ORGANISATION EUROPEENNE
ET MEDITERRANEENNE
POUR LA PROTECTION DES PLANTES

EUROPEAN AND MEDITERRANEAN
PLANT PROTECTION
ORGANIZATION

EPPO Reporting Service

NO. 06 PARIS, 2013-06-01

CONTENTS

21 Bld Richard Lenoir
75011 Paris

Tel: 33 1 45 20 77 94
Fax: 33 1 70 76 65 47

E-mail: hq@eppo.int
Web: www.eppo.int

2013/118 First report of Pierce's disease of grapevine (*Xylella fastidiosa*) in Taiwan

In 2002, characteristic symptoms of Pierce's disease (caused by *Xylella fastidiosa* – EPPO A1 List) were observed in commercial vineyards in the major grapevine (*Vitis vinifera*) production areas of central Taiwan. Leaf scorch symptoms appeared at the onset of berry ripening (veraison) in late May to early June. Necrotic tissue with yellow or burgundy red margins developed at the edge of the leaves and then coalesced. Severely affected leaves became fully necrotic and fell prematurely, leaving matchstick-like petioles attached to the cane. Affected twigs and branches declined and plant dieback was observed within 1 to 5 years. Samples (petioles) were collected from diseased plants and tested (ELISA, PCR) for the presence of *X. fastidiosa*. Koch's postulates were fulfilled by artificially inoculating the isolated bacterium to *V. vinifera* cvs. 'Kyoho', 'Honey Red' and 'Golden Muscat'. The inoculated plants developed typical leaf scorch symptoms and the bacterium could be reisolated from them, thus confirming that the grapevine leaf scorch disease in Taiwan is caused by *X. fastidiosa*. This is the first time that Pierce's disease is reported from Taiwan and from Asia.

In Taiwan, it can be recalled that *X. fastidiosa* was first reported in 1993 causing a leaf scorch disease in Asian pear (*Pyrus pyrifolia*) (EPPO RS 94/049, 96/204, 2007/187). Phylogenetic analyses were performed by comparing the 16S rRNA gene and 16S-23S rRNA internal transcribed spacer region (16S-23S ITS) of 12 Pierce's disease strains from Taiwan with the sequences of 13 *X. fastidiosa* strains from different hosts and different geographical areas. Results showed that the Pierce's disease strains of Taiwan were closely related to the American *X. fastidiosa* grape strains but not to the pear strains of Taiwan, suggesting that the *X. fastidiosa* grape and pear strains of Taiwan may have evolved independently from each other. Concerning insect vectors, extensive field surveys conducted in Taiwan have showed that in affected commercial vineyards, one xylem-feeding leafhopper *Kolla paulula* (Hemiptera: Cidadellidae) might be a potential vector (the most efficient vector in America, *Homalodisca coagulata,* does not occur in Taiwan). The bacterium was detected in *K. paulula* but further studies are needed to verify that it can transmit the disease. Since the first observation of Pierce's disease symptoms in 2002, a total of 12 023 affected grapevines have been destroyed in commercial vineyards. However, the disease has not been successfully controlled 10 years after its initial discovery, possibly due to the inefficient suppression of the bacterium in other host plants acting as reservoirs in the vicinity of vineyards. Further studies are needed to identify these potential host plants and develop management strategies to control the disease.

Source: Su CC, Chang CJ, Chang CM, Shih HT, Tzeng KC, Jan FJ, Kao CW, Deng WL (2013) Pierce's disease of grapevines in Taiwan: isolation, cultivation and pathogenicity of *Xylella fastidiosa. Journal of Phytopathology* **161**(6), 389-396.

Additional key words: detailed record, host plant **Computer codes:** XYLEFA, TW

2013/119 Situation of *Clavibacter michiganensis* subsp. *sepedonicus* in Norway

In Norway, potato ring rot (*Clavibacter michiganensis* subsp. *sepedonicus* – EPPO A2 List) was first detected in 1964, and in the following years it became evident that the disease was causing rotting of tubers and yield reduction in several Norwegian counties. Since 1965 national legislation has been implemented to control the disease and has evolved over time to become more similar to the EU Commission Directive 2006/56/EC. In 1999, the

NPPO initiated an eradication programme against *C. michiganensis* subsp. *sepedonicus* in order to export potatoes to other European countries. From 1999 to 2002, a survey was conducted in commercial potato production in all counties. Potato production of all growers (with a production area > 2 ha) was sampled and tested (IFAS, fatty acid analysis, PCR). When the bacterium was detected in a potato lot, the grower was required to implement strict eradication measures including the following: removal of infected potatoes, prohibition to use any potatoes from the infected farm as seed potatoes, disinfection of all potentially contaminated tools (handling, storage, machinery), prohibition to grow potatoes on infected land during the 2 following years, destruction of all volunteer potato plants during this 2-year quarantine period. After this initial survey, two follow-up studies were conducted (2003-2004 and 2005-2008) to monitor the effectiveness of the eradication measures. From 1999 to 2008, approximately 10 700 samples were tested from 4 433 growers across Norway. As a result, 328 cases of potato ring rot were found, mainly in the counties of Hedmark, Nordland, Troms and Trøndelag. It was also observed that the overall disease situation had improved considerably during the studied period (1999-2008), and more particularly during the period of the follow-up studies (2003-2008). The eradication programme has been re-initiated in 2011, focussing on the areas where the disease has already been detected; in addition, the quarantine period has been extended from 2 to 3 years.

Source: Perminow JIS, Akselsen ILW, Borowksi E, Ruden Ø, Grønås W (2012) Potato ring rot in Norway: occurrence and control. *Potato Research* **55**(3-4), 241-247.

Additional key words: detailed record **Computer codes:** CORBSE, NO

2013/120 *Ralstonia solanacearum* does not occur in Armenia

The NPPO of Armenia considers that the PQR record concerning the occurrence of *Ralstonia solanacearum* (EPPO A2 List) on its territory is erroneous. This old record mentioned a possible presence of the bacterium on tomatoes prior to 1979 but no references could be traced. The NPPO stressed that each year detailed monitoring and surveillance programmes are implemented by the inspectors of the State Service of Food Safety in all regions of Armenia, and that no cases of *R. solanacearum* have ever been reported during these activities.
The situation of *Ralstonia solanacearum* in Armenia can be described as follows: **Absent, confirmed by surveys.**

Source: NPPO of Armenia (2013-06).

Additional key words: denied record, absence **Computer codes:** RALSSO, AM

2013/121 Studies on the use of thermotherapy against '*Candidatus* Liberibacter asiaticus'

Research studies have been conducted in the USA on the use of thermotherapy to eliminate '*Candidatus* Liberibacter asiaticus' (EPPO A1 List) from infected citrus trees. Results have shown that continuous thermal exposure to 40 to 42°C for a minimum period of 48 h was sufficient to significantly reduce the bacterial titre or eliminate '*Ca.* Liberibacter asiaticus' from diseased citrus trees (young potted-plants). During these experiments, all surviving plants showed healthy vigorous growth and remained disease free for more than 2 years following the treatment (when not exposed to re-infection). It is concluded that thermotherapy could be used as a sanitation method during breeding programmes or the production of healthy planting material. Further studies are needed to evaluate whether thermotherapy could also be used, possibly in combination with chemical treatments, for trees grown in commercial groves and private gardens.

Source: Hoffman MT, Doud MS, Williams L, Zhang MQ, Ding F, Stover E, Hall D, Zhang S, Jones L, Gooch M, Fleites L, Dixon W, Gabriel D, Duan YP (2013) Heat treatment eliminates '*Candidatus* Liberibacter asiaticus' from infected citrus trees under controlled conditions. *Phytopathology* **103**(1), 15-22.

