ORGANISATION EUROPEENNE
ET MEDITERRANEENNE
POUR LA PROTECTION DES PLANTES

EUROPEAN AND
MEDITERRANEAN
PLANT PROTECTION
ORGANIZATION

EPPO Reporting Service

NO. 1 PARIS, 2018-01

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2018/001 EPPO Standards on efficacy evaluation of plant protection products: new version of the PP1 database

The EPPO Standards for the efficacy evaluation of plant protection products (PP1) describe the conduct of trials carried out to assess the efficacy of plant protection products. They are addressed to all institutions, official registration authorities, public institutes or private firms carrying out such trials. The whole series of EPPO PP1 Standards (more than 300 Standards covering a wide range of crops and pests) is available via an online database. All general Standards (e.g. design, conduct, reporting and analysis of trials, phytotoxicity, effects on succeeding crops, analysis of resistance risk, minor uses) can be accessed free of charge. Access to specific Standards (e.g. aphids on potato, weeds in cereals) is provided for an annual fee. Subscriptions should be made directly online via the database.

In January 2018 a new version of the database was released. This new version includes a new lay-out and improved functionalities to help users consult and retrieve the EPPO PP1 Standards and better adapt the payment system to different levels of services. In addition, the database has been updated with the following new and revised standards adopted by EPPO Council in September 2017.

Direct access to the database: https://pp1.eppo.int**.**

General Standards

- PP 1/214 (4) Principles of acceptable efficacy (Revision)
- PP 1/296 (1) Principles of efficacy evaluation for low-risk plant protection products (NEW)

Specific standards

- PP 1/70 (4) Aphid vectors of *Barley yellow dwarf virus* (Revision)
- PP 1/297 (1) Thrips on stone fruits and citrus (NEW)
- PP 1/298 (1) Thrips on table grapes (NEW)
- PP 1/299 (1) Aphids on citrus (NEW)
- PP 1/300 (1) Aphids on fruiting vegetables of the Solanaceae and Cucurbitaceae families under protected and field conditions (NEW)
- PP 1/301 (1) *Ceratitis capitata* – bait application (NEW)
- PP 1/302 (1) *Ceratitis capitata* – foliar application (NEW)
- PP 1/303 (1) *Eutypa lata* on grapevine (NEW)
- PP 1/304 (1) Control of suckers in orchards (NEW)
- PP 1/305 (1) Weeds in soybean (NEW)

Note: PP 1/106 (2) *Ceratitis capitata* has been withdrawn as it is replaced by the new Standards PP 1/301 and PP 1/302.

Finally, new and revised extrapolation tables have been adopted to accompany EPPO Standard PP 1/257 Efficacy and crop safety extrapolations for minor uses

Extrapolation tables are available at:
http://www.eppo.int/PPPRODUCTS/minor_uses/minor_uses.htm

Source: EPPO Secretariat (2018-01).

Additional key words: EPPO, database

2018/002 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 has indicated in bold the situation of the pest concerned using the terms of ISPM no. 8.

- **New records**

In Argentina, *Drosophila suzukii* (Diptera: Drosophilidae – EPPO A2 List) was first found in 2014 on raspberries (*Rubus idaeus*) in Choele Choel (province of Río Negro). Subsequently, the pest was found in orchards (oranges (*Citrus sinensis*) and mulberries (*Morus* sp.)) in the region of Concordia (province of Entre Ríos), in blueberries (*Vaccinium* spp.) in Lobos (province of Buenos Aires), and in several sites near Anillaco (province of La Rioja) (Lue *et al*., 2017). **Present, only in some areas (provinces of Buenos Aires, Entre Ríos, La Rioja, Río Negro).**

Grapevine Pinot gris virus (*Trichovirus*, GPGV) has recently been detected in Pakistan. A total of 249 grapevine (*Vitis vinifera*) samples were collected from different grape-growing regions and tested for different viruses. GPGV was detected in 5 self-rooted asymptomatic vines growing in the same vineyard in Sillanwali (Punjab region). Further studies will be conducted to determine the prevalence of GPGV in Pakistan (Rasool *et al*., 2017). **Present, few occurrences (5 positive samples).**

A single specimen of *Leptoglossus occidentalis* (Hemiptera: Coreidae) was first observed in 2016-11-12 in Odem, an Israeli settlement in the Northern part of the Golan Heights (Van der Heyden, 2018). **Present, a single specimen was found in 2016 in Odem.**

In Morocco, *Leptoglossus occidentalis* (Hemiptera: Coreidae) was first found near Tangier in June 2015. Three nymphs (2 instar III and 1 instar V) were observed in pine trees (*Pinus pinaster*) located approximately 1 km from the sea coast (Gapon, 2015). **Present, 3 specimens were first found in 2015 near Tangiers.**

In Lebanon, *Leptoglossus occidentalis* (Hemiptera: Coreidae) was first identified in 2015. Two adult specimens had been collected in October and November 2014, one from a private property in Arsoun and one from a small population of *Pinus brutia* trees in Dlebta (Nemer, 2015). **Present, 2 adults were first found in 2014 in Arsoun and Dlebta.**

In Nigeria, *Tomato chlorosis virus* (*Crinivirus*, ToCV – EPPO A2 List) was detected for the first time in 2017. In January and February 2017, symptoms of yellowing and leaf curling had been observed in tomato (*Solanum lycopersicum*) fields in 7 states (Kaduna, Kano, Katsina, Kebby, Jigawa, Sokoto and Zamfara) in Northern Nigeria. In these fields, tomato plants were also heavily infested by *Bemisia tabaci*. Laboratory analysis confirmed the presence of ToCV in tomato leaf samples collected from the 7 states mentioned above (Mohammed *et al.*, 2018). **Present, only in some areas (found in 7 states in Northern Nigeria).**

