPPO region: Italy (Emilia-Romagna), Monaco, Russia (Far East).
Asia: China (at least Shandong, Xizhang), Japan (Honshu, Kyushu), Korea (Republic of), Korea (Dem. People's Republic), Russia (Far East), Taiwan.
North America: USA (California, District of Columbia).

On which plants: *C. pini* is apparently restricted to Pinaceae. According to the literature, *C. pini* has been recorded on *Pinus coulteri, P. densiflora, P. halepensis, P. koraiensis, P. massoniana, P. nigra, P. parviflora, P. pinaster, P. pinea, P. radiata, P. tabuliformis, P. thunbergii*. *Abies* sp. is also mentioned in a list of hosts, but this needs to be confirmed. Observations made in the city of Cervia (IT) have showed that *C. pini* attacked both *P. pinaster* and *P. pinea* (new host in Italy).

Damage: *C. pini* feeds and develops among the growing pine needles. As a consequence, needles become yellow and partially necrotic. Mealybugs also excrete honey dew on which sooty moulds subsequently develop. Canopies of attacked pine trees show partial to full necrosis, and in some cases tree mortality has been observed in the city of Cervia (IT). Data on the biology and life cycle of the pest is very scarce in the available literature.
Pictures can be viewed on the EPPO Global Database:
https://gd.eppo.int/taxon/DACLPI/photos

Dissemination: Immature stages of mealybugs can move over short distances. Over long distances, all stages can be transported on infested plant material.

Pathways: Plants for planting (including bonsais), cut branches of *Pinus* spp. from countries where *C. pini* occurs.

Possible risks: Pine trees are widely planted across the EPPO region for forestry and ornamental purposes. Data is generally lacking on the economic and environmental impacts of *C. pini*. In California (US) where the pest has been introduced, recent literature suggests that it is not a pest, although in the early 1990s it was reported that it could behave as a pest. Concerning the situation in Monaco, more recent information could not be found in the literature. In Italy, the introduction of *C. pini* and the observation of damage have triggered the implementation of phytosanitary measures. In March 2016, a national decree for 'emergency measures to avoid the spread of *Crisicoccus pini* Kuwana in Italy', as well as a pest control plan were adopted. In all infested sites, severely affected pine trees were destroyed, insecticide (abamectine) was applied by endotherapy and a predator *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae) was repeatedly released. In 2018

(after 3 years of control measures), chemically treated pine trees showed recovery, *C. montrouzieri* were still present and a reduction of scale populations was observed. As *C. pini* could be a threat to pine trees in urban environments and possibly in forests, it is advisable to monitor the situation of this pest in the EPPO region.

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EPPO RS 2019/011

Panel review date –

Entry date 2019-01

Additional key words: Alert List

Computer codes: DACLPI

2019/012 First report of *Tomato brown rugose fruit virus* in Germany

The NPPO of Germany recently informed the EPPO Secretariat of the first outbreak of *Tomato brown rugose fruit virus* (*Tobamovirus*- ToBRFV) in Nordrhein-Westfalen. The virus was found in 7 greenhouses growing tomato (*Solanum lycopersicum*) for fruit production, covering 25 ha. About 10% of plants showed symptoms. The identification was confirmed by molecular methods (RT-PCR with tobamovirus-specific primers and sequencing). Additionally, another greenhouse with tomatoes is suspected to be infected. The origin of the outbreak is not known. Trace-back studies are ongoing but it is noted that tomato seedlings originated from another country. Eradication measures are applied (destruction of the plants in the greenhouses, clearing and disinfection of the greenhouses and the material used for tomato production).
A rapid Pest Risk Analysis was conducted and concluded that the virus poses a significant phytosanitary risk for Germany and other EU Member States. This is the first report of ToBRFV in Europe. The virus was so far only known from Jordan (see EPPO RS 2016/024) and Israel.
The pest status of *Tomato brown rugose fruit virus* in Germany is officially declared as: **Present, under eradication.**

Source: NPPO of Germany (2018-11).

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Pictures: *Tomato brown rugose fruit virus*. https://gd.eppo.int/taxon/TOBRFV/photos

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

2019/013 First report of *Tomato brown rugose fruit virus* in Italy (Sicilia)

The NPPO of Italy recently informed the EPPO Secretariat of the first outbreak of *Tomato brown rugose fruit virus* (*Tobamovirus*- ToBRFV) in Sicilia. Following a report submitted by the University of Palermo, a preliminary survey was carried out by the Regional Phytosanitary Service of Sicily. The presence of ToBRFV was confirmed in one greenhouse (2000 m^2) growing tomato (*Solanum lycopersicum*) in Ispica municipality (Ragusa province). About 10% of plants were infected but symptoms were not severe. Further surveys will be conducted in the area to detect potential other outbreaks.
The pest status of *Tomato brown rugose fruit virus* in Italy is officially declared as: **Present, at low prevalence, in specific parts of the area where host plants are grown.**

Source: NPPO of Italy (2019-01).