Additional key words: treatment **Computer codes:** LIBEAS

2013/122 *Stenocarpella maydis* no longer occurs in Austria

In Austria, *Stenocarpella maydis* (EPPO A2 List) was detected once in 1993 in maize crops (*Zea mays*) grown from old imported seed lots. Since this isolated finding, *S. maydis* has never been found again. Between 2011 and 2013, 43 samples were specifically tested for *S. maydis* and the fungus was not detected. The NPPO of Austria considers that this fungus no longer occurs on its territory.
The pest status of *Stenocarpella maydis* in Austria is officially declared as: **Absent**.

Source: NPPO of Austria (2013-07).

Additional key words: absence **Computer codes:** DIPDMA, AT

2013/123 First report of *Pepino mosaic virus* in Lithuania

During 2010 and 2011, 131 symptomatic samples of tomato leaves and fruit were collected from commercial glasshouses in Lithuania and tested for the presence of *Pepino mosaic virus* (*Potexvirus*, PepMV – EPPO A2 List). PepMV was detected (DAS-ELISA, RT-PCR) in 2 distinct glasshouses: 1) on a tomato plant showing mild yellow leaf spotting; 2) on tomato fruit with marbling symptoms. Nucleotide sequence analysis showed that the 2 Lithuanian isolates of PepMV belonged to the EU and CH2 genotypes. This is the first time that PepMV is reported from Lithuania.
The situation of *Pepino mosaic virus* in Lithuania can be described as follows: **Present, only in some areas (found in 2010/2011 in 2 glasshouses).**

Source: Šneideris D, ŽiŽyte M, Zitikaite I, Urbanavičiené L, Staniulis J (2013) First report of two distinct strains of *Pepino mosaic virus* infecting tomatoes in greenhouses in Lithuania. *Journal of Plant Pathology* **95**(1), 217-218.

Additional key words: new record **Computer codes:** PEPMV0, LT

2013/124 Association of *Little cherry virus 1* with Shirofugen stunt disease

Shirofugen stunt is a syndrome of flowering cherry (*Prunus serrulata* cv. 'Shirofugen') grafted on sweet or sour cherry (*P. avium, P. cerasus*) which is also used as a woody indicator during virus indexing. This syndrome is characterized by strong rosetting with dwarfed and deformed leaves, reduced vigour, gradual necrosis at the graft union, and plant dieback after a few vegetative cycles. The graft transmissibility of the disease and the symptomatology strongly suggested a viral etiology but the causal agent remained unknown. Recent molecular studies (using advanced sequencing techniques) suggest that *Little cherry virus 1* (*Closteroviridae*, LChV1 – EU Annexes) is associated with this disease, as it was the only viral agent being detected in diseased plants. However, it is acknowledged that further research is needed to demonstrate that LChV1 is indeed the causal agent. Interestingly, it is noted that other studies had also tentatively associated LChV1 with Kwanzan stunting, a syndrome which has been observed in another flowering cherry (*P. serrulata* cv. 'Kwanzan') used as a woody indicator.

Source: Candresse T, Marais A, Faure C, Gentit P (2013) Association of *Little cherry virus 1* (LChV1) with the Shirofugen stunt disease and characterization of the genome of a divergent LChV1 isolate. *Phytopatholoy* **103**(3), 293-298.

Additional key words: etiology **Computer codes:** LCHV10

2013/125 First report of *Tomato chlorotic dwarf viroid* in Norway and subsequent eradication

In Southwestern Norway, unusual symptoms were observed at the end of 2011 in one glasshouse of tomatoes (*Solanum lycopersicum* cv. 'Juanita') located in the county of Rogaland. Affected plants showed small and narrow leaves, leaf yellowing and bronzing, as well as a stunted and bushy appearance. In January 2012, a sample was submitted to Fera (GB) for diagnostic analysis. Molecular tests (real-time PCR, RT-PCR, sequencing) confirmed the presence of *Tomato chlorotic dwarf viroid*. In the affected glasshouse, the disease spread very rapidly, it was first observed in 3-4 plants in December 2011 and affected several hundred plants by the end of January 2012. In February and March, symptoms could be observed on plants in all parts of the infected greenhouse. All tomato plants were destroyed and the whole site was disinfected and left empty for 8 weeks. It is now considered that the disease has been eradicated.
The situation of *Tomato chlorotic dwarf viroid* in Norway can be described as follows: **Absent, first found in 2011 in 1 glasshouse tomato crop, eradicated.**

Source: Fox A, Daly M, Nixon T, Brurberg MB, Blystad D, Harju V, Skelton A, Adams IP (2013) First report of *Tomato chlorotic dwarf viroid* (TCDVd) in tomato in Norway and subsequent eradication. *New Disease Reports* **27**, 8. http://dx.doi.org/10.5197/j.2044-0588.2013.027.008

Additional key words: new record, eradication **Computer codes:** TCDVD0, NO

2013/126 First report of *Tomato apical stunt viroid* in Slovenia

In Slovenia, 14 samples were collected in 2011 from symptomless *Solanum jasminoides* plants in greenhouses and retail trade. These samples were tested for the presence of viroids. Molecular tests (PCR, sequencing) confirmed the presence of *Tomato apical stunt viroid* (EPPO Alert List) in 7 samples, and of *Citrus exocortis viroid* in 3 samples.
The situation of *Tomato apical stunt viroid* in Slovenia can be described as follows: **Present, detected in 2011 in a few samples of asymptomatic *Solanum jasminoides*.**

Source: Viršček Marn M, Mavrič Pleško I (2012) First report of *Tomato apical stunt viroid* in *Solanum jasminoides* in Slovenia. *New Disease Reports* **26**, 7. http://dx.doi.org/10.5197/j.2044-0588.2012.026.007

Additional key words: new record **Computer codes:** TASVD0, SI

2013/127 *Pepper chat fruit viroid* a new viroid of capsicum and tomato possibly transmitted by seeds

In autumn 2006, a new disease was observed in a glasshouse crop of *Capsicum annuum* in the Netherlands. Fruit size of the infected plants was reduced by up to 50%, and plant growth was also slightly reduced. Investigations showed that the causal agent was a new viroid species belonging to the genus *Pospiviroid* and called *Pepper chat fruit viroid* (PCFVd). Inoculation experiments showed that PCFVd could infect several Solanaceae including tomato (*Solanum lycopersicum*) and potato (*S. tuberosum*). Following this initial record, the viroid was no longer found during the annual surveys and inspections carried out by the Dutch NPPO. PCFVd is currently considered as no longer present in the Netherlands.
In 2009, PCFVd was detected in other parts of the world on capsicum and tomato crops in Canada and Thailand, respectively. In Canada, PCFVd was detected for the first time in summer 2009 in Southern Ontario, in 1 glasshouse of *Capsicum annuum* cvs. 'Score' and 'Lamborgini'. It was noted that approximately 3% of the plants were showing mild growth reduction and abnormally small fruits. At the end of 2009, PCFVd was detected for the first time in Thailand in tomato leaf samples collected from field crops in the province of Lampang. Affected tomato plants were stunted and showed leaf necrosis, distortion and discoloration. The mechanism of spread of PCFVd over long distances is not known but movement with traded seed is suspected.
At the end of 2012, the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) reported that they had intercepted 5 consignments of tomato seed infected with PCFVd exported from Israel and Thailand in September and October 2012. These infected consignments were destroyed or re-exported following Australian regulations. This finding suggests that PCFVd, like other pospiviroids, might be seed-transmitted and that its geographical distribution is probably wider than originally thought.