- **Detailed records**

In the USA, *Agrilus planipennis* (Coleoptera: Buprestidae - EPPO A2 List) is reported for the first time from South Carolina. The pest has been detected in Greenville, Oconee, and Spartanburg counties. In order to prevent any further spread of the pest, movements of wood and wood products from South Carolina are regulated, including firewood of all

hardwood species, nursery stock, green lumber, waste, compost, and chips of ash species (NAPPO, 2017).
The pest status of *Agrilus planipennis* in the USA is officially declared as: **Present in some parts of the United States and subject to official control to prevent further spread.**

Since 2013, specific surveys on soybean (*Glycine max*) diseases have been conducted in the state of New York (US). A few brown and lemon-shaped cysts, similar to those of soybean cyst nematode (*Heterodera glycines* – EPPO A2 List), were isolated from a soil sample which had been collected from a soybean field in Cayuga county in autumn 2016 (after harvest). Laboratory analysis (morphological, molecular and inoculation tests) confirmed the presence of *H. glycines*. This is the first time that this nematode is reported from the state of New York (Wang *et al*., 2017)

In China, *Meloidogyne graminicola* (EPPO Alert List) was found for the first time in Zhejiang province in May 2016 in irrigated rice (*Oryza sativa*) fields near Jinhua. Zhejiang province is one of the major rice growing area in Eastern China (Tian *et al*., 2017). In the province of Hunan, *M. graminicola* was first found in June 2016 in a rice field in Hetang district. In April and June 2017, further investigations were carried out in the main rice-producing regions of Hunan. Severe symptoms caused by *M. graminicola* were observed in Changsha (Ningxiang city), Zhuzhou (Liling city, Zhuzhou county), Xiangtan (Xiangtan county), Hengyang (Leiyang city), Yueyang (Pingjiang county), Changde (Hanshou county), and Yiyang (Ziyang district, Heshan district). The incidence of symptoms exceeded 85% in severely infested paddy fields (Song *et al*., 2017).

In China, *Peronospora belbahrii* was found in July 2016 on basil (*Ocimum basilicum*) in the Shunyi and Daxing districts of Beijing. Basil downy mildew had been found on the island of Hainan in 2014, thus the recent record in Beijing constitutes the first report in mainland China (Hu *et al*., 2018).

- **Host plants**

Inoculation experiments conducted in the USA have shown that almond (*Prunus dulcis*) is susceptible to *Fusarium euwallaceae* (EPPO A2 List). Inoculated plants showed vascular lesions extending above and below inoculation points and the fungus could be re-isolated from inoculated plants (Moreno *et al*., 2018).

Tomato chlorosis virus (*Crinivirus*, ToCV – EPPO A2 List) was detected in *Vigna unguiculata* (cowpea) plants growing together with tomatoes under glasshouses in Liaocheng prefecture, Shandong province, China. During summers 2014 and 2016, leaves of affected cowpea plants had exhibited interveinal chlorotic yellowing, dark green veins, and curling. Tomato plants were also infected by TocV and heavy whitefly (*Bemisia tabaci*) infestations were observed in the sampling sites. The disease incidence was around 87% for tomato plants and 5% for cowpea plants (Wang *et al*., 2018).

Sources: Gapon DA (2015) First record of *Leptoglossus occidentalis* (Heteroptera: Coreidae) in Morocco. *Heteropterus Revista de Entomología* 15(2), 161-163.
Hu B, Li Z, Hu M, Sun H, Zheng J, Diao Y (2018) Outbreak of downy mildew caused by *Peronospora belbahrii* on *Ocimum basilicum* var. *polosum* in China. *New Disease Reports* **37**(1). http://dx.doi.org/10.5197/j.2044-0588.2018.037.001
Lue CH, Mottern JL, Walsh GC, Burrington ML (2017) New record for the invasive spotted wing drosophila, *Drosophila suzukii* (Matsumura, 1931) (Diptera: Drosophilidae) in Anillaco, western Argentina. *Proceedings of the Entomological Society of Washington* **119**(1), 146-150.

Mohammed IU, Yakub AM, Yusuf I, Muhammad A, Navas-Castillo J, Fiallo-Olivé E (2018) First report of *Tomato chlorosis virus* infecting tomato in Nigeria. *Plant Disease* **102**(1), p 257.

Moreno K, Carrillo JD, Trouillas FP, Eskalen A (2018) Almond (*Prunus dulcis*) is susceptible to *Fusarium euwallaceae*, a fungal pathogen vectored by the polyphagous shot hole borer in California. *Plant Disease* **102**(1), p 251.

NAPPO Phytosanitary Alert System - USA (2017-10-25) *Agrilus planipennis* (Emerald Ash Borer) - APHIS adds South Carolina to the regulated area in the United States. http://www.pestalert.org/oprDetail.cfm?oprID=733

Nemer N (2015) Report on insect pests associated with conelet losses and their management in *Pinus pinea* forests in Lebanon. FAO, Rome 45 pp.

Rasool S, Naz S, Rowhani A, Golino DA, Westrick NM, Farrar KD, Al Rwahnih M (2017) First report of *Grapevine Pinot gris virus* infecting grapevine in Pakistan. *Plant Disease* **101**(11), p 1958.

Song ZQ, Zhang DY, Liu Y, Cheng FX (2017) First report of *Meloidogyne graminicola* on rice (Oryza sativa) in Hunan Province, China. *Plant Disease* **101**(12), p 5153.

Tian ZL, Barsalote EM, Li XL, Cai RH, Zheng JW (2017) First report of root-knot nematode, *Meloidogyne graminicola*, on rice in Zhejiang, Eastern China. *Plant Disease* **101**(12), p 2152.

Van der Heyden T (2018) First record of *Leptoglossus occidentalis* Heidemann, 1910 (Hemiptera: Heteroptera: Coreidae: Coreinae: Anisoscelini) in the Golan Heights. *Revista gaditana de Entomología* **9**(1), 1-3.

