



ORGANISATION EUROPEENNE
ET MEDITERRANEENNE
POUR LA PROTECTION DES PLANTES

EUROPEAN AND MEDITERRANEAN
PLANT PROTECTION
ORGANIZATION

EPPO Reporting Service

No. 05 PARIS, 2014-05-01

CONTENTS

Pests & Diseases

- [2014/081](#) - Eradication of *Synchytrium endobioticum* from Austria
- [2014/082](#) - *Dothistroma septosporum* detected in Baden-Württemberg, Germany
- [2014/083](#) - *Dothistroma pini* and *Dothistroma septosporum* occur in Slovenia
- [2014/084](#) - Situation of *Phytophthora lateralis* in the Netherlands
- [2014/085](#) - *Dendroctonus valens*: an invasive forest pest in China
- [2014/086](#) - Laurel wilt (*Raffaelea lauricola*) and its vector (*Xyleborus glabratus*): addition to the EPPO Alert List
- [2014/087](#) - First report of *Scyphophorus acupunctatus* in Cyprus
- [2014/088](#) - Incursion of *Potato spindle tuber viroid* in potato breeding material in the Netherlands
- [2014/089](#) - First report of 'Candidatus *Phytoplasma ulmi*' in the United Kingdom
- [2014/090](#) - PPV-CR: a new strain of *Plum pox virus* described from sour cherry in Russia
- [2014/091](#) - EPPO report on notifications of non-compliance

Invasive Plants

- [2014/092](#) - *Ailanthus altissima* occurs in Turkey
- [2014/093](#) - Control methods against *Acer negundo*
- [2014/094](#) - Is the proportion of alien species in man-made habitats influenced by city size?
- [2014/095](#) - Variation in seed traits and germination potential of *Solanum elaeagnifolium* in Greece
- [2014/096](#) - The response of *Parthenium hysterophorus* and of its biological control agent *Epiblema strenuana* under a changing climate
- [2014/097](#) - Alterations in soil microbial community and chemical parameters in ecosystems invaded by *Acacia dealbata*
- [2014/098](#) - Impacts of *Acacia mearnsii* on pastures and grazing capacity
- [2014/099](#) - Comparing levels of invasion in North American and in European habitats
- [2014/100](#) - The presence of three fortuitously arrived insects have an impact on invasive alien plants in Spain
- [2014/101](#) - Control strategy against *Cyperus esculentus* in Switzerland

2014/081 Eradication of *Synchytrium endobioticum* from Austria

The NPPO of Austria declared the eradication of *Synchytrium endobioticum* (EPPO A2 List) from its territory. Investigations have shown that the pathogen has not been found for at least 30 years.

The pest status of *Synchytrium endobioticum* in Austria is officially declared as: **Absent, pest eradicated.**

Source: NPPO of Austria (2014-03).

Additional key words: eradication, absence

Computer codes: SYNCEN, AT

2014/082 *Dothistroma septosporum* detected in Baden-Württemberg, Germany

The NPPO of Germany recently informed the EPPO Secretariat of the finding of *Dothistroma septosporum* (teleomorph: *Mycosphaerella pini* - EU Annexes) in a new area. In February 2014, the disease was found on *Pinus nigra* trees in a forest at Iffezheim, Baden-Württemberg. These trees were approximately 25 years old and showed typical symptoms such as needle and sprout necrosis. Approximately 80 % of the trees in an area of 0.5 ha were infected. The fungus was identified morphologically. It is presumed that the disease has been present at this location since 2011. Quarantine has been imposed.

The pest status of *Dothistroma septosporum* in Germany is officially declared as: **Present, few occurrences.**

Source: NPPO of Germany (2014-03).