Source: Gibbs MJ, Chambers G, Seyb A, Mackie J, Constable F, Rodoni B, Letham D, Davis K (2013) First report of Pepper chat fruit viroid in traded tomato seed, an interception by Australian Biosecurity. Plant Disease 97(in press). http://dx.doi.org/10.1094/PDIS-03-13-0293-PDN
NPPO of the Netherlands - Pest status of harmful organisms in the Netherlands (Fytosignalering covering 2012).
INTERNET
IPPC website. Australia. Tomato seed is a likely pathway for the spread of Pepper chat fruit viroid. https://www.ippc.int/news/tomato-seed-likely-pathway-spread-

pepper-chat-fruit-viroid
Reanwarakorn K, Klinkong S, Porsoongnurn J (2011) First report of natural infection of *Pepper chat fruit viroid* in tomato plants in Thailand. *New Disease Reports* **24**, 6. http://www.ndrs.org.uk/article.php?id=024006
Verhoeven JThJ, Jansen CCC, Roenhorst JW, Flores R, De la Peña M, 2009. Pepper chat fruit viroid: biological and molecular properties of a proposed new species of the genus *Pospiviroid*. *Virus Research* **144**, 209-214.
Verhoeven JTJ, Botermans M, Jansen CCC, Roenhorst JW (2011) First report of *Pepper chat fruit viroid* in capsicum pepper in Canada. *New Disease Reports* **23**, 15. http://dx.doi.org/10.5197/j.2044-0588.2011.023.015

Additional key words: new pest   Computer codes: PCFVD0, AU, CA, IL, NL, TH

2013/128 Outbreaks of *Myiopardalis pardalina* (Baluchistan melon fly) in Central Asia: addition to the EPPO Alert List

Because severe outbreaks of *Myiopardalis pardalina* (Diptera: Tephritidae - Baluchistan melon fly) have recently been reported in Central Asia, the EPPO Secretariat decided to add this fruit fly to the EPPO Alert List.

Myiopardalis pardalina (Diptera: Tephritidae) - Baluchistan melon fly

Why: *Myiopardalis pardalina* was originally described from Baluchistan, an area extending from Southeastern Iran to Western Pakistan. In both countries, it is considered as a pest of melon which regularly causes crop losses (e.g. 30-80% in Iran, and 15-60% in Pakistan), and even complete crop destruction during epidemics. In Afghanistan, severe outbreaks have taken place since the 1990s. In Uzbekistan, *M. pardalina* was first observed in 2000 in the Karakalpakstan Republic and the province of Khorezm where it has become the most common melon pest. In 2006, *M. pardalina* was also found in Kashkadarya, Surkhandarya and Bukhara provinces. In 2004, its presence was reported in Turkmenistan causing severe losses to melon crops. The pest has also spread to neighbouring countries and it is now recorded in Kyrgyzstan, Tajikistan, and Southern Kazakhstan.

Where: For many countries listed below, records are based on old literature which could not be confirmed or updated with more recent information. The presence of the pest in Egypt, Saudi Arabia and Senegal is sometimes mentioned in scientific papers, but the EPPO Secretariat could not find suitable sources to confirm these records which are thus considered as doubtful.
EPPO region: Armenia, Azerbaijan, Cyprus, Georgia, Kazakhstan, Kyrgyzstan, Lebanon, Russia (Southern Russia), Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.
Asia: Afghanistan, India (Bihar, Punjab), Iran, Iraq, Kazakhstan, Kyrgyzstan, Lebanon, Pakistan, Syria, Tajikistan, Turkmenistan, Uzbekistan. There are some old records of *M. pardalina* in Israel in the literature, but according to the Israeli NPPO (2011), this fruit fly has not been found since the 1960s.

On which plants: The main host plant of *M. pardalina* is *Cucumis melo* (melon), but other cultivated Cucurbitaceae can be attacked: *Citrullus lanatus* (watermelon), *Cucumis melo* var. *flexuosus* (snake melon), *Cucumis sativus* (cucumber), as well as weeds (*Cucumis trigonus, Ecballium elaterium*).

Damage: Damage is caused by larvae feeding inside the fruit on pulp and seeds. Attacked fruit are generally affected by secondary rots (bacterial and fungal) which render them unfit for consumption (tainted) and unmarketable. Exit holes can also be observed on fruit. In several countries (e.g. Afghanistan, Turkmenistan, Uzbekistan), severe losses in melon crops (up to 80-90%) have been reported. In the absence of control measures, the harvest can be completely lost. In Turkey,

M. pardalina is considered as a common melon pest but seems to be under control. Within the EPPO region, no information is available about the pest situation in Caucasus countries, Southern Russia, Ukraine or other Mediterranean countries (e.g. Cyprus, Lebanon) which may suggest that no major damage is observed there.
Adult females (pale yellow, 5.5-6.5 mm long) lay eggs under the skin of unripe fruit (e.g. when melons are of 3-5 cm diameter). A female can lay 60 to 110 eggs during its lifetime. Eggs are white, shiny, oval (1 mm long) and hatch after 3-4 days. Larvae are white, legless, feed inside the fruit for 8 to 18 days. Mature larvae (10 mm long) exit the fruit, fall on the ground and pupate in the soil for 13 to 20 days. During summer, there may be 2 to 3 overlapping generations (even 4 in Southern and Eastern Iran), each lasting approximately 30 days. *M. pardalina* overwinters as pupae in the soil, usually at a depth of 5 to 15 cm. It is reported that it can survive under snow cover and temperatures slightly below zero.

Dissemination: Adults can fly but there is no data on their flying capacity. Information is generally lacking on the biology of the pest. In particular, the reasons why under certain circumstances *M. pardalina* can emerge as a serious pest and spread rapidly remain unexplained.

Pathway: Fruit of host plants, soil from countries where *M. pardalina* occurs.

Possible risks: Melons and other host plants of *M. pardalina* such as watermelons and cucumbers are widely grown in the EPPO region, in particular in Southern Europe and around the Mediterranean Basin. Control of *M. pardalina* is difficult and probably requires a combination of different measures: use of resistant cultivars, early plantation time, bagging of young fruits, removal and destruction of infected plant material, deep ploughing of the soil, application of insecticide treatments. Control may also be complicated by the fact that *M. pardalina* does not appear to be very responsive to food-attractants (e.g. methyl-eugenol) which are used in the control or monitoring of other fruit fly species. At least in some countries of Central Asia, *M. pardalina* has caused severe crop damage and economic losses during the last decade. Although there are many uncertainties about the geographical distribution of the pest in the EPPO region, its biology and establishment potential in areas where it is still absent, *M. pardalina* may be a threat to melon crops in the EPPO region, in particular in Southern Europe and North Africa.

Sources

Abdullah K, Latif A, Khan SM, Khan MA (2007) Field test of the bait spray on periphery of host plants for the control of the fruit fly, *Myiopardalis pardalina* Bigot (Tephritidae: Diptera). *Pakistan Entomologist* **29**(2), 91-94.

Asadullah SJ, Sajjad A, Moeen-ud-Din S, Muhammad A (2012) Management of melon fruit fly, *Myiopardalis pardalina* Bigot (Diptera: Tephritidae) in Kunduz, Afghanistan. *Proceedings of the International Conference on Agricultural, Environment and Biological Sciences* (Phuket, TH, 2012-05-26/27), 5 pp.

Bariş A, Çobanoğlu S (2011) Determining of the damage ratios of melon fly [*Myiopardalis pardalina* (Bigot, 1891) (Diptera: Tephritidae)] on different melon cultivars. *Proceedings of the fourth Plant Protection congress of Turkey* (Kahramanmaraş, TR, 2011-06-28/30), p 14.

Bayrak N, Hayat R (2012) [Tephritidae (Diptera) species of Turkey]. Türk Bilimsel Derlemeler Dergisi **5**(2), 49-55 (in Turkish).

CABI (1961) *Myiopardalis pardalina*. Distribution Maps of Plant Pests no. 124. CABI, Wallingford (GB).

Chugtai GH, Kahn L (1983) Studies on the biology and chemical control of melon fly, *Myiopardalis pardalina* Bigot. *Pakistan Entomologist* **5**(1-2), 17-20.

Farrar N, Shiekhi A, Monfared N, Pejman H, Hosini S, Rahimi H (2010) The comparison of biology of *Myiopardalis pardalina* (Bigot) and *Dacus ciliatus* Loew and their mechanical control in Iran. *Proceedings of the European Congress of Entomology* (Budapest, HU, 2010-08-23/27), p 135.

Gentry JW (1965) *Crop insects of Northeast Africa-Southwest Asia*. Agricultural Handbook no. 273, USDA-ARS, Washington DC, 214 pp.