Wang X, Bergstrom GC, Chen S, Thurston DM, Cumming JA, Handoo A, Hult MN, Skantar AM (2017) First report of the soybean cyst nematode, *Heterodera glycines*, in New York. *Plant Disease* **101**(11), p 1957.

Wang XY, Feng J, Zang LY, Yan YL, Yang YY, Zhu XP (2018) Natural occurrence of *Tomato chlorosis virus* in cowpea (*Vigna unguiculata*) in China. *Plant Disease* **102**(1), p 254.

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

Computer codes: AGRLPL, DROSSU, FUSAEW, GPGV00, HETDGL, LEPLOC, MELGGC, PEROBE, TOCV00, AR, CN, IL, MA, NG, PK, US

2018/003 EPPO report on notifications of non-compliance: notifications from Ukraine

The NPPO of Ukraine has recently sent to the EPPO Secretariat its notification of non-compliance made because of the detection of pests and weeds in imported consignments during 2017 (covering a period of 11 months).

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Insects and pathogens					
Caryedon gonagra	*Arachis*	Stored products	India	Ukraine	1
Ceratitis capitata	*Actinidia*	Fruit	Greece	Ukraine	1
	Citrus limon	Fruit	Turkey	Ukraine	1
	Citrus sinensis, Citrus reticulata	Fruit	Turkey	Ukraine	4
	Citrus paradisi	Fruit	Turkey	Ukraine	1
	Citrus reticulata	Fruit	Spain	Ukraine	1
Frankliniella occidentalis	*Brassica oleracea* var. *italica*	Vegetables	Poland	Ukraine	1
	Rosa	Cut flowers	Kenya	Ukraine	1
	Unspecified	Plants for planting	Netherlands	Ukraine	3
	Cynara	Vegetables	Spain	Ukraine	1
Tuta absoluta	*Solanum lycopersicum*	Vegetables	Turkey	Ukraine	1
	Solanum lycopersicum	Vegetables	Spain	Ukraine	1
Stenocarpella maydis	*Zea mays*	Stored products (seeds for popcorn)	USA	Ukraine	5
Weeds					
Ambrosia artemisiifolia	*Helianthus*	Seeds	Turkey	Ukraine	1
Cuscuta campestris	Wool	Sheep's wool	Moldova	Ukraine	1
Sorghum halepense	Wool	Sheep's wool	Moldova	Ukraine	1
Ipomoea hederacea	*Nicotiana* (raw leaves)	Stored products	USA	Ukraine	1

Source: NPPO of Ukraine (2017-12).

Additional key words: interceptions **Computer codes:** UA

2018/004 International Conference on 'The Impact of global change on the emergence of plant diseases and pests in Europe' (Paris, 2018-04-23/24)

ANSES (French Agency for Food Safety), in collaboration with EPPO and EFSA (European Food Safety Authority), is organizing a conference on the impact of global change on the emergence of plant diseases and pests in Europe, on the 23rd and 24th of April 2018 in Paris (RATP House, 189 rue de Bercy, Paris, France). This Conference is addressed to researchers, policy makers and stakeholders working in the field of environment and agriculture. The Conference will be held in English with interpretation into French. No registration fees will be requested. Registration and a provisional programme will soon be available.

Conference website: https://www.anses.fr/en/content/international-conference-%E2%80%9C-impact-global-change-emergence-plant-diseases-and-pests-europe%E2%80%9D

Source: EPPO Secretariat (2018-01).

Additional key words: conference **Computer codes:** FR

2018/005 First report of *Anoplophora glabripennis* in Lebanon

In 2015-05-01, one specimen of *Anoplophora glabripennis* (Coleoptera, Cerambycidae – EPPO A1 List) was found in the urban area of Aabrine, Northern Lebanon. One week later, another beetle was found. A year later in 2016-07-13, a third specimen was spotted in the same area. It is not known for the moment whether these findings correspond to incursions or to an established population. It is suspected that the pest has been introduced with infested wood packaging material, but this could not be ascertained. As *A. glabripennis* could represent a serious threat to many tree species in Lebanon, it is stressed that surveys should be carried out to delimit the extent of the infestation, that measures should be taken to prevent any further introduction or spread, and that the general public should be informed about this new potential risk.

Source: Moussa Z, Cocquempot C (2017) *Anoplophora glabripennis* Motschulsky, 1854, a new introduced pest that could threat hardwood trees in Lebanon (Coleoptera, Cerambycidae). *Bulletin de la Société Entomologique de France* **122**(4), 501-508.

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

Additional key words: new record **Computer codes:** ANOLGL, LB

2018/006 Eradication of *Tuta absoluta* from Belarus

The NPPO of Belarus recently informed the EPPO Secretariat of the successful eradication of *Tuta absoluta* (Lepidoptera: Gelechiidae – EPPO A2 List) from its territory. The pest was first found in May 2011 in the region of Gomel in a tomato greenhouse of 3 ha. In July 2011, *T. absoluta* was also detected outdoors in an area of 3.5 ha and in private plots located near the infested tomato greenhouse. Official phytosanitary measures were taken in the infested area to eradicate the pest. As of 2016-01-01, *T. absoluta* was no longer found on the territory of Belarus, the NPPO considered that it has been successfully eradicated.
The pest status of *Tuta absoluta* in Belarus is officially declared as: **Absent: pest eradicated in 2015.**

Source: NPPO of Belarus (2018-01).