Additional key words: detailed record

Computer codes: SCIRPI, DE

2014/083 *Dothistroma pini* and *Dothistroma septosporum* occur in Slovenia

In Slovenia, *Dothistroma* (red band) needle blight has been recorded since the 1970s, but disease symptoms have intensified during the last few years (EPPO RS 2009/182). It has now been demonstrated that needle blight is associated with two distinct fungal species *Dothistroma pini* and *Dothistroma septosporum*. Prior to this in Slovenia, only *Mycosphaerella pini* (anamorph: *Dothistroma pini* (EU Annexes)) was known to occur. In 2011 and 2012, symptomatic pine needles were collected from forest and ornamental pine trees (*Pinus nigra* subsp. *nigra*, *Pinus nigra* subsp. *laricio*, *P. sylvestris*, *P. mugo*) across Slovenia and tested for the presence of *Dothistroma* spp. Results showed that both *D. pini* and *D. septosporum* occur in Slovenia. *D. septosporum* alone was detected in samples of *P. mugo* which had been collected from parks and gardens in Ljubljana, Volčji Potok, and Stara Fužina. It was also detected in samples of *P. sylvestris* from a park in Ribčev Laz, and in samples of *P. nigra* subsp. *nigra* from a nursery in Rimš. *D. pini* together with *D. septosporum* were detected in samples of *P. nigra* subsp. *laricio*, *P. nigra* subsp. *nigra* and *P. sylvestris* which had been collected from native forest stands in Panovec, Pivka, and Podčetrtek, respectively. Considering the occurrence of *D. pini* at distant locations, the authors considered that the fungus has most likely been present in the country for several years. This is the first time that *D. pini* is reported from Slovenia.

Source: Piškur B, Hauptman T, Jurc D (2013) *Dothistroma* needle blight in Slovenia is caused by two cryptic species: *Dothistroma pini* and *Dothistroma septosporum*. *Forest Pathology*. doi: 10.1111/efp.12059.

Additional key words: new record, detailed record

Computer codes: DOTSPI, SCIRPI, SI

2014/084 Situation of *Phytophthora lateralis* in the Netherlands

In the Netherlands, *Phytophthora lateralis* (EPPO A2 List) was first recorded on *Chamaecyparis* sp. in a nursery in 2004. Since then, annual surveys have been conducted and phytosanitary measures were applied when new findings were made. These phytosanitary measures had been established on the basis of a preliminary Pest Risk Assessment. The detection of 3 incidental cases in 2010 and 2011, as well as the detection of *P. lateralis* in France in 2010/2011 (EPPO RS 2011/029), triggered the revision of this assessment. This new Dutch Pest Risk Assessment was completed in September 2013 and concluded that phytosanitary measures should be discontinued in the Netherlands. The main reasons for ending these measures were that *P. lateralis* is already present in Europe (France, United Kingdom) and that its eradication seemed unlikely.

The pest status of *Phytophthora lateralis* in the Netherlands is officially declared as: **Present, at low prevalence.**

Source: NPPO of the Netherlands (2013-12).

Van der Gaag DG, Meffert J (2013) Pest Risk Assessment for *Phytophthora lateralis*. Netherlands Food and Consumer Product Safety Authority, Utrecht (NL).

<http://www.nvwa.nl/onderwerpen/english/dossier/pest-risk-analysis/evaluation-of-pest-risks>

Additional key words: detailed record

Computer codes: PHYTLA, NL

2014/085 *Dendroctonus valens*: an invasive forest pest in China

The red turpentine beetle, *Dendroctonus valens* (Coleoptera: Scolytidae) originating from North America was introduced into China (counties of Yangcheng and Xinshui - Shanxi province) in the early 1980s when unprocessed logs were imported from the USA. In 1999, it was found in Hebei province and by 2003 this bark beetle had spread to 85 counties in 3 provinces of Northern China covering an area of more than 700 000 ha. At present, *D. valens* has been found in the following provinces: Beijing, Hebei, Henan, Neimenggu (Inner Mongolia), Shaanxi, and Shanxi. It is estimated that *D. valens* has killed more than 10 million pine trees since its introduction, mainly *Pinus tabulaeformis* (Chinese red pine), a species which has been widely planted in monoculture during reforestation programmes. The Chinese State Forestry Administration now ranks *D. valens* as the second most important forest pest nationwide. A national management programme was initiated in 2000 and includes regulatory, silvicultural, insecticidal, and semiochemical approaches.