Kapoor VC (1989) Pest status; Indian sub-continent. In: Robinson AS, Hooper G (eds) *Fruit flies, their biology, natural enemies and control*. World Crop Pests 3(A), Elsevier, Amsterdam (NL), 59-62.

Khan S, Chughtai GH, Qamar-ul-Islam (1984) Chemical control of melon fruit fly (*Myiopardalis pardalina*). *Pakistan Journal of Agricultural Research* **5**(1), 40-42.

Kugler J, Freldberg A (1975) A list of the fruit flies (Diptera: Tephritidae) of Israel and nearby areas, their host plants and distribution. *Israel Journal of Entomology* **10**, 51-72.

Personal communication with Galya Zharmukhamedova, Kazakh Institute for Plant Protection and Quarantine (2012-09).

Stonehouse J, Sadeed SM, Harvey A, Haiderzada GS (2006) *Myiopardalis pardalina* in Afghanistan. *Proceedings of the 7th International Symposium on fruit flies of economic importance* (Salvador, BR, 2006-09-10/15), 1-12.

EPPO RS 2013/128
Panel review date - Entry date 2013-06

2013/129 First reports of *Quadrastichus erythrinae* in Guadeloupe and Martinique

The presence of *Quadrastichus erythrinae* (Hymenoptera: Eulophidae) has recently been reported from Guadeloupe and Martinique. In May 2012, this gall wasp was found in Fort-de-France (Martinique) and Baie-Mahault (Guadeloupe) on *Erythrina variegata* var. *fastigiata* (Fabaceae). On both islands, these trees were introduced 30 years ago essentially to be planted as windbreaks around banana plantations. Extensive tree mortality has been observed and growers are now recommended to plant *Dracanea fragans* to replace their destroyed hedges.

The erythrina gall wasp, *Q. erythrinae* was first described in 2004 from specimens collected from *Erythrina* spp. in Singapore, Mauritius and Réunion. Erythrinas (coral trees) are tropical and sub-tropical trees which are used as ornamentals, shade trees, trellis support (e.g. to grow betel nut, black pepper, vanilla, yam), windbreaks, for soil and water conservation, as well as for traditional medicine. *Q. erythrinae* induces galls on the leaves, petioles, twigs and shoots of several *Erythrina* species. Severe infestations can cause curling of young shoots, defoliation and tree death. Following its initial description, *Q. erythrinae* spread very rapidly and across huge distances to several countries in Asia, the Pacific (e.g. Hawaii), North America (Florida, US) and most recently in the Caribbean (Guadeloupe and Martinique). This invasive species is causing severe damage and threatens endemic *Erythrina* species (e.g. *E. sandwicensis* in the Pacific). Since the beginning of the invasion, it has been suspected that *Q. erythrinae* originates from Eastern Africa. Recent studies have shown that it occurs naturally in Tanzania where its populations are limited by several parasitoids. However, its detailed distribution in Eastern Africa and the geographic origin of the invasion remain unknown. Research projects are on-going to identify potential biological agents which could be used to control *Q. erythrinae*.
The currently known distribution of *Q. erythrinae* is as follows:
Africa: Mauritius, Réunion, Seychelles, Tanzania (native).
North A**m**erica: USA (Florida, Hawaii).
Caribbean: Guadeloupe, Martinique.
Asia: China (Aomen (Macau), Fujian, Guangdong, Hainan, Xianggang (Hong Kong)), India (Karnataka, Kerala, Maharashtra, West Bengal), Japan (Ryukyu Archipelago), Malaysia, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Vietnam.
Oceania: American Samoa, Guam.

Source: Etienne J, Dumbardon-Martial E (2013) *Quadrastichus erythrinae* Kim : un redoutable ravageur pour les érythrines de Guadeloupe et de Martinique (Hymenoptera, Eulophidae, Tetrastichinae). *Bulletin de la Société entomologique de France* **118**(2), 155-158.

Additional sources:
CABI (2009) *Quadrastichus erythrinae*. Distribution Maps of Plant Pests no. 722. CABI Wallingford (GB).
Gerlach J, Madl M (2007) Notes on *Erythrina variegata* (Linnaeus 1754) (Rosopsida: Fabaceae) and *Quadrastichus erythrinae* Kim 2004 (Hymenoptera: Chalcidoidea: Eulophidae) in Seychelles. *Linzer Biologische Beiträge* **39**(1), 79-82.
Messing RH, Noser S, Hunkeler J (2008) Using host plant relationships to help determine origins of the invasive Erythrina gall wasp, *Quadrastichus erythrinae* Kim (Hymenoptera: Eulophidae). *Biological Invasions* **11**(10), 2233-2241.
Lit IL Jr, Caasi-Lit MT, Balatibat JB, Palijon AM, Larona AR, Borja AJD (2010) Postscript to an invasion: the

erythrina gall wasp, *Quadrastichus erythrinae* Kim (Hymenoptera: Eulophidae), in the Philippines. *Philippine Entomologist* **24**(2), 100-121 (abst.).

Additional key words: new record, distribution list   Computer codes: QUSTER, GD, MT

2013/130 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 on the EPPO Alert List. The situation of the pest concerned is indicated in bold, using the terms of ISPM no. 8.

- **New records**

In 2011, *Iris yellow spot virus* (*Tospovirus* – formerly EPPO Alert List) was found for the first time in Tajikistan in onion fields (*Allium cepa*) near Dushanbe (Alabi *et al*., 2012). **Present, first found in 2011 near Dushanbe.**

In November 2011, severe blight and leaf shedding were observed on boxwood (*Buxus sempervirens*) in the Black Sea region, Turkey. Laboratory analysis of samples of leaves, branches and roots collected from the provinces of Trabzon and Artvin confirmed the presence of *Cylindrocladium buxicola* (formerly EPPO Alert List) (Akili *et al.,* 2012). **Present, first found in 2011 in the Black Sea region.**

In Italy, the presence of *Tobacco ringpost virus* (*Nepovirus*, TRSV - EPPO A2 List) was detected in March 2011 in plants of *Aeonium* (Crassulaceae) growing in a private garden near Salerno (Campania region). Affected plants showed chlorotic spots and rings on both leaf surfaces. According to the authors, this is the first time that TRSV is reported in cultivated plants in Italy. It is recalled that TRSV had been intercepted in the 1980s in imported gladiolus bulbs (Sorrentino *et al*., 2012). **Present, few records.**

During a survey carried out in Portugal, the presence of *Phytophthora ramorum* (EPPO Alert List) was detected for the first time in November 2006 on *Viburnum* spp. (Jesus Gomes & Amaro, 2008). **Present, no details.**

Xanthomonas axonopodis pv. *vesicatoria* (EPPO A2 List) was detected for the first time in Saudi Arabia during summer 2009 and 2010 in 4 glasshouses of capsicum (*Capsicum annuum* cv. 'California Wonder') in the region of Al-Kharj (Ibrahim & Al-Saleh, 2012). **Present, found in a small number of glasshouses in the region of Al-Kharj.**

Xylosandrus compactus (Coleoptera: Scolytidae) was first found in 2 urban parks in the province of Napoli (Campania region), Italy. It was observed on plants of *Quercus ilex, Viburnum tinus, Fraxinus ornus* and *Celtis australis* showing symptoms of withering on twigs and shoots of small diameter (NPPO of Italy, 2011). This was also the first record of this pest in Europe. More recent studies have showed that the introduction of *X. compactus* on *Q. ilex* was followed by a severe outbreak of *Fusarium solani*, a fungus which is vectored by *X. compactus* (Bosso *et al*., 2012). **Present, first found in 2011 in 2 urban parks (Campania).**

- **Detailed records**

In China, *Acidovorax citrulli* (EPPO Alert List) occurs in several provinces including Hebei, Shandong and Zhejiang (Yan *et al*., 2013).

Ditylenchus dipsaci (EPPO A2 List) has been detected for the first time in Minnesota (US) on garlic plants (*Allium sativum*) showing stunting and chlorosis. The nematode was found in samples which had been collected from Morrison and Dakota counties during summer 2011, and from Carver county during summer 2012 (Mollov *et al*., 2012).