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

Additional key words: eradication, absence **Computer codes:** GNORAB, BY

2018/007 *Spodoptera frugiperda* continues to spread in Africa

In early 2016, outbreaks of *Spodoptera frugiperda* (Lepidoptera: Noctuidae – EPPO A1 List) were reported for the first time in Africa where high armyworm populations damaging maize (*Zea mays*) crops have been noticed (EPPO RS 2016/188, 2017/035, 2017/116, 2017/191, 2017/213). This phytosanitary crisis has prompted coordinated actions by FAO aiming to contain the pest. As of 2017-11-24, *S. frugiperda* has been officially confirmed in the following African countries (recent records are marked in bold and with an asterisk): Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, **Cape Verde*,** Central African Republic, Congo (Democratic Republic of), Congo, **Côte d'Ivoire*,** Ethiopia, Gambia, Ghana, **Guinea Bissau*,** Guinea, Kenya, **Madagascar*,** Malawi, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tomé e Principe, **Senegal*, Seychelles*, Sierra Leone*, Somalia*,** South Africa, South Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe.
In addition, *S. frugiperda* has been detected in Gabon, Mali, Sudan but its presence remains to be officially confirmed in these countries.

Source: FAO (2017-11-24) Briefing note on fall armyworm (FAW) in Africa. http://www.fao.org/3/a-bt415e.pdf

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

Additional key words: new record

Computer codes: LAPHFR, CI, CV, GW, MG, SC, SL, SN, SO

2018/008 First report of '*Candidatus* Liberibacter solanacearum' in Portugal

In September 2017, '*Candidatus* Liberibacter solanacearum' haplotype E (only potato haplotypes are listed in EPPO A1 List) was detected in a commercial field (1 ha) of carrots (*Daucus carota*) in the municipality of Olho Marinho, Portugal. The presence of the pathogen was detected following a laboratory analysis which had been requested by the grower. Further investigations are being carried out to determine the origin of the infection. An official survey programme, including trapping for psyllid vectors, will be carried out in 2018. This is the first time that '*Ca*. L. solanacearum' is reported from Portugal.
The pest status of '*Candidatus* Liberibacter solanacearum' in Portugal is officially declared as: **Present, under eradication.**

Source: NPPO of Portugal (2018-01).

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

Additional key words: new record **Computer codes:** LIBEPS, PT

2018/009 *'Candidatus* Liberibacter solanacearum' detected in *Trioza anthrisci* specimens from the United Kingdom and Sweden

Several specimens of *Trioza anthrisci* (Hemiptera: Triozidae) were collected by suction traps in Northeastern Scotland (United Kingdom) and Gotland (Sweden) from 2015 to 2016, and 10 were tested for the presence of '*Candidatus* Liberibacter solanacearum' (potato haplotypes are listed in EPPO A1 List). Five out of 6 specimens from the United Kingdom and 2 out of 4 specimens from Sweden tested positive (real-time PCR) for '*Ca*. L. solanacearum' haplotype C. This is the first time that this bacterium is detected in *T. anthrisci,* which can be considered as a new potential vector. This psyllid has been reported in Scandinavia, Western and Central Europe, Turkey and Russia (Altai); and in the United Kingdom, its host plants include: *Angelica sylvestris, Anthriscus sylvestris, Chaerophyllum hirsutum, Heracleum sphondylium* (all Apiaceae).
In Sweden, '*Ca*. L. solanacearum' (haplotype C) had already been detected in association with a disease on carrots (*Daucus carota*) (EPPO RS 2012/119, 2016/194). However, in the United Kingdom and prior to this finding, '*Ca*. L. solanacearum' had never been reported in crops, weeds or psyllids, but only in parsley (*Petroselinum crispum*) seeds collected from local shops (EPPO RS 2017/129).

Source: Sjölund MJ, Clark M, Carnegie M, Greenslade AFC, Ouvrard D, Highet F, Sigvald R, Bell JR, Arnsdorf YM, Cairns R, Kenyon DM (2017) First report of *'Candidatus* Liberibacter solanacearum' in the United Kingdom in the psyllid *Trioza anthrisci*. *New Disease Reports* **36**(4). http://dx.doi.org/10.5197/j.2044-0588.2017.036.004

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

Additional key words: new record, epidemiology **Computer codes:** LIBEPS, TRIZAH, GB

2018/010 Studies on the possible transmission of '*Candidatus* Liberibacter solanacearum' by carrot seeds

Trials have been conducted in France to study the transmission of '*Candidatus* Liberibacter solanacearum' (potato haplotypes are listed on the EPPO A1 List) by seeds of carrot (*Daucus carota*). Earlier studies done by two independent laboratories had obtained contradictory results. One study (Loiseau *et al.*, 2017) had not obtain any seed transmission, whereas the other one (Bertolini *et al*., 2015) had shown some transmission from carrot seeds to plants after 4 months of culture with a transmission rate ranging from 12 to 42%. In the current study, transmission trials were conducted in 2015 on 4 lots of 500 carrot seeds naturally contaminated with '*Ca*. L. solanacearum' and on 2 lots of 100 healthy seeds. The contamination rate of the seed lots ranged from 96 to 100% (a higher rate than in the two previous studies). Plants were grown for 6 months in an insect-proof greenhouse. Each month, groups of 108 plants obtained from contaminated seed lots, as well as groups of 24 plants obtained from healthy seeds, were tested by real-time PCR for '*Ca*. L. solanacearum'. Testing of seeds and plants from healthy lots always gave negative results. During the 6 months of the trial, no plant obtained from contaminated seeds tested positive or showed any symptoms. These results and the results of the previous studies suggest that transmission of '*Ca*. L. solanacearum' by carrot seeds is rare and difficult to reproduce. It is concluded that taking into account the results of the present study and of the observed geographical distribution of the disease on carrot crops, seeds are not a major transmission pathway. Although more studies are needed, psyllids (*Trioza apicalis* and *Bactericera trigonica*) probably play a more efficient role in transmitting the bacterium. The presence of cultivated or weed plants capable of acting as reservoirs in the vicinity of carrot crops should also be further studied.