Pictures: *Tomato brown rugose fruit virus*. https://gd.eppo.int/taxon/TOBRFV/photos

Additional key words: new record **Computer codes:** TOBRFV, IT

2019/014 First report of *Tomato brown rugose fruit virus* in Mexico

Tomato brown rugose fruit virus (*Tobamovirus*- ToBRFV) was recently reported from Mexico. Symptoms on fruits included yellow discoloration, green spots and deformations, green grooves and irregular brown spots, and on leaves, mosaic symptoms, spots and yellowing. In September 2018, ToBRFV was first detected in 8 nurseries growing tomatoes (*Solanum lycopersicum*) and capsicum (*Capsicum* sp.) in the municipality of Yurecuaro (State of Michoacan). The identification was confirmed by RT-PCR and sequencing. The virus was also detected in October 2018 in the State of Guanajuato. Additional surveys are planned to detect new outbreaks and phytosanitary measures are applied to control the disease.
The pest status of *Tomato brown rugose fruit virus* in Mexico is officially declared as: **Transitory pest, actionable and under eradication**.

Source: NAPPO Phytosanitary Alert System. Official Pest Reports. Mexico (2018-09-17) *Tomato brown rugose fruit virus*: detected in the municipality of Yurecuaro, Michoacan. https://www.pestalerts.org/oprDetail.cfm?oprID=765

Cambrón-Crisantos JM, Rodríguez-Mendoza J, Valencia-Luna JB, Alcasio-Rangel S, García-Ávila CJ, López-Buenfil JA and Ochoa-Martínez DL (2018) First report of *Tomato brown rugose fruit virus* (ToBRFV) in Michoacan, Mexico. *Revista Mexicana de Fitopatología* **37**(1). DOI: 10.18781/R.MEX.FIT.1810-5

INTERNET
El Sol del Bajio. Celaya, Mexico (2019-01-24). Atienden problema del virus rugoso del tomate https://www.elsoldelbajio.com.mx/local/atienden-problema-del-virus-rugoso-del-tomate-2184078.html

Pictures: *Tomato brown rugose fruit virus*. https://gd.eppo.int/taxon/TOBRFV/photos

Additional key words: new record **Computer codes:** TOBRFV, MX

2019/015 *Tomato brown rugose fruit virus* (*Tobamovirus*- ToBRFV): addition to the EPPO Alert List

Why: *Tomato brown rugose fruit virus* (*Tobamovirus*, ToBRFV) was first identified on tomatoes in Jordan in 2015 (EPPO RS 2016/024), outbreaks have recently occurred in Germany (EPPO RS 2019/012), in Italy (EPPO RS 2019/013) and in Mexico (EPPO RS 2019/014) where the virus causes major concerns for growers of tomato and capsicum. As ToBRFV is an emerging virus and tomato is an important crop in the EPPO region, the EPPO Secretariat decided to add it to the EPPO Alert List.

Where:
EPPO region: Germany (under eradication), Israel (first disease symptoms in 2014), Italy (Sicilia), Jordan (first identified in 2015).
America: Mexico (under eradication).
Asia: Israel, Jordan.

On which plants: Tomato (*Solanum lycopersicum*) and capsicum (*Capsicum* sp.) are the main hosts. Inoculation experiments showed that *Nicotiana benthamiana, N. glutinosa, N. sylvestris, N. tabacum* (tobacco) develop symptoms and that weeds such as *Chenopodiastrum murale* and *Solanum nigrum* may act as reservoirs for ToBRFV. Eggplant (*Solanum melongena*) and potato (*S. tuberosum*) did not show symptoms after inoculation of the virus and ToBRFV was not found when the plants were subsequently tested by ELISA.

Damage: On tomatoes, symptoms vary depending on varieties. Tomato cultivars with the *Tm-2*^{2} resistance gene (used against other tobamoviruses) are susceptible to ToBRFV. On tomato, foliar symptoms include chlorosis, mosaic and mottling with occasional leaf narrowing. Necrotic spots may appear on peduncles, calyces and petioles. Fruit show yellow or brown spots, with rugose symptoms rendering the fruits non-marketable. Fruits may be deformed and have irregular maturation. In the paper describing the first finding in Israel, diseased plants had 10 to 15% symptomatic fruit. In Jordan, in the first reported outbreak, disease incidence reached almost 100%. On capsicum, foliar symptoms include deformation, yellowing and mosaic. Capsicum fruits are deformed, with yellow or brown areas or green stripes.
Pictures are available at https://gd.eppo.int/taxon/TOBRFV/photos.