In October 2012, *Drosophila suzukii* (Diptera: Drosophilidae – EPPO A2 List) was observed for the first time in Comunidad Valenciana, Spain. The pest was caught in the province of Valencia. No damage has been observed on fruit crops (Anonymous, 2013).

In Lithuania, *Beet necrotic yellow vein virus* (*Benyvirus*, BNYVV – EPPO A2 List) was first found in 2004 in the Sakiai region. A recent survey showed that BNYVV was still of limited distribution in the country, as it was only detected in the following regions: Sakiai, Kaunas and Panevézys (Zizyte *et al*., 2013).

Leptoglossus occidentalis (Hemiptera: Coreidae) occurs in Maremma Regional Park, Toscana, Italy (Bracalini *et al*., 2013).

Tobacco ringspot virus (*Nepovirus* – EPPO A2 List) occurs in Oklahoma (US). It was detected in 2010 on several cucurbit crops (*Cucumis melo, Cucurbita pepo, Citrullus lanatus*). This confirms an old record of TRSV made in 1956 in Oklahoma on *C. lanatus* (Abdalla *et al*., 2012).

- **New host plants**

In December 2009, dieback symptoms were observed on *Chamaecyparis lawsoniana* trees growing in the vicinity of larch trees infected by *Phytophthora ramorum* (EPPO Alert List) in Somerset, United Kingdom. Laboratory analysis confirmed the presence of *P. ramorum* (EPPO Alert List) in these symptomatic trees. This is the first time that a natural infection of *P. ramorum* is reported on *C. lawsoniana* (Brasier and Webber, 2012).

Meloidogyne enterolobii (EPPO A2 List) was found infecting *Euphorbia punicea* (Euphorbiaceae) in an ornamental nursery in Florida (US). Affected plants showed stunted growth and leaf yellowing. Commonly known as Jamaican poinsettia, *E. punicea* is an evergreen shrub with dark green leaves and flashy red bracts used for ornamental purposes (Han *et al*., 2012).

- **New pests**

Tomato zonate spot virus (TZSV) is a new virus tentatively assigned in the genus *Tospovirus* which was first found in Yunnan province, China. Severe symptoms have been observed on tomato (*Solanum lycopersicum*) and capsicum (*Capsicum annuum*) crops in Yunnan since 2005. Affected plants showed concentric zoned ringspots on fruits and necrotic lesions on leaves. During studies carried out from 2008 to 2010, TZSV was also found affecting tobacco (*Nicotiana tabacum*) in Guangxi province (Dong *et al*., 2008; Cai *et al*., 2011).

Beet curly top Iran virus (BCTIV) is considered to be a major pathogen of sugar beet in Iran. Affected plants show leaf curling, yellowing, and/or swelling of veins on the lower leaf surfaces. This virus was initially considered to be a member of the genus *Curtovirus*, but recent studies have concluded that it probably belongs to a distinct and new genus (within the *Geminiviridae* family) for which the name *Bectivirus* is proposed. BCTIV can also infect, but at low rate, spinach (*Spinacia oleracea*), tomato (*Solanum lycopersicum*), pepper (*Capsicum annuum*) and several weed species (e.g. *Datura stramonium*). This virus is transmitted by *Neoalitus* (*Circulifer*) *haematoceps* (Soleimani *et al*., 2013).

- **Diagnostics**

A key for the morphological identification of larvae of *Anoplophora chinensis* (Coleoptera: Cerambycidae - EPPO A2 List), *A. glabripennis* (EPPO A1 List) and *Psacothea hilaris* (formerly EPPO Alert List) has been published. It contains numerous and detailed morphological pictures of larvae and aims to distinguish these three exotic species from the closely related species of the native fauna of Europe (Pennacchio *et al*., 2012).

A PCR test has been developed in Italy to confirm the identity of *Anoplophora chinensis* (Coleoptera: Cerambycidae - EPPO A2 List) in frass collected from infested trees or their immediate vicinity. With this method, it is no longer necessary to damage host plants to try to find insect specimens. It is considered that this new diagnostic tool is particularly useful during delimiting surveys for eradication/containment programmes, as well as during import inspections of traded material (Strangi *et al*., 2012).

A real-time PCR assay has been developed for the detection and identification of the two *formae speciales* of *Melampsora medusae* (EPPO A2 List): *M. medusae* f.sp. *deltoidae* and *M. medusae* f.sp. *tremuloidae* on infected poplar leaves (Boutigny *et al*., 2013).

A PCR method has been developed and used in routine analysis for 10 years in France for the detection and identification of poplar rusts that are occurring in Europe: *Melampsora larici-populina, M. allii-populina* and *M. medusae* f.sp. *deltoidae* (EPPO A2 List). It is noted that during these studies *M. medusae* f.sp. *deltoidae* has not been detected in commercial poplar nurseries in France (Husson *et al*., 2013).

A LAMP (Loop-mediated isothermal amplification) test has been developed for the detection of *Xanthomonas arboricola* pv*. pruni* (EPPO A2 List) (Bühlmann *et al*., 2013).

A new real-time PCR test has been developed in New Zealand for the detection of '*Candidatus* Liberibacter solanacearum' (EPPO A1 List for Solanaceae haplotypes) in potato tubers (Beard *et al*., 2013).

- **Etiology**

Since the discovery of phytoplasmas, the conclusive proof of their pathogenicity (verification of Koch's postulates) has been lacking because all attempts to culture them on artificial growing media had failed. Contaldo *et al*. (2012) have recently published the first demonstration of the axenic culture of phytoplasmas on artificial growing media. Under defined conditions, specific commercial media allowed the cultivation of phytoplasma colonies. Colonies obtained were similar in shape and dimensions with those of mycoplasmas.

- **Eradication**

In May 2013, USDA-APHIS officially announced the eradication of *Anoplophora glabripennis* (Coleoptera: Cerambycidae – EPPO A1 List) from Manhattan and Staten Island in New York (US). In 2011, the pest had also been eradicated from the area of Islip, New York (NAPPO, 2013).

Source: Abdalla OA, Bruton BD, Fish WW (2012) First confirmed report of *Tobacco ringspot virus* in cucurbit crops in Oklahoma. *Plant Disease* **96**(11), p 1705.

Akilli S, Katircioglu YZ, Zor K, Maden S (2012) First report of box blight caused by *Cylindrocladium pseudonaviculatum* in the Eastern Black Sea region of Turkey. *New Disease Reports* **25**, 23. http://doi:10.5197/j.2044-0588.2012.025.023

Alabi OJ, Saidov N, Muniappan R, Naidu RA (2012) First report of *Iris yellow spot virus* in onion in Tajikistan. *New Disease Reports* **26**, 28. http://dx.doi.org/10.5197/j.2044-0588.2012.026.028

Anonymous (2013) Incidencia de plagas y enfermedades en las Comunidades Autonomas en 2012. *Phytoma-España* no.249, 52-63.

Beard SS, Pitman AR, Kraberger S, Scott IAW (2013) SYBR Green real-time quantitative PCR for the specific detection and quantification of '*Candidatus* Liberibacter solanacearum' in field samples from New Zealand. *European Journal of Plant Pathology* **136**(1), 203-215.

Bosso L, Senatore M, Varlese R, Ruocco M, Garonna AP, Bonanomi G, Mazzoleni S, Cristinzio G (2012) Severe outbreak of *Fusarium solani* on *Quercus ilex* vectored by *Xylosandrus compactus. Journal of Plant Pathology* **94**(suppl.), S4.99.

Boutigny AL, Guinet C, Vialle A, Hamelin R, Frey P, Ioos R (2013) A sensitive real-time PCR assay for the detection of the two *Melampsora medusae formae speciales* on infected poplar leaves. *European Journal of Plant Pathology* **136**(3), 433-441.

Bracalini M, Benedettelli S, Croci F, Terreni P, Tiberi R, Panzavolta T (2013) Cone and seed pests of *Pinus pinea*: assessment and characterization of damage. *Journal of Economic Entomology* **106**(1), 229-234.