Source: Loiseau M, Renaudin I, Cousseau-Suhard P, Lucas PM, Forveille A, Gentit P (2017) Lack of evidence of vertical transmission of '*Candidatus* Liberibacter solanacearum' by carrot seeds suggests that seed is not a major transmission pathway. *Plant Disease* **101**(12), 2104-2109.

Earlier studies

Bertolini E, Teresani GR, Loiseau M, Tanaka FAO, Barbé S, Martínez C, Gentit P, López MM, Cambra M (2015) Transmission of '*Candidatus* Liberibacter solanacearum' in carrot seeds. *Plant Pathology* **64**(2), 276-285.

Loiseau M, Renaudin I, Cousseau-Suhard P, Poliakoff F, Gentit P (2017) Transmission tests of '*Candidatus* Liberibacter solanacearum' by carrot seeds. *Acta Horticulturae* 1153, 41-46.

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

Additional key words: epidemiology **Computer codes:** LIBEPS

2018/011 A new citrus decline disease in Iran is associated with '*Candidatus* Liberibacter asiaticus' and '*Candidatus* Phytoplasma aurantifolia'

Since 2010, a new emerging citrus decline disease has been observed in Iran. This disease is currently widespread in the Southern part of Kerman province where it is causing the death of approximately 10% of cultivated citrus trees. The disease has been observed on sweet orange (*Citrus sinensis*), grapefruit (*C. paradisi*), and mandarin (*C. reticulata*) plants grafted on Bakraee, a local citrus variety frequently used as a rootstock. Early symptoms include pale green leaves, no production of new sprouts, and general retardation of growth. Late symptoms include evident tree decline along with reduction and decay of the root system.

To determine the possible causes of this new decline disease, leaf and root samples were collected in March 2017 in Southern Kerman, from 9 symptomatic and 3 asymptomatic citrus trees. Molecular tests revealed the presence of mixed infections with phytoplasmas and liberibacter species in symptomatic samples. Liberibacter species were identified exclusively in roots, while phytoplasmas were found in both roots and leaves. Further tests showed that liberibacter strains could be attributed to '*Candidatus* Liberibacter asiaticus' (EPPO A1 List) and that phytoplasma strains could be attributed to '*Candidatus* Phytoplasma aurantifolia' (EU Annexes). It is noted that further investigations are needed to better understand the etiology and epidemiology of this new citrus decline, as well as to determine its potential impact on citrus production.

Source: Alizadeh H, Quaglino F, Azadvar M, Kumar S, Alizadeh A, Bolboli F, Casati P, Bianco PA (2017) First report of a new citrus decline disease (CDD) in association with double and single infection by '*Candidatus* Liberibacter asiaticus' and '*Candidatus* Phytoplasma aurantifolia' related strains in Iran. *Plant Disease* **101**(12), p 2145.

Additional key words: etiology **Computer codes:** LIBEAS, PHYPAF, IR

2018/012 First report of *Pseudomonas syringae* pv. *actinidiae* in Argentina

In recent years, in the Mar del Plata area of Argentina, many kiwifruit orchards composed of only male plants (*Actinidia deliciosa* cv. Chieftain) have been established for pollen production, since the country was considered unaffected by *Pseudomonas syringae* pv. *actinidiae* (EPPO A2 List). Routine controls have been conducted to verify the absence of the bacterium in the pollen that is produced and commercialized. In February 2015, during one of these controls, some bacterial colonies with morphological features similar to those of *P. syringae* pv. *actinidiae* were detected. Four of these colonies were further studied (biochemical, molecular, and pathogenicity tests) and the identity of the bacterium was confirmed to be *P. syringae* pv. *actinidiae*. This is the first time that this bacterium has been detected in Argentina. For the moment, it has been detected only in pollen and not in plants, but extensive monitoring and laboratory analysis are ongoing.
The situation of *Pseudomonas syringae* pv. *actinidiae* in Argentina can be described as follows: **Present, only in some areas (detected in pollen collected near Mar del Plata).**

Source: Balestra GM, Buriani G, Cellini A, Donati I, Mazzaglia A, Spinelli F (2018) First report of *Pseudomonas syringae* pv. *actinidiae* on kiwifruit pollen from Argentina. *Plant Disease* **102**(1), p 237.

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

Additional key words: new record **Computer codes:** PSDMAK, AR

2018/013 First report of *Xanthomonas fragariae* in the Republic of Korea

In the Republic of Korea, angular leaf spot of strawberry (*Fragaria* × *ananassa*) caused by *Xanthomonas fragariae* (EPPO A2 List) was first reported in 2010 on field crops near Jinju city and in glasshouses in Okjong-myon and Hadong-gun (Gyeongsangnam-do province). In November 2012, a nationwide survey was conducted to determine the extent of the disease. Angular leaf spot was observed in 88 field crops in Sukok, Jinju, Okjong, Hadong (Gyeongsangnam-do province), and in 1 field in Namwon (Jeollabuk-do province).
The situation of *Xanthomonas fragariae* in the Republic of Korea can be described as follows: **Present, only in some areas (Gyeongsangnam-do and Jeollabuk-do provinces).**

Source: Kim DR, Gang GH, Jeon CW, Kang NJ, Lee SW, Kwak YS (2016) Epidemiology and control of strawberry bacterial angular leaf spot disease caused by *Xanthomonas fragariae*. *The Plant Pathology Journal* **32**(4), 290-299.

Kwon JH, Yoon HS, Kim JS, Shim CK, Nam MH (2010) [Angular leaf spot of strawberry caused by *Xanthomonas fragariae*]. *Research in Plant Disease* **16**(1), 97-100 (in Korean).

Yoon MJ, Myung IS, Lee JY, Kim YS, Lee YH, Kim DY, Lee YK (2016) [Distribution of bacterial angular leaf spot of strawberry and characterization of *Xanthomonas fragariae* strains from Korea]. *Research in Plant Disease* **22**(1), 9-17 (in Korean).