Transmission: ToBRFV is transmitted by seed, contact (contaminated tools, hands, clothing, direct plant-to-plant contact), and propagation material (grafts, cuttings). Tobamoviruses can remain infective in seeds, plant remains and contaminated soil for months. They are found in the seed coat and the endosperm, which could explain why conventional seed disinfection treatments are not fully effective to control them. Even if transmission from seed to seedling is low, further dissemination by contact (e.g. during transplantation of seedlings or regular handling of the crop) allows a rapid spread within a glasshouse.
The disease was first observed in autumn 2014 in Israel and further spread occurred across the entire country within one year, because of human-assisted spread and trade of infected seeds or seedlings.

Pathway: Seed, plants for planting from countries where ToBRFV occurs. The virus is also spread locally by contact.

Possible risks: Tomato and capsicum are important crops grown in the entire EPPO region under protected conditions. Symptoms of the disease makes the fruit unmarketable. Once the virus is introduced in an area, control measures are very limited and mainly rely on elimination of infected plants and strict hygiene measures. Testing methods (ELISA, RT-PCR) are available to detect the virus in the seed. It therefore seems desirable to avoid its further introduction and spread within the region.

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EPPO RS 2016/024, 2019/012, 2019/013, 2019/014, 2019/015

Panel review date - Entry date 2019-01

Additional key words: Alert List **Computer codes:** TOBRFV

2019/016 *Xylella fastidiosa* subsp. *multiplex* detected in Toscana region, Italy

In Italy, during official surveys conducted in November 2018 in Toscana region, *Xylella fastidiosa* subsp. *multiplex* (EPPO A2 List) was found in the municipality of Monte Argentario, a peninsula located in the province of Grosseto. Various ornamental and wild Mediterranean plants gave positive results when tested for the bacterium. Phytosanitary measures were taken in accordance with EU Decision 2015/789 to eradicate the disease. A demarcated area was delimited in December 2018 and intensive surveys are being implemented. As of January 2019, 1120 samples have been collected from the demarcated area, and 72 plants belonging to the following species: *Calicotome spinosa, Calicotome sp., Cercis siliquastrum, Cistis* sp., *Eleagnus angustifolia, Ficus carica, Lavandula* sp., *Prunus dulcis, Rhamnus alaternus, Rosmarinus officinalis, Polygala myrtifolia, Spartium junceum* were found to be infected. In the affected area, both *Philaenus spumarius* and *Neophilaenus campestris* (both Hemiptera: Aphrophoridae) vectors have been found. Leaf scorch symptoms have been observed only in some plants (*Prunus dulcis, Polygala myrtifolia and Spartium junceum*).
The pest status of *Xylella fastidiosa* in Italy is officially declared as: **Present, only in some parts of the Member State concerned.**

Source: NPPO of Italy (2019-01).

INTERNET
Regione Toscana. Servizio Fitosanitario Regionale. Monte Argentario: alcune piante colpite dal batterio '*Xylella fastidiosa*'. http://www.regione.toscana.it/-/monte-argentario-alcune-piante-colpite-dal-batterio-xylella-fastidiosa-

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

Additional key words: new record **Computer codes:** XYLEFA, XYLEFM, IT

2019/017 First report of *Xylella fastidiosa* subsp. *multiplex* in Portugal

In December 2018, during official surveys conducted in Portugal, *Xylella fastidiosa* subsp. *multiplex* (EPPO A2 List) was found in the municipality of Vila Nova de Gaia (near Porto) in a composite and asymptomatic sample of lavender (*Lavandula dentata*) collected in a zoo. Another sample was collected from *Nerium oleander* on the same day from the same location but gave negative results. The infected *L. dendata* plants were approximately 6 years-old and had been produced from a group of 12 mother plants (more than 10-years old) whose origin is unknown. Measures were taken in accordance with EU Decision 2015/789 to eradicate the disease. A demarcated area was established around the infected plants surrounded by a buffer zone of 5 km radius. The infected zone inludes all plants of *L. dentata* known to be infected by *X. fastidiosa*, as well as other potentially infected *L. dentata* plants. A total of 38 samples were taken from the infected lavender bed and from other lavender beds (sharing the same mother plants); all these plants not being more than 100 m from each other. As a result, 33 plants were found to be infected by *X. fastidiosa* subsp. *multiplex*. Two samples of *L. angustifolia* and *Rosmarinus officinalis* located in their vicinity were also tested. Although they gave negative results, these plants were also destroyed. Intensive surveys are continuing to identify potential host plants and collect samples. As of January 2019, 158 plant samples have been collected and are being tested.
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 (2019-01).