Brasier C, Webber J (2012) Natural stem infection of Lawson cypress (*Chamaecyparis lawsoniana*) caused by *Phytophthora ramorum. New Disease Reports* **25**, 26. http://dx.doi.org/10.5197/j.2044-0588.2012.025.026

Bühlmann A, Pothier JF, Tomlinson JA, Frey JE, Boonham N, Smits THM, Duffy B (2013) Genomics-informed design of loop-mediated isothermal amplification for detection of phytopathogenic *Xanthomonas arboricola* pv. *pruni* at the intraspecific level. *Plant Pathology* **62**(2), 475-484.

Cai JH, Qin BX, Wei XP, Huang J, Zhou WL, Lin BS, Yao M, Hu ZZ, Feng ZK, Tao XR (2011) Molecular Identification and Characterization of Tomato zonate spot virus in tobacco in Guangxi, China. *Plant Disease* **95**(11), p 483.

Contaldo N, Bertaccini A, Paltrinieri S, Windsor HM, Windsor GD (2012) Axenic culture of plant pathogenic phytoplasmas. *Phytopathologia Mediterranea* **51**(3), 607-617.

Dong JH, Cheng XF, Yin YY, Fang Q, Ding M, Li TT, Zhang LZ, Su XX, McBeath JH, Zhang ZK (2008) Characterization of Tomato zonate spot virus, A new *Tospovirus* species in China. *Archives of Virology* **153,** 855-864.

Han H, Brito JA, Dickson DW (2012) First report of *Meloidogyne enterolobii* infecting *Euphorbia punicea* in Florida. *Plant Disease* **96**(11), p 1706.

Husson C, Ioos R, Andrieux A, Frey P (2013) Development and use of new sensitive molecular tools for diagnosis and detection of *Melampsora* rusts on cultivated poplar. *Forest Pathology* **43**, 1-11.

Ibrahim Y, Al-Saleh M (2012) First report of bacterial spot caused by *Xanthomonas campestris* pv. *vesicatoria* on sweet pepper (*Capsicum annuum* L.) in Saudi Arabia. *Plant Disease* **96**(11), p 1690.

Jesus Gomes de M, Amaro PT (2008) [Occurrence of *Phytophthora ramorum* in

Portugal on *Viburnum* spp.]. *Revista de Ciências Agrárias,* 105-111 (in Portuguese).
Mollov DS, Subbotin SA, Rosen C (2012) First report of *Ditylenchus dipsaci* on garlic in Minnesota. *Plant Disease* **96**(11), p 1706.
NAPPO Pest Alert System. Official Pest Reports. USA (2013-05-14) Asian longhorned beetle (Anoplophora glabripennis) eradicated from Manhattan and Staten Island, New York. http://www.pestalert.org/oprDetail_print.cfm?oprid=547
NPPO of Italy (2011-09).
Pennacchio F, Sabbatini Peverieri G, Jucker C, Allegro G, Roversi PF (2012) A key for the identification of larvae of *Anoplophora chinensis, Anoplophora glabripennis* and *Psacothea hilaris* (Coleoptera Cerambycidae Lamiinae) in Europe. *Redia* **95**, 57-65.
Soleimani R, Matic S, Taheri H, Behjatnia SAA, Vecchiati M, Izadpanah K, Accotto GP (2012) The unconventional geminivirus *Beet curly top Iran virus*: satisfying Koch's postulates and determining vector and host range. *Annals of Applied Biology* **162**(2), 174–181.
Sorrentino R, Alioto D, Russo M, Rubino L (2012) Presence of *Tobacco ringspot virus* in *Aeonium*. *Journal of Plant Pathology* **94**(suppl.), S4.103.
Strangi A, Sabbatini Peverieri G, Roversi PF (2012) Managing outbreaks of the citrus long-horned beetle *Anoplophora chinensis* (Forster) in Europe: molecular diagnosis of plant infestation. *Pest Management Science* **69**(5), 627-634.
Yan S, Yang Y, Wang T, Zhao T, Schaad NW (2013) Genetic diversity of *Acidovorax citrulli* in China. European *Journal of Plant Pathology* **136**(1), 171-181.
Zizyte M, Valkonen J, Staniulis J (2013) Characterization of *Beet necrotic yellow vein virus* infecting sugar beet in Lithuania. *Journal of Plant Pathology* **95**(1), 211-216.

Additional key words: new record, detailed record, new pest, host plant, etiology, diagnostics, eradication

Computer codes: ANOLCH, ANOLGL, BCTIV0, BNYVV0, CYLDBU, DITYDI, DROSSU, IYSV00, LEPLOC, LIBEPS, MELGMY, MELMME, PHYPSP, PHYTRA, PSACHI, PSDMAC, TRSV00, TZSV00, XANTAV, XANTPR, CN, ES, GB, IR, IT, LT, PT, SA, TJ, TR, US

2013/131 A new regulation on invasive alien plants in Wallonie (Belgium)

From now on in Wallonie (Belgium), the provision, use or management of plant species or the transport of soil potentially contaminated by invasive alien plants should be in accordance with the 'circular related to invasive alien plants' approved on the 30th of May 2013.

Article 1 stipulates that planting invasive alien plants listed in Annex 1 is prohibited. These plants may only be planted in botanical gardens and arboreta if they are closely monitored and if measures are in place to prevent any spread of the species. Species listed in Annex 2 should not be planted within 50 metres of sites with a protection status according to the law on nature conservation or sites of high biological value. The introduction of species listed in Annex 2 is also prohibited within 50 metres of a watercourse.
Article 2 indicates that the movement of soil contaminated with seeds, rhizomes, tubers or any part of an invasive alien plant which could spread the species is prohibited. It is recommended to avoid the use and movement of soil from areas on which invasive alien plants listed in Annexes 1 and 2 are present, except if the soil is adequately treated. In particular, the presence of *Fallopia* spp. and *Heracleum mantegazzianum* (Apiaceae, EPPO List of Invasive Alien Plants) will be the object of specific measures.
Article 3 states that the management of the plants listed in Annexes 1 and 2 should follow good practices validated by the Public Service of Wallonie.
Article 4 indicates that waste from the management of invasive alien plants populations should be gathered and destroyed.
Article 5 deals specifically with *Fallopia* spp. and indicates that the cutting and removal of rhizomes of *Fallopia* spp. is prohibited as this practice may spread the plant.

Annex 1 of invasive alien plants for which planting is prohibited in Belgium contains the following species: *Ailanthus altissima* (Simaroubaceae, EPPO List of Invasive alien plants*),* *Aster x salignus* (Asteraceae), *Baccharis halimifolia* (Asteraceae, EPPO List of IAP), *Bidens frondosa* (Asteraceae), *Crassula helmsii* (Crassulaceae, EPPO A2 List), *Cyperus eragrostis* (Cyperaceae), *Duchesnea indica* (Rosaceae), *Egeria densa* (Hydrocharitaceae, EPPO List of IAP), *Fallopia japonica* (Polygonaceae, EPPO List of IAP), *Fallopia sachalinensis* (Polygonaceae, EPPO List of IAP), *Fallopia x bohemica* (Polygonaceae, EPPO List of IAP), *Heracleum mantegazzianum* (Apiaceae), *Hyacinthoides hispanica* (Asparagaceae), *Hydrocotyle ranunculoides* (Apiaceae, EPPO A2 List), *Impatiens glandulifera* (Balsaminaceae, EPPO List of IAP), *Impatiens parviflora* (Balsaminaceae), *Lagarosiphon major* (Hydrocharitaceae, EPPO List of IAP), *Ludwigia grandiflora* (Onagraceae, EPPO A2 List), *L. peploides* (Onagraceae, EPPO A2 List), *Mimulus guttatus* (Phrymaceae), *Myriophyllum aquaticum* (Haloragaceae, EPPO List of IAP), *Myriophyllum heterophyllum* (Haloragaceae, EPPO List of IAP), *Persicaria wallichii* (Polygonaceae), *Prunus serotina* (Rosaceae, EPPO List of IAP), *Senecio inaequidens* (Asteraceae, EPPO List of IAP), *Solidago canadensis* (Asteraceae, EPPO List of IAP), *S. gigantea* (Asteraceae, EPPO List of IAP) and *Symphyotrichum lanceolatum* (Asteraceae).