Pictures: *Xanthomonas fragariae*. https://gd.eppo.int/taxon/XANTFR/photos

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

2018/014 First report of *Xanthomonas fragariae* in China

During summer 2016, angular leaf spot symptoms were observed on strawberry (*Fragaria* × *ananassa* cv. Sweet Charlie) crops in Tianjin, China. It is estimated that the disease incidence reached up to 60%. Disease symptoms appeared mostly on leaf edges as small, brownish-black specks, which later became angular water-soaked lesions. Additionally, some severely infected plants presented reddish to necrotic lesions on the upper leaf surfaces. Yellow bacterial colonies were consistently isolated from water-soaked lesions of 5 infected plants. Laboratory analysis (morphological, biochemical, molecular and pathogenicity tests) confirmed the presence of *Xanthomonas fragariae* (EPPO A2 List) in the diseased samples. According to information available at the EPPO Secretariat, this is the first time that *X. fragariae* is reported from China. It is noted that further surveys will be conducted to assess the distribution of the bacterium in China. Although the disease observed in Tianjin was localized and not very severe, it is considered that the spread *X. fragariae* to new areas could have a potentially significant economic impact on Chinese strawberry production.
The situation of *Xanthomonas fragariae* in China can be described as follows: **Present, only in some areas (Tianjin).**

Source: Wang J, Wei HL, Chang RK, Liu HQ, Wang YH (2017) First report of strawberry bacterial angular leaf spot caused by *Xanthomonas fragariae* in Tianjin, China. *Plant Disease* **101**(11), p 1949.

Pictures: *Xanthomonas fragariae*. https://gd.eppo.int/taxon/XANTFR/photos

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

2018/015 *Xylella fastidiosa* found for the first time on pecan (*Carya illinoinensis*) in Arizona, New Mexico, California and Texas (US)

In the United States, pecan bacterial leaf scorch is a chronic disease associated with *Xylella fastidiosa* (EPPO A2 List) that can weaken pecan (*Carya illinoinensis*) and cause major yield losses in susceptible cultivars. In 2015 and 2016, leaf scorch symptoms were observed in pecan plantings in Arizona, New Mexico, California and Texas. Symptoms included tan to light brown necrotic lesions, which often started on the leaf margin and expanded throughout the leaflet, eventually resulting in abscission. Some leaflets exhibited tip necrosis with the end of the leaflet curling upward. Symptomatic and asymptomatic shoots (3 to 4 per tree) were collected from pecan plantings in Arizona, New Mexico, California, Texas and tested (ELISA, PCRs). This study also included samples collected from the USDA-ARS germplasm collection of pecans and hickories which is located in Texas. As a result, 79 pecan trees from Arizona, New Mexico, California and Texas were found to be infected by *X. fastidiosa*. Although further analysis is required to determine the diversity of *X. fastidiosa* subspecies in pecan, 2 isolates from Texas could be identified as *X. fastidiosa* subsp. *multiplex*. This is the first time that *X. fastidiosa* is detected in pecan in the Southwestern USA and in the US germplasm collection of *Carya* species. Finally, it is noted that this finding has implications for international distribution of pecan germplasm, as well as pecan nursery and orchard management in the USA.

Source: Hilton AE, Jo YK, Cervantes K, Stamler RA, Randall JJ, French JM, Heerema RJ, Goldberg NP, Sherman J, Wang X, Grauke LJ (2017) First report of pecan bacterial leaf scorch caused by *Xylella fastidiosa* in pecan (*Carya illinoinensis*) in Arizona, New Mexico, California, and Texas. *Plant Disease* 101(11), p 1949.

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

Additional key words: detail record, host plant **Computer codes:** XYLEFA, US

2018/016 First report of *Neonectria neomacrospora* in Belgium

In June 2017, symptoms of shoot dieback were detected on *Abies grandis* saplings in Southern Belgium (Luxembourg province). Affected saplings (5 to 10 years old) were growing in the understorey of an *A. grandis* stand which had been planted in the early 1970s. Symptoms were observed on about 20% of the saplings which showed shoot tip necrosis on both lateral and terminal shoots. Affected shoots displayed purple to reddish necrotic lesions on the bark and their diameter was occasionally reduced. Necrotic lesions were also associated with a browning and shedding of needles. Laboratory tests (morphological and molecular), as well as pathogenicity tests confirmed the presence of *Neonectria neomacrospora* (EPPO Alert List) in symptomatic saplings. This is the first time that this fungus is reported from Belgium. The potential economic importance of *N. neomacrospora* remains to be studied, in particular for the Belgian Christmas tree sector.
The situation of *Neonectria neomacrospora* in Belgium can be described as follows: **Present, only in some areas (in 1 stand of *Abies grandis* in Luxembourg province).**

Source: Schmitz S, Charlier A, Chandelier A, 2017. First report of *Neonectria neomacrospora* on *Abies grandis* in Belgium. *New Disease Reports* **36**(17). http://dx.doi.org/10.5197/j.2044-0588.2017.036.017

Pictures: *Neonectria neomacrospora.* https://gd.eppo.int/taxon/NECTMA/photos

Additional key words: new record **Computer codes:** NECTMA, BE

2018/017 First report to *Tomato leaf curl New Delhi virus* in Morocco

In 2017, symptoms resembling those caused by *Tomato leaf curl New Delhi virus* (*Begomovirus*, ToLCNDV EPPO Alert List) were observed in zucchini (*Cucurbita pepo*) crops growing near Agadir and Taroudant in Morocco. The incidence of disease was high, with severe yellow mosaic symptoms accompanied by leaf curling and roughness of the fruit skin. The infected plants had smaller and fewer fruits when compared to healthy ones and in most cases fruit bursting was observed. Leaf samples were collected from diseased zucchini plants (9 samples taken near Agadir and 6 taken near Taroudant) and tested by molecular tests (PCR tests with generic and specific primers). Results confirmed the presence of ToLCNDV in all 9 samples from Agadir and in 4 out of 6 samples from Taroudant. This is the first time that ToLCNDV is reported from Morocco.
The situation of *Tomato leaf curl New Delhi virus* in Morocco can be described as follows: **Present, only in some areas (first found in 2017 near Agadir and Taroudant).**