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

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

2019/018 Update on the situation of *Xylella fastidiosa* in Spain

- **Mainland Spain**

In the province of Alicante (Comunidad Valenciana) where *Xylella fastidiosa* (EPPO A2 List) was first found in June 2017 in one plot of almond (*Prunus dulcis*) trees (EPPO RS 2017/133), new detections were made within the demarcated area. As of November 2018, 201 new positive cases were detected, and the demarcated area will be enlarged to approximately 100 000 ha (covering 31 municipalities). During 2018, 12 517 samples were taken in Comunidad Valenciana (7 688 within the demarcated area), 6 065 were negative (4 026 within the demarcated area), 231 were positive and 6 221 are still under test (3 431 within the demarcated area). As of November 2018, 440 infected plants have been detected in Alicante province: 425 *Prunus dulcis* from 378 plots, 3 *Phagnalon saxatile*, 1 *Calicotome spinosa*, 3 *Helichrysum italicum*, 5 *Polygala myrtifolia*, 1 *Prunus armeniaca*, 1 *Rhamnus alaternus* and 1 *Rosmarinus officinalis*. To date, 283 ha (690 plots) have been treated with insecticide and 431 plots have been destroyed (21 662 almond trees and specified plants present in the underbrush of a nearby forest). During 2018, 2 070 insects have been collected (1 935 tested) in infected plots or their surroundings. *X. fastidiosa* has been confirmed in 10 *Neophilaenus campestris* (out of 1 001 tested) and 36 *Philaenus spumarius* (out of 829 tested). Studies on subspecies have identified *X. fastidiosa* subsp. *multiplex* in the following plants: *Helychrysum italicum, Phagnalon saxatile, Polygala myrtifolia, Prunus armeniaca, Prunus dulcis* and *Rosmarinus officinalis*.

In April 2018, *Xylella fastidiosa* subsp. *multiplex* was detected in 1 olive tree (*Olea europaea* cv. Picual) in Villarejo de Salvanés (Communidad de Madrid). An infected area (3.14 ha) and a buffer zone (5 km radius) have been delimited. 345 samples were collected from specified hosts in the infected area and all were negative. Treatments were also applied against insect vectors in April 2018 in the infected area and around it (within 500 m radius). The infected tree and other potential hosts were destroyed, and another treatment was applied against insect vectors. As of December 2018, 1 666 plant samples, as well as 55 insect samples, have been collected from the demarcated area and all test results were negative.

In April 2018, *X. fastidiosa* was detected in 3 *Polygala myrtifolia* plants in a nursery (greenhouse with physical protection against vector insects) located in the municipality of El Ejido (Andalucía). Infected plants came from a lot which had been imported from Portugal. Plant material of the affected nursery was destroyed and intensive surveys have been carried out around the infected site within 1 km radius. As of November 2018, all tested samples (1 484 samples) gave negative results.

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

- **Islas Baleares**

In Islas Baleares, specific surveys are being conducted on *X. fastidiosa*. As of October 2018, 740 infected plants have been detected: 427 in Mallorca, 194 in Ibiza and 119 in Menorca. In Baleares, the bacterium has been detected in 20 host plant species: *Acacia saligna, Calicotome spinosa, Cistus albidus, Cistus monspeliensis, Ficus carica, Fraxinus angustifolia,*

Genista lucida, Juglans regia, Lavandula dentata, Nerium oleander, Olea europaea var. *europaea, Olea europaea* var. *sylvestris, Polygala myrtifolia, Prunus avium, Prunus domestica, Prunus dulcis, Rhamnus alaternus, Rosmarinus officinalis, Teucrium capitatum* and *Vitis vinifera*. Since December 2017, a containment strategy has been adopted in Islas Baleares.

Source: NPPO of Spain (2018-10, 2018-11, 2018-12)

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

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

2019/019 *Ralstonia solanacearum* is absent from Western Australia (AU)

The Department of Primary Industries and Regional Development of Western Australia (AU) recently informed the EPPO Secretariat that *Ralstonia solanacearum* (bacterial wilt - EPPO A2 List) no longer occurs in the state of Western Australia (AU). Bacterial wilt was present in Western Australia as early as 1919, and was recorded on potato, tomato and tobacco (*Solanum tuberosum, S. lycopersicum* and *Nicotiana tabacum*). At the peak of infection in 1967-1968, approximately 145 acres (approximately 58 ha) of potatoes were affected on 27 properties. Previous significant outbreaks had occurred in potatoes in 1944, 1947 and 1951. Eradication of the disease in Western Australia was accomplished after all properties affected by bacterial wilt were quarantined for a period of five years, during which no potatoes or other solanaceous crops could be grown, and volunteer potatoes were destroyed. The last detection of bacterial wilt in a commercial crop was in January 1975. Later infections were confirmed in home gardens in 1984, 1985 and 1987. These were all traced to home owners planting imported ware potatoes (*S. tuberosum* cv. Pontiac) in their gardens. The infected plots were immediately treated with formalin and property owners were required to exclude all solanaceous plants for a period of 5 years. There have been no detections of bacterial wilt in Western Australia since 1987.