In its native range in North America (Canada, Mexico, USA) and parts of Central America (Guatemala, Honduras), *D. valens* is considered to be a secondary pest of pines (*Pinus* spp.). It usually infests weakened or dying trees, but outbreaks and tree mortality attributed to *D. valens* alone are rare. In North America, *D. valens* can be found on many

pine species and occasionally on spruce (*Picea* spp.) and larch (*Larix* spp.). In Western North America, *P. ponderosa*, *P. contorta*, *P. jeffeyi*, *P. lambertiana*, *P. monticola* and *P. radiata* are the preferred hosts. In China, the primary host is *P. tabulaeformis* (*P. armandii*, *P. bungeana* and *Picea meyeri* have occasionally been attacked but there are no confirmed reports of mortality on these species). In Shanxi province, *P. sylvestris* is a rare non-native species and it has occasionally been attacked by *D. valens*. As *P. sylvestris* is more or less continuously distributed across northern Eurasia, this pine species could serve as a potential corridor for the spread of *D. valens* into Europe.

Several fungal species have been reported in association with *D. valens*, although their possible role in tree mortality remains to be studied. In China, the most consistently isolated fungus is *Leptographium procerum*, and studies have indicated that it was most probably introduced into China along with *D. valens*. The fungi associated with *D. valens* in China is different to that in the insect's native range (e.g. *Leptographium terebrantis*, commonly associated with *D. valens* in the USA, has not been found in China; *L. sinoprocerum* is a new species which has been collected from *D. valens* only in China). Finally, in their review dedicated to *D. valens* in China, Sun *et al.* (2014) also stressed that the increasing emergence of new aggressive beetle/fungal associations (e.g. *Xyleborus glabratus*/Laurel wilt - *Platypus quercivorus*/*Raffaelea quercivora* - *Pityophthorus juglandis*/Thousands cankers disease) raises serious phytosanitary concerns.

The current distribution of *D. valens* is as follows:

EPPO region: absent.

Asia: China (Beijing, Hebei, Henan, Neimenggu, Shaanxi, Shanxi).

North America: Canada (Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Northwest Territories, Nova Scotia, Ontario, Québec), Mexico, USA (Arizona, California, Colorado, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming).

Central America: Guatemala, Honduras.

EPPO note: several American *Dendroctonus* species attacking conifer trees are already included on the EPPO A1 List (i.e. *D. adjunctus*, *D. brevicornis*, *D. frontalis*, *D. ponderosae*, *D. rufipennis*), but *D. valens* has never been specifically listed.

- Source:** Gao B, Wen X, Guan H, Knizek M, Zdarek J (2005) Distribution and attack behaviour of the red turpentine beetle, *Dendroctonus valens*, recently introduced to China. *Journal of Forest Science* 51(4), 155-160 (abst.).
- INTERNET
- Bark and Ambrosia beetles of the US & Canada. *Dendroctonus valens*. http://www.barkbeetles.info/us_canada_chklist_target_species.php?lookUp=491
- Liu ZD, Xu BB, Sun JG (2014) Instar numbers, development, flight period, and fecundity of *Dendroctonus valens* (Coleoptera: Curculionidae: Scolytinae) in China. *Annals of the Entomological Society of America* 107(1), 152-157.
- Sun JH, Lu M, Gillette NE, Wingfield MJ (2013) Red turpentine beetle: innocuous native becomes invasive tree killer in China. *Annual Review of Entomology* 58, 293-311.
- Taerum SJ, Duong TA, de Beer ZW, Gillette N, Sun JH, Owen DR, Wingfield MJ (2013) Large shift in symbiont assemblage in the invasive red turpentine beetle. *PLoS ONE* 8(10), e78126. doi:10.1371/journal.pone.0078126