Source: Radouane N, Tahiri A, El Ghadraoui L, Al Figuigui J, Lahlali R (2018) First report of *Tomato leaf curl New Delhi virus* in Morocco. *New Disease Reports* **37**, 2. http://dx.doi.org/10.5197/j.2044-0588.2018.037.002

Pictures: *Tomato leaf curl New Delhi virus.* https://gd.eppo.int/taxon/TOLCND/photos

Additional key words: new record **Computer codes:** TOLCND, MA

2018/018 First report of *Alternanthera sessilis* in Turkey

Alternanthera sessilis (Amaranthaceae) has been reported for the first time in Turkey occurring along the bank of the river Asi where three individual populations were discovered. The species is native to Central and South America and it has been introduced into Africa, Asia, Australia, New Zealand, and North America (where in the case of the latter it is listed as a noxious weed). *A. sessilis* is an aquatic annual or perennial plant introduced into the EPPO region for ornamental purposes. Within the EPPO region, the species has been reported from Belgium, Italy, Israel and Russia where it has a restricted distribution, and in Spain where it is listed as an invasive.

Source: Güzel Y (2017) Türkiye için yeni bir istilacı yabancı bitki kaydı: *Alternanthera sessilis* (Amaranthaceae) *Bitki Koruma Bülteni* **57,** 65-72.
EPPO Reporting Service no. 08 – 2009, Num. article: 2009/167.
Sanz-Elorza M, González Bernardo F, Gavilán Iglesias LP, (2008) The alien flora of Castilia and León (Spain). *Botanica Complutensis* **32**, 117-137.

Additional key words: new record, invasive alien plants **Computer codes:** ALRSE, TR

2018/019 Notes of the occurrence of *Prosopis juliflora* in Gran Canaria (ES)

Prosopis juliflora (Fabaceae) is a shrub or small tree native to Mexico and Central America. The species has a wide invasive range including Africa, Asia and Australia and currently it has a very limited naturalised distribution in the EPPO region. It is currently reported as naturalised in low lying areas in Israel, the West Bank and Jordan. *P. juliflora* is also confirmed as present (two planted trees only) in Almeria, South-eastern Spain and the species is reported as naturalised in limited areas in Gran Canaria (Canary Islands, ES) where it has been obserbed since 2011 as an escape from cultivation in the dry southern part of the island. More recently, in 2015, in Gran Canaria, near Arinaga, barranco del Polvo, along the estuary, scattered mature individuals have been recorded which are reported to be flowering and fruiting. Numerous saplings are recorded in this area. Near Pedrazo, barranco del Negro, along a dry riverbed a single individual is recorded and in Pozo Izquierdo, again along a dry riverbed approximately five individuals have been recorded. Interestingly, a Pest Risk Analysis (PRA) has recently been conducted for this species for the EPPO region as part of an EU funded LIFE project. The PRA concluded that the species should be considered for a recommendation for regulation in the EPPO region and as a potential species of European Union concern under the Regulation (EU) 1143/2014, and these evaluations will be conducted during 2018/2019.

Source: Verloove F (2017) New xenophytes from the Canary Islands (Gran Canaria and Tenerife; Spain). *Acta Botanica Croatica* **76** (2), 120–131.

Pictures: *Prosopis juliflora.* https://gd.eppo.int/taxon/PRCJU/photos

Additional key words: detailed record, invasive alien plants **Computer codes:** PRCJU, ES

2018/020 First report of *Heracleum sosnowskyi* in Serbia

In 2016, *Heracleum sosnowskyi* (Apiaceae: EPPO A2 pest) was recorded as a new alien species of the flora of Serbia. The species was found in the area of Belgrade on the left bank of the river Danube near Kovilovo. The species is native to central and eastern Caucasus and Western, Central, Eastern and Southwestern Transcaucasia and Northern Turkey. Within the EPPO region the species is invasive in Finland, Hungary and Latvia where it threatens native biodiversity, erodes riverbanks and causes negative impacts for humans by posing a health risk. Due to these impacts, the species is listed as a species of European Union concern under the Regulation (EU) 1143/2014. The current population in Serbia extends in a narrow linear population along both sides of the Grbavica river canal where an average of 10 individuals are recorded per 10 m^2. The authors recommend that the species should be monitored and further investigations on the spread and distribution of the species should be performed.

Source: Stojanović V, Petrović S, Kovačević J, Stojanović D, Bjedov I (2017) *Heracleum sosnowskyi* Manden. (Apiaceae) – a new invasive species in the flora of Serbia. *BIBLID* **116**, 215-220.

Pictures: *Heracleum sosnowskyi*. https://gd.eppo.int/taxon/HERSO/photos

Additional key words: new record, in vasive alien plants **Computer codes:** HERSO, RS

2018/021 Four new EPPO datasheets on EPPO A2 invasive alien plants

Four new datasheets have been published on invasive alien plants recommended for regulation as A2 pests in 2017.

***Salvinia molesta* (Salviniaceae)**
In the EPPO region, *Salvinia molesta* has been found in Austria, Belgium, France (Corsica), Germany, Italy, Israel, the Netherlands and Portugal, but it is not clear if reports represent established populations. In France, the species was first found in Corsica in 2010, in a water reservoir. *S. molesta* is most often found in stagnant or slow-flowing waters such as lakes, slow-flowing rivers or streams, wetlands, rice paddies, irrigation channels, ditches, ponds and canals. Dense mats of *S. molesta* have the potential to reduce access to the water for recreation, interfere with various engineering structures such as weirs, floodgates or locks, block drains and cause flooding, prevent livestock reaching water; prevent photosynthesis in the water below the mat, and have negative impacts on native animals and plants, and more generally significantly alter aquatic ecosystems and reduce the aesthetic appeal of water bodies.