Source: Department of Primary Industries and Regional Development of Western Australia. Biosecurity (2018-11).

References about the past occurrence of bacterial wilt in Western Australia:

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Pictures: *Ralstonia solanacearum*. https://gd.eppo.int/taxon/RALSSO/photos

Additional key words: absence, detailed record **Computer codes:** RALSSO, AU

2019/020 First report of '*Candidatus* Liberibacter solanacearum' and its vectors *Bactericera trigonica* and *B. nigricornis* in Tunisia

In 2014-2016 symptoms similar to those associated with the presence of 'Ca. L. solanacearum' (EPPO A1 List, Solanaceae haplotypes) were observed in the governorates of Kairouan and Sidi Bouzid and, to a lesser extent, in several other carrot-growing areas such as Fahes (governorate of Zaghouan) and Chott-Mariem (governorate of Sousse). Symptoms including leaf curling, yellowing, bronze and purplish discoloration, stunting of plants and roots, and proliferation of secondary roots, affected 20 to 40% of the carrots in some plots and caused significant yield losses. Symptoms were observed both in fields sown with locally produced seed and imported seed. Laboratory analyses by real-time PCR on samples taken from carrot fields in Kairouan detected '*Ca.* L. solanacearum' haplotypes D and E. this is the first time haplotypes D and E were detected co-infecting a carrot plant. Three samples taken from field for carrot seed production tested positive for haplotype D.
Surveys on vectors were conducted between May 2014 and April 2015 in the governorates of Kairouan, Zaghouan, Monastir, Manouba, Beja, Gafsa and Sousse and showed that *Bactericera trigonica* and *B. nigricornis* (both Hemiptera: Triozidae) were present in all symptomatic fields. The authors note that both species were not previously known to be present in Tunisia and consider that they are likely to be the vectors of '*Ca.* L. solanacearum' as reported in other Mediterranean countries. *Bactericera trigonica* and *B. nigricornis* were also observed on other crops from the Apiaceae family as well as on tomato and potato.

The situation of '*Candidatus* Liberibacter solanacearum' in Tunisia can be described as follows: **Present, only on carrot crops (haplotypes D and E).**

Source: Ben Othmen S, Morán FE, Navarro I, Barbé S, Martínez C, Marco-Noales E, López MM (2018) 'Candidatus Liberibacter solanacearum' haplotypes D and E in carrot plants and seeds in Tunisia. *Journal of Plant Pathology* **100**(2), 197–207. https://doi.org/10.1007/s42161-018-0045-7
Ben Othmen S, Abbes K, El Imem M, Ouvrard D, Rapisarda C, & Chermiti B (2018). *Bactericera trigonica* and *B. nigricornis* (Hemiptera: Psylloidea) in Tunisia as potential vectors of '*Candidatus* Liberibacter solanacearum' on Apiaceae. *Oriental Insects*, 1–13. https://doi.org/10.1080/00305316.2018.1536003

Pictures: '*Candidatus* Liberibacter solanacearum' https://gd.eppo.int/taxon/LIBEPS/photos

Additional key words: new record **Computer codes:** LIBEPS, BCTCTR, TRIZBR, TN

2019/021 First report of '*Candidatus* Liberibacter solanacearum' haplotype C in a symptomless potato plant in Finland

In Finland, '*Candidatus* Liberibacter solanacearum' haplotype C is transmitted by the carrot psyllid *Trioza apicalis* (Hemiptera: Triozidae) and causes yield losses (see EPPO RS 2012/118 and 2017/129). Because '*Candidatus* Liberibacter solanacearum' haplotypes A and B (EPPO A1 List) cause the damaging zebra chip disease in potato in the USA and New Zealand, the occurrence of '*Ca.* Liberibacter solanacearum' in cultivated and volunteer potatoes in Tavastia Proper and Satakunta regions of Finland was studied. Eight volunteer potato plants and one cultivated potato plants grown at the edge of a carrot field were tested by PCR and found to be positive for '*Ca.* L. solanacearum' haplotype C but did not show symptoms of zebra chip disease. This is the first observation of haplotype C in field grown potatoes. It may be noted that haplotype E was also detected in potato stores in Spain (see EPPO RS 2017/134). Transmission experiments were performed. Attempts to transmit '*Ca.* L.

solanacearum' into potato with *T. apicalis* were not successful. '*Ca.* L. solanacearum' haplotype C was transmitted from infected carrots to potato plants by leaf grafting and by phloem connection formed by dodder but daughter tubers produced by the infected potato plants all tested negative.