Annex 2 of invasive alien plants for which introduction is prohibited within and nearby protected sites and areas of high biological value and in the vicinity of watercourses contains the following species: *Acer negundo* (Sapincaceae), *Acer rufinerve* (Sapindaceae), *Amelanchier lamarckii* (Rosaceae, EPPO List of IAP), *Aster novi-belgii* (Asteraceae), *Azolla filiculoides* (Salviniaceae, EPPO Observation List of invasive alien plants), *Buddleja davidii* (Scrophulariaceae, EPPO List of IAP), *Cornus sericea* (Cornaceae, EPPO List of IAP), *Cotoneaster horizontalis* (Rosaceae), *Elaeagnus angustifolia* (Elaeagnaceae), *Elodea canadensis* (Hydrocharitaceae), *E. nuttallii* (Hydrocharitaceae, EPPO List of IAP), *Fraxinus pennsylvanica* (Oleaceae), *Helianthus tuberosus* (Asteraceae, EPPO List of IAP), *Lemna* *minuta* (Araceae), *Lupinus polyphyllus* (Fabaceae, EPPO Observation List of IAP), *Lysichiton americanus* (Araceae, EPPO Observation List of IAP), *Mahonia aquifolium* (Berberidaceae), *Parthenocissus inserta* (Vitaceae), *Parthenocissus quinquefolia* (Vitaceae), *Prunus laurocerasus* (Rosaceae), *Rhododendron ponticum* (Ericaceae, EPPO Observation List of IAP), *Rhus typhina* (Anacardiaceae), *Rosa rugosa* (Rosaceae), *Rudbeckia laciniata* (Asteraceae), *Spiraea alba* (Rosaceae), *Spiraea douglasii* (Rosaceae) and *Spiraea x billardii* (Rosaceae).

Source: Moniteur Belge (2013) Circulaire relative aux plantes exotiques envahissantes. Région Wallonne. Service public de Wallonie. 30 mai 2013.
http://staatsbladclip.zita.be/moniteur/lois/2013/06/11/loi-2013203325.html

Additional key words: invasive alien plants, regulation

Computer codes: ACRNE, ACRRU, AILAL, AMELM, ASTLN, ASTNB, ASTSL, AZOFI, BACHA, BIDFR, BUDDA, CRWSR, CSBHE, CTTHO, CYPER, DUCIN, ELDCA, ELDDE, ELDNU, ELGAN, FRXPE, HCJHI, HELTU, HERMZ, HYDRA, IPAGL, IPAPA, LEMMT, LGAMA, LSYAM, LUDUR, LUPPO, MAHAQ, MIUGU, MYPBR, POLCU, POLPS, PRNLR, PRNSO, PRTIN, PRTQU, REYBO, RHOPO, RHUTY, ROSRG, RUDLA, SENIQ, SOOCA, SPVAB, SPVBI, SPVDO, BE

2013/132 Recent activities on invasive alien plants in Austria

Education and awareness-raising campaigns are being conducted in Austria within the Federal States by public institutions through meetings, distribution of folders and posters to students (from primary schools to universities) and the general public. Information is also spread through regional radio and television programmes.

The following invasive alien plants have been or are under eradicatation/control in protected areas in the Federal States of Austria: *Ailanthus altissima* (Simaroubaceae, EPPO List of Invasive alien plants), *Ambrosia artemisiifolia* (Asteraceae, EPPO List of IAP), *Asclepias curassavica* (Apocynaceae), *Fallopia japonica* (Polygonaceae, EPPO List of IAP), *Heracleum mantegazzianum* (Apiaceae, EPPO List of IAP), *Impatiens glandulifera* (Balsaminaceae, EPPO List of IAP), *Phytolacca americana* (Phytolaccaceae), *Robinia pseudoacacia* (Fabaceae), *Solidago gigantea* (Asteraceae, EPPO List of IAP).

Source: Convention on the Conservation of European Wildlife and Natural Habitats (2013) Implementation of recommendations on invasive alien species. National reports and contributions. Bern Convention group of experts on invasive alien species, Alghero, Sardinia, Italy (20-22 June 2013), pp 10-12.

Additional key words: invasive alien plants

Computer codes: AILAL, AMBEL, ASCCU, HERMZ, IPAGL, PHTAM, POLCU, ROBPS, SOOGI, AT

2013/133 Recent activities on invasive alien plants in Portugal

In Portugal the following activities and projects related to invasive alien plants have been or are currently being undertaken.

A request had been made for the intentional introduction of *Paulownia tomentosa* (Paulowniaceae) in Portugal for afforestation. The species was accepted and an authorization for controlled trials was issued before the end of 2012.

From 2010 to 2012, a research project involving universities in Portugal and Brazil was investigating ecological processes and management strategies for *Acacia dealbata* (Fabaceae, EPPO List of invasive alien plants), *A. saligna* (Fabaceae), *A. longifolia* (Fabaceae), *Parkinsonia aculeata* (Fabaceae), *Prosopis juliflora* (Fabaceae), *Sesbania virgata* (Fabaceae) and *Sporobolus indicus* (Poaceae).

During the construction of the hydroelectric complex of Baixo Sabor in Torre de Moncorvo (North-East of the country), populations of *Acacia dealbata*, *Ailanthus altissima* (Simaroubaceae, EPPO List of IAP), *Datura stramonium* (Solanaceae) and *Phytolacca americana* (Phytolaccaceae) have been subject to control actions. Invasive alien plants including *Carpobrotus* spp. (Aizoaceae) have been eradicated in an area of 5.5 hectares in the dune system of Cresmina-Guincho. In the Lagoas de Bertiandos e San Pedro de Arcos Protected Landscape, an inventory of rare and protected species was undertaken, as well as control actions against *Acacia dealbata*, *A. melanoxylon* (Fabaceae) and *Hakea sericea* (Proteaceae, EPPO List of IAP). In May 2012, the woody invasive alien plants *Acacia* spp. and *Hakea* spp. have also been subject to control actions in Senhora da Mó. The objective of this control programme was to diversify forest composition and take advantage of natural regrowth.

In Madeira, since 2008, periodic actions have been undertaken for the monitoring of *Arundo donax* (Poaceae), *Carpobrotus edulis* (Aizoaceae, EPPO List of IAP) and *Ricinus communis* (Euphorbiaceae). In 2009, projects started concerning the following species: the eradication of *Agave americana* (Asparagaceae) at Ponta de SãLourenço; the control of *Phalaris aquatica* (Poaceae) in the Castanheira's valley on Deserta Grande Island; the control of *Conyza bonariensis* (Asteraceae) on Selvagem Grande Island; the control of *Cytisus scoparius* (Fabaceae) in a mountaineous area where Zino's Petrel (*Pterodroma madeira,* Procellariidae) nests.

In the Azores, a regional plan aims to eradicate and control the following invasive alien plants in areas of high biological value on all islands of the archipelago: *Acacia melanoxylon*, *Ailanthus altissima*, *Arundo donax*, *Carpobrotus edulis*, *Clethra arborea* (Clethraceae), *Drosanthemum floribundum* (Ruschioideae), *Gunnera tinctoria* (Gunneraceae, EPPO Alert List), *Hedychium gardnerianum* (Zingiberaceae), *Hydrangea macrophylla* (Hydrangeaceae), *Ipomoea indica* (Convolvulaceae), *Lantana camara* (Verbenaceae), *Pittosporum undulatum* (Pittosporaceae), *Polygonum capitatum* (Polygonaceae), *Pteridium aquilinum* (Dennstaedtiaceae), *Rubus ulmifolius* (Rosaceae) and *Ulex europaeus* (Fabaceae).
In addition, control programmes against *Acacia melanoxylon*, *Gunnera tinctoria*, *Clethra arborea* and *Hedychium gardnerianum* were undertaken in the priority habitat 'Laurissilva forest'.