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

***Pistia stratiotes* (Araceae)**
In the EPPO region, *Pistia stratiotes* was first recorded in the Netherlands in 1973 but plants did not become established. First reports from Austria and Germany were made in 1980. Repeated introductions failed to establish in Germany up until 2005, however, since 2008, an established population has been permanently present in thermal sections of the River Erft. In Italy, *P. stratiotes* was reported first in 1998. *P. stratiotes* is now considered as established in at least one location in France, in a canal along the Rhône river, where first observations dated back to 2005. *P. stratiotes* grows in slow moving rivers and reservoirs, irrigation channels, ponds, lakes, canals and ditches. Dense mats of *P. stratiotes* block

sunlight, reducing primary production, decreasing water turbidity. Furthermore, the water shaded by *P. stratiotes* shows decreased levels of oxygen and increased levels of nitrate, ammonium and phosphorus. As a result of the altered habitat, submerged vegetation has been shown to decrease under dense mats along the river Erft in Western Germany.

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

***Gymnocoronis spilanthoides* (Asteraceae)**
Gymnocoronis spilanthoides has been reported as casual in 1988 in Hungary, occurring in the thermal waters of Lake Héviz and ditches near Keszthely. Two naturalised occurrences have also been reported in North-Western Italy (Lombardia region). The population in Italy stretches along the water body for over 500 m, and occupies the whole canal width (up to 4 m wide). Within its introduced range, *G. spilanthoides* grows in wetlands, particularly degraded waterways forming marginal clumps on the edge of slow flowing or still water bodies and also forming dense sprawling floating mats in rivers (including tidally influenced areas) and reservoirs, irrigation channels, ponds, lakes, canals and ditches. *G. spilanthoides* can have negative impacts on biodiversity and causes other environmental damage. Because *G. spilanthoides* grows very quickly, it can rapidly cover water bodies with a floating mat, excluding other plants and the animals that rely on them. Water quality may decline if large amounts of plant die-off and rot under water.

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

***Cardiospermum grandiflorum* (Sapindaceae)**
In the EPPO region, *C. grandiflorum* has non-native records from France (Landes and Alpes-Maritimes departments where it is considered a casual species in the process of becoming established). The species is also present in Italy (Liguria, in the mainland and the Catania (Canalicchio) in the island of Sicily), Malta (considered as an invasive species), Portugal (Madeira Island), and Spain (Canary Islands: Gran Canaria, Tenerife, La Gomera, La Palma). In the Alpes-Maritimes department in France, the species was first recorded in Menton in the City of Beausoleil in an urban area. *C. grandiflorum* prefers open habitats though it may grow well in forest edges. *C. grandiflorum* thrives in well-drained soil types. Research on invasive populations from Australia found soil types to vary substantially among regions of high-density populations indicating a wide edaphic tolerance by the species. In its invasive range *C. grandiflorum* typically forms dense draping carpets/mats, smothering large areas of underlying vegetation.

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

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

Additional key words: publication, invasive alien plants **Computer codes:** CRIGR, GYNSP, PIIST, SAVMO

2018/022 Predicting the future range of knotweeds (Polygonaceae) in South East Europe

The knotweeds (Polygonaceae), specifically *Fallopia japonica* var. *japonica*, *Fallopia japonica* var. *compacta*, *Fallopia sachalinensis* and *Fallopia* x *bohemica* are all native to Asia and considered some of the most invasive alien species within the EPPO region. Their negative impacts include outcompeting native biodiversity along with impacts on infrastructure and ecosystem services. Using current distribution data of these knotweed species from 4 081 localities in South East Europe (Serbia and the Kosovo region, Montenegro, Slovenia, Croatia, Bosnia and Herzegovina, Bulgaria and Romania), predictions were made on future occurrences using statistical modelling and 19 bioclimatic variables derived from WorldClim datasets. The results predict that the most suitable range for *F. japonica* var. *japonica* and *F. sachalinensis* is in the north of the region studied whereas for *F.* x *bohemica* central south east Europe is more suitable. The study predicts that *F. japonica* and *F.* x *bohemica* could expand their range in riparian habitats up to 30 – 40 % and the authors suggest that urgent preventative measures are required to mitigate spread in the region.

Source: Jovanović S, Hlavati-Širka V, Lakušić D, Jogan N, Nikolić T, Anastasiu P, Vladimirov V, Šinžar-Sekulić (2018) Reynoutria niche modelling and protected area prioritization for restoration and protection from invasion: A Southeastern Europe case study. *Journal for Nature Conservation*, **41**, 1-15.

Additional key words: modelling, invasive alien plants **Computer codes:** POLCK, POLCU, REYBO, REYSA, BA, BG, HR, ME, RO, RS

2018/023 10th International Conference on Biological Invasions (2018-09-04/07 Dublin, Ireland)

The 10th International Conference on Biological Invasions (NEOBIOTA) will take place between 4th – 7th September 2018 in Dun Laoghaire, Dublin, Ireland. Early registration is open until 2018-06-16. Abstracts for oral and poster presentations can be submitted up until 2018-03-31.

The main conference topics include:

- Positive and negative effects of invasive species,
- Ecological networks and coexistence in invaded ecosystems,
- Biological invasions and mutualisms,
- Impacts of invasive species on ecosystem and ecosystem services,
- Are there any universal characteristics that can be used to predict biological invasions?
- Novel ways of managing invasive species.

Source: Conference website: http://www.neobiota2018.org/ehome/166837/383086/

Additional key words: invasive alien plants, conference **Computer codes:** IE