Source: Haapalainen M, Latvala S, Rastas M, Wang J, Hannukkala A, Pirhonen M & Nissinen AI (2018) Carrot pathogen '*Candidatus* Liberibacter solanacearum' haplotype C detected in symptomless potato plants in Finland. *Potato Research* **61**(1), 31–50. https://doi.org/10.1007/s11540-017-9350-3

Pictures: '*Candidatus* Liberibacter solanacearum' https://gd.eppo.int/taxon/LIBEPS/photos

Additional key words: detailed record **Computer codes:** LIBEPS, TRIZAP, SOLTU, FI

2019/022 First report of three Asteraceae species in Tunisia

Senecio angulatus (Asteraceae) is a fast-growing vine which is native to South Africa. The species has been reported as being invasive in Australia and New Zealand. Within the EPPO region, *S. angulatus* is reported from France, Italy and Spain where it is considered invasive and more recently from Greece (Rhodes Island). In Tunisia, *S. angulatus* was first identified in 2016 near ancient buildings around the city of Monastir. The species was also observed growing into dune systems where it was associated with *Opuntia ficus-indica* and *Ephedra fragilis* communities. In addition, the species was found around ancient buildings in Bizerta. The authors consider *S. angulatus* as a casual species in Tunisia. Two other species were identified for the first time in Tunisia: *Jacobaea erucifolia* (native to Europe and Asia) which was observed growing along road margins and abandoned fields around Jendouba, and *Kleinia mandraliscae* which was observed in a coastal rocky area around the city of Monastir. With regard to the latter species, this is the first time this South Africa native has been recorded for North Africa, though the species is reported as being casual in Sicily (IT) and Spain.

Source: El Mokn R, Iamonico D (2018) Three new records of *Senecioneae* (Asteraceae) for the allochthonous Tunisian flora: occurrence and taxonomic notes. *Flora Mediterranea* **28**, 385-392.

Additional key words: new record **Computer codes:** EPEFR, OPUFI, SENAN, ES, IT, TN

2019/023 Seed survival of *Heracleum mantegazzianum*

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. Due to the impact of the species on native biodiversity and ecosystem services, it is regulated at the EU level (EU 1143/2014) and included in the list of invasive alien species of Union concern. To evaluate seed persistence in the soil, seeds of the species were buried at depths of 5-10 cm at ten locations in different regions in the Czech Republic to cover a range of climatic, geographic and soil conditions. At each site, soil chemical properties were recorded. After 1 year of burial, some of the seeds were exhumed and tested for viability. This was repeated 2, 3, 5, and 7 years after burial. The mean percentage of viable seeds was 8.8 after year 1, 2.1 after year 2, 1.2 after year 3, 0.4 after year 5 and 0.1 after year 7. There was a significant correlation between the percentage of non-viable seeds and the content of total and organic carbon in the soil. The authors suggest that following presumed eradication of the species, the managed area should be monitored well beyond the reported period of seed bank persistence (i.e. 7 years).

Source: Moravcová L, Pyšek P, Krinke L, Müllerová J, Perglová I, Pergl J (2018) Long-term survival in soil of seed of the invasive herbaceous plant *Heracleum mantegazzianum*, *Preslia* **90**, 225-234.
Pictures: *Heracleum mantegazzianum*. https://gd.eppo.int/taxon/HERMZ/photos

Additional key words: invasive alien plants, biology **Computer codes:** HERMZ, CZ

2019/024 Interception of invasive alien plants as contaminants in potted plants from China

Contamination of potted plants by invasive alien plant species is a known pathway for entry within the EPPO region. Both *Parthenium hysterophorus* (Asteraceae: EPPO A2 List) and *Polygonum perfoliatum* (Polygonaceae: EPPO A2 List) have been intercepted by the Dutch NPPO as contaminants of potted plants (see EPPO RS 2016/020). Following the implementation of the EU Regulation 1143/2014 on Invasive Alien Species, and the establishment of an EU list of Invasive Species of Union concern, inspection efforts targetting potted plants at Dutch ports has increased. In 2018, a shipment of *Podocarpus macrophyllus* and *Pseudolarix amabilis* bonsai plants from China were inspected and several non-native plant species were identified. These included two species currently on the EU list of Invasive Species of Union concern (*P. perfoliatum* and *Alternanthera philoxeroides* (Amaranthaceae: EPPO A2 List)), as well as *Humulus scandens* (Cannabaceae - EPPO A2 List) which is currently being considered for listing as a species of Union concern. In the case of the latter, two small plants were collected from the potted plants and raised in the greenhouse of the Plant Protection Service at Wageningen (NL). Both female and male plants were present as contaminants and both were grown to maturity where they flowered and produced seed which aided identification. This is the first report of *H. scandens* entering the EPPO region via the pathway 'contaminants of potted plants'.