Source: Convention on the Conservation of European Wildlife and Natural Habitats (2013) Implementation of recommendations on invasive alien species. National reports and contributions. Bern Convention group of experts on invasive alien species, Alghero, Sardinia, Italy (20-22 June 2013), pp 48-65.

Additional key words: invasive alien plants

Computer codes: 1ACAG, 1CBSG, 1HKAG, ABKDO, ACADA, ACALO, ACAME, ACASA, AGVAM, CBSED, CXEAR, DATST, DRUFL, ERIBO, GUATI, HEYGA, HKASE, HYEMA, IPOAC, LANCA, PAKAC, PAZTO, PHATU, PHTAM, POLCT, PRCJU, PTEAQ, PTUUN, RIICO, RUBUL, SAOSC, SEBVI, SPZIN, ULEEU, PT

2013/134 Recent activities on invasive alien plants in Slovakia

The Slovakian law (Act No. 543/2002 Coll. on Nature and Landscape Protection) provides a framework for protection of native species and ecosystems. The Act makes it prohibited to import, possess, grow, reproduce and trade both IAS and their parts or products thereof that could cause their spread.
According to the Order of the Ministry of the Environment No. 24/2003 Coll., provisions apply to 7 plant species (the most problematic): *Fallopia japonica* (Polygonaceae, EPPO List of invasive alien plants), *Fallopia × bohemica* (Polygonaceae, EPPO List of IAP), *Fallopia sachalinensis* (Polygonaceae, EPPO List of IAP), *Heracleum mantegazzianum* (Apiaceae, EPPO List of IAP), *Impatiens glandulifera* (Balsaminaceae, EPPO List of IAP), *Solidago canadensis* (Asteraceae, EPPO List of IAP) and *Solidago gigantea* (Asteraceae, EPPO List of IAP). In 2011, according to the order No. 173/2011 Coll. of the Ministry of the Environment of the Slovak Republic, 2 new species were added: *Ambrosia artemisiifolia* (Asteraceae, EPPO List of IAP) and *Helianthus tuberosus* (Apiaceae, EPPO List of IAP).

In the framework of the protection of sandy and floodplain habitats against invasive alien plant species, and in partnership with Hungary, the following species are subject to control actions: *Acer negundo* (Sapindaceae), *Ailanthus altissima* (Simaroubaceae, EPPO List of IAP), *Amorpha fruticosa* (Fabaceae, EPPO List of IAP), *Asclepias curassavica* (Apocynaceae), *Prunus serotina* (Rosaceae, EPPO List of IAP) and *Robinia pseudoacacia* (Fabaceae). Control methods are being tested for *Celtis australis* (Ulmaceae), *Fraxinus pennsylvanica* (Oleaceae) and *Gleditsia triacanthos* (Fabaceae).

Source: Convention on the Conservation of European Wildlife and Natural Habitats (2013) Implementation of recommendations on invasive alien species. National reports and contributions. Bern Convention group of experts on invasive alien species, Alghero, Sardinia, Italy (20-22 June 2013), pp 67-69.

Institute for European Environmental Policy (2007) Technical support to EU strategy on invasive alien species (IAS). Policy options to minimize the negative impacts of IAS on biodiversity in Europe and the EU. 127 p.
http://ec.europa.eu/environment/nature/invasivealien/docs/Shine2008_IAS%20Task%202_Annexes%201-5.pdf

Additional key words: invasive alien plants

Computer codes: ACRNE, AILAL, AMHFR, ASCCU, CETAU, FRXPE, GLITR, HELTU, HERMZ, IPAGL, PRNSO, POLCU, REYBO, REYSA, ROBPS, SOOCA, SOOGI, SK

2013/135 Recent activities on invasive alien plants in Spain

The river basin bodies which are responsible for in water management have created their own working group on invasive alien species in continental waters. The following river catchment are being monitored or are subject to control actions for the following invasive alien plants:

- On the Guadalquivir river basin, control methods are being tested on *Eichhornia crassipes* (Pontederiaceae, EPPO A2 List) and *Elodea* spp. (Hydrocharitaceae).
- On the Guadiana river basin, *Eichhornia crassipes* (Pontederiaceae, EPPO A2 List) is being monitored and is subject to control actions.
- On the Jucar river basin, monitoring is in progress on *Arundo donax* (Poaceae). Occasional work has been carried out to control *Ludwigia grandiflora* (Onagraceae, EPPO A1 List) and *Lemna* spp. (Araceae).

- On the Miño-Sil river basin, occasional control actions against *Acacia dealbata* (Fabaceae, EPPO List of invasive alien plants), *Azolla filliculoides* (Salviniaceae, EPPO Observation list of invasive alien plants) and *Eichhornia crassipes* (Pontederiaceae, EPPO A2 List) has been undertaken. Work with volunteers and awareness campaigns have also been carried out.
- On the Segura river basin, a specific treatment has been developed to control *Arundo donax* (Poaceae) as the plant is affecting infrastructures.

Source: Convention on the Conservation of European Wildlife and Natural Habitats (2013) Implementation of recommendations on invasive alien species. National reports and contributions. Bern Convention group of experts on invasive alien species, Alghero, Sardinia, Italy (20-22 June 2013), pp 72-75.

Additional key words: invasive alien plants **Computer codes:** 1ELDG, 1LEMG, ABKDO, ACADA, AZOFI, EICCR, LUDUR, ES

2013/136 Recent activities on invasive alien plants in Sweden

Sweden is exploring the possibilities to better use citizen science to collect information about invasive alien species and the new Species Information Gateway (Artportalen Website) has been launched.

In addition, eradication and control projects are being carried out by the county administrative board for *Fallopia japonica* (Polygonaceae, EPPO List of IAP), *Heracleum mantegazzianum* (Apiaceae, EPPO List of invasive alien plants), *Nymphoides peltata* (Menyanthaceae) and *Rosa rugosa* (Rosaceae).

Source: Artportalen Website
http://www.artportalen.se/

Convention on the Conservation of European Wildlife and Natural Habitats (2013) Implementation of recommendations on invasive alien species. National reports and contributions. Bern Convention group of experts on invasive alien species, Alghero, Sardinia, Italy (20-22 June 2013), pp 76-78.

Additional key words: invasive alien plants **Computer codes:** HERMZ, NYPPE, POLCU, ROSRG, SE

2013/137 UK Guide to citizen science

A guide to citizen science has recently been published in the UK, as it is acknowledged that it is increasingly being used to collect data on invasive alien species. This publication is based on conclusions from a comprehensive report reviewing more than 200 citizen science projects from the UK and around the world. In this guide, the term citizen science is defined as: 'volunteer collection of biodiversity and environmental information which contributes to expanding our knowledge of the natural environment, including biological monitoring and the collection or interpretation of environmental observations'. Advice on the different steps of the elaboration of a citizen science project is also provided, as follows:

- Before starting: is citizen science the best approach? Choosing a citizen science approach; citizen science flowchart.

- First steps: establish project team; define project aims; identify funding and resources; identify and understand target participants.
- Development phase: design the survey or scheme; consider data requirements; consider technological requirements; develop supporting materials: test and modify protocols.
- Live phase: promote and publicize the project; accept data and provide rapid feedback.
- Analysis and reporting phase: plan and complete data analysis and interpretation; report results; share data and take action in response to data; evaluate to maximize lessons learned.

Source: Tweddle JC, Robinson LD, Pocock MJO & Roy HE (2012) Guide to citizen science: developing, implementing and evaluating citizen science to study biodiversity and the environment in the UK. Natural History Museum and NERC Centre for Ecology & Hydrology forUK-EOF. 29 p.
http://www.ukeof.org.uk/documents/guide-to-citizen-science.pdf

Additional key words: invasive alien plants, citizen science, publication

Computer codes: GB