Source: Personal communication: J. van Valkenburg, Q-bank http://www.q-bank.eu/
Q-bank interactive key: http://keys.lucidcentral.org/keys/v3/bonsai/

Additional key words: invasive alien plants, interception **Computer codes:** ALRPH, HUMJA, PODMA, POLPF, PSLAM, PTNHY, AILAL, NL

2019/025 Ten new EPPO datasheets on EPPO A1 and A2 invasive alien plants

Ten new datasheets have been published on invasive alien plants recommended for regulation as A1 and A2 pests in 2018. Posters and leaflets are also available on the EPPO website (https://www.eppo.int/RESOURCES/eppo_publications/pest_specific_posters).

***Ambrosia confertiflora* (Asteraceae - EPPO A2 List)**
Within the EPPO region, *Ambrosia confertiflora* is established and invasive in Israel. The species is also non-native in Australia where it is a weed in degraded pastures and agricultural land. In Israel, *A. confertiflora* occurs in various natural and disturbed habitats, including dry plains and semi-arid valleys, degraded pastures, cultivated orchards, summer field crops (cotton and water melon), avocado and date groves, along roadsides, river banks and wadi beds (dry river beds), in wastelands and other disturbed areas. *A. confertiflora* forms dense stands that can outcompete native plant species.

For the full datasheet: https://gd.eppo.int/taxon/FRSCO

***Andropogon virginicus* (Poaceae - EPPO A2 List)**
In the EPPO region, *Andropogon virginicus* occurs in France, the Russian Federation and Georgia. In France, *A. virginicus* was found in 2006 in the military camp 'Camp du Poteau'. It is suspected that *A. virginicus* was introduced into the military camp with NATO munitions between the years 1950 and 1967. The species invades a wide variety of habitats from disturbed to relatively intact habitats including ruderal areas, wetlands, open pastures, grasslands and open woodlands. *A. virginicus* stands can be dense, widespread and highly competitive, suggesting that the species reduces biodiversity.

For the full datasheet: https://gd.eppo.int/taxon/ANOVI

Cortaderia jubata **(Poaceae - EPPO A1 List)**
Cortaderia jubata is absent from the natural environment in the EPPO region although it is reported as invasive in California, Hawaii, New Zealand, Australia and South Africa. *C. jubata* has a very broad environmental tolerance: it can tolerate severe drought but establishes best in wet, sandy soil without existing vegetation and has been shown to germinate best in high-light, warm (about 20°C) and moist conditions. This species negatively affects forestry production by competing with forestry trees and making access difficult.

For the full datasheet: https://gd.eppo.int/taxon/CDTJU

Ehrharta calycina **(Poaceae - EPPO A2 List)**
In the EPPO region, *Ehrharta calycina* is known to occur in Portugal, Spain and Tunisia. *E. calycina* appears to have fairly broad environmental tolerance. In California and Australia, where the species is invasive, *E. calycina* can dominate plant communities, excluding native plant species and transforming shrublands into grasslands. This species can form monospecific stands by suppressing the germination of native species through rapid growth and shading out of native plant seedlings.

For the full datasheet: https://gd.eppo.int/taxon/EHRCA

Hakea sericea **(Proteaceae - EPPO A2 List)**
In the EPPO region, *Hakea sericea* is present in France, Portugal and Spain where it invades disturbed areas (particularly road margins), forest margins, coastal grasslands and pine forests. In Portugal, *H. sericea* forms extensive dense monospecific stands which can exclude native plant species and/or change community composition, including associated fauna.

For the full datasheet: https://gd.eppo.int/taxon/HKASE

Humulus scandens **(Cannabaceae - EPPO A2 List)**
In the EPPO region *Humulus scandens* is present in Austria, Belgium, the Czech Republic, France, Germany, Italy, Hungary, Romania, Serbia, Slovakia, Slovenia, Switzerland, the Ukraine. The species thrives along riversides, particularly on the loose, bare surfaces of alluvial bars formed by river and streamsides by temporary floods. The plant can also invade ruderal areas under climates with no dry seasons. In Hungary and France, *H. scandens* has been shown to have a negative impact on native plant communities by reducing species richness and modifying species composition.

For the full datasheet: https://gd.eppo.int/taxon/HUMJA

Lespedeza cuneata **(Fabaceae: EPPO A1 List)**
Lespedeza cuneata is absent from the natural environment in the EPPO region. The species is native to Asia and has been introduced into the Americas, the Caribbean and South Africa. In the USA, *L. cuneata* can thrive under a variety of conditions, crowding out native species in natural areas. The species forms dense stands in areas where it invades, reducing light availability and potentially increasing competition for soil water.

For the full datasheet: https://gd.eppo.int/taxon/LESCU

***Lygodium japonicum* (Lygodiaceae - EPPO A1 List)**
Lygodium japonicum is absent from the natural environment in the EPPO region. The species is native to Asia and has been introduced into North America, Australia and South Africa. Where introduced in the USA, *L. japonicum* occupies a broad range of natural and disturbed habitats where it can grow in full sun or shade. The vine can grow over native vegetation decreasing native plant diversity.

For the full datasheet: https://gd.eppo.int/taxon/LYFJA

***Prosopis juliflora* (Mimosoideae - EPPO A2 List)**
Prosopis juliflora is present within the EPPO region in Algeria, Israel, Jordan, Morocco, Spain (mainland and Gran Canaria) and Tunisia. The species has been introduced into many other regions of the world where it is invasive. *P. juliflora* is a very aggressive invader with the potential to outcompete and replace native vegetation. *Prosopis* species have large impacts upon water resources, nutrient cycling, the successional process and soil conservation. Negative effects include complete loss of native pasture and rangelands, transforming natural grasslands into thorn woodland (i.e. encroachment). Prosopis rapidly form dense thorny thickets that reduce biodiversity and can also block irrigation channels, obstruct roads and block smaller trails completely, affecting access to pastures, croplands, water sources and fishing areas.

For the full datasheet: https://gd.eppo.int/taxon/PRCJU

***Triadica sebifera* (Euphorbiaceae - EPPO A1 List)**
Triadica sebifera is absent from the natural environment in the EPPO region. The species is native to Asia, and non-native and invasive in North America and Australia. In North America, *T. sebifera* has a wide environmental tolerance and can thrive in many different habitats, including forests, wetlands, grasslands, coastal prairie, mesic sites, disturbed sites and low-lying fields. In the USA, *T. sebifera* displaces native plant species and establishes dominant stands, and can transform areas of prairie and grassland to woody thickets within 10 years.

For the full datasheet: https://gd.eppo.int/taxon/SAQSE

Source: EPPO Secretariat (2019-01).
EPPO Global Database: https://gd.eppo.int/

Additional key words: invasive alien plants, publications

Computer codes: ANOVI, CDTJU, EHRCA, FRSCO, HKASE, HUMJA, LESCU, LYFJA, PRCJU, SAQSE

2019/026 Effect of shade and eutrophication on the biological control of *Salvinia molesta* by the weevil *Cyrtobagous salviniae*

Salvinia molesta (Salviniaceae: EPPO A2 List) is a floating aquatic plant species native to Brazil and introduced to Africa, Asia, Australia, New Zealand and North and Central America. The species has been also introduced into the EPPO region where it is considered transient. The biological control agent, *Cyrtobagous salviniae* (Coleoptera: Erirhinidae) has been utilised against the aquatic plant in many regions of the world where it has shown to be an effective biological control agent. However, in some areas, where *S. molesta* grows in shaded waterbodies the biocontrol agent has been less effective. The current study assessed the effect of three shade regimes (80 %, 40 % and full light) on *C. salviniae* in a series of replicated greenhouse experiments where plants were grown in water containing two nutrient levels (high and low) under each shade regime. Half of the plants for each nutrient

level and each shade regime were subjected to herbivory by *C. salviniae*. Plants grown under shade and in high nutrient levels were of higher quality (expressed as carbon: nitrogen ratio) compared to plants exposed to full sunlight. The plants grown under shade incurred less damage by the biocontrol agent than those grown under full sunlight. The authors suggest the reason for this may be due to higher insoluble nitrogen concentrations in plants grown under shade which may act to deter herbivory from the weevil.

Source: Maseko Z, Coetzee JA, Hill MP (2018) Effect of shade and eutrophication on the biological control of *Salvinia molesta* (Salviniaceae) by the weevil *Cyrtobagous salviniae* (Coleoptera: Erirhinidae). *Austral Entomology* https://doi.org/10.1111/aen.12370

Pictures: *Salvinia molesta*. https://gd.eppo.int/taxon/SAVMO

Additional key words: biological control, invasive alien plants **Computer codes:** CYRBSA, SAVMO, ZA