Additional key words: geographical distribution

Computer codes: DENCVA, CN

2014/086 Laurel wilt (*Raffaelea lauricola*) and its vector (*Xyleborus glabratus*): addition to the EPPO Alert List

Why: in the Southeastern part of the USA, widespread mortality of redbay (*Persea borbonia*) has been observed since 2003. The disease has been called ‘laurel wilt’. The cause of this tree mortality has been identified as *Raffaelea lauricola*, a fungus which serves as a food source for the redbay ambrosia beetle, *Xyleborus glabratus* (Coleoptera: Scolytidae). Both the pathogen and the insect vector originate from Asia and have shown invasive behaviour in the USA. In addition to *P. borbonia*, *R. lauricola* has been detected in avocado trees (*P. americana*) in Florida also causing a vascular wilt disease. As in the USA, both *R. lauricola* and its insect vector are perceived as a serious threat to the avocado fruit production, the EPPO Secretariat decided to add them to the EPPO Alert List.

Where: *X. glabratus* is native to Asia (India, Myanmar, Japan and Taiwan) where it infests aromatic tree species (mainly from the Lauraceae family). Studies of an insect collection in Beijing have shown that *X. glabratus* also occurs in China. *R. lauricola* has been isolated from *X. glabratus* beetles collected from Kyushu Island (Japan) and Taiwan. However, differences in the mycangial mycoflora of *X. glabratus* in Taiwan, Japan and USA, suggest that the *X. glabratus* population established in the USA probably originates from another part of Asia. In the USA, *X. glabratus* was first caught in May 2002 in a trap located at Port Wentworth (near Savannah, Georgia). Soon after, widespread mortality of redbay (*P. borbonia*) was observed in the coastal plains of Georgia and other US states. In 2007, *R. lauricola* was detected for the first time in an avocado tree in Jacksonville, Florida. As of July 2013, *R. lauricola* has been detected in 90 avocado trees in various commercial groves of Florida, and more than 1 900 symptomatic trees have been removed as part of a suppression and sanitation strategy. Interestingly, only 6 *X. glabratus* beetles could be caught in these avocado groves.

- ***R. lauricola***
 EPPO region: absent.
 Asia: Japan, Taiwan.
 North America: USA (Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina).
- ***X. glabratus***
 EPPO region: absent.
 Asia: Bangladesh, China (Fujian, Hunan, Sichuan), India (Assam, West Bengal), Japan (Kyushu), Myanmar, Taiwan.
 North America: USA (Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina).

On which plants: laurel wilt has been observed in Lauraceae (in Asia, the fungus has been detected only in the vector for the moment). *R. lauricola* infects *P. borbonia* (redbay), *P. palustris* (swampbay), *Sassafras albidum* and *P. americana* (avocado). In USA, *P. borbonia* and *P. palustris* are common, shade tolerant, broadleaved evergreen trees of various forested habitats and residential areas of the Southeastern Atlantic coastal plain region. *R. lauricola* has also been isolated from *Lindera melissifolia*, *Litsea aestivalis* and *Lacaria trianda* which are considered as endangered species but the impact of laurel wilt on these trees remains uncertain.

In its native range, *X. glabratus* is often associated with Lauraceae (e.g. *Cinnamomum camphora*, *C. osmophloeum*, *Lindera latifolia*, *Litsea elongata*, *Machilus nanmu*, *Phoebe lanceolata*, *Phoebe neurantha*, *Phoebe zhenan*). However, it is also found on trees belonging to other plant families such as: *Leucaena glauca* and *Lithocarpus edulis* (Fagaceae), *Schima superba* (Theaceae), *Shorea robusta* (Dipterocarpaceae). In the USA,

X. glabratus has been found attacking *P. americana* (avocado), *P. borbonia* (redbay), *P. palustris* (swampbay) and *Sassafras albidum*.

Damage: symptoms of laurel wilt are typical of those that are caused by other vascular wilt pathogens: vascular black discoloration, rapid wilting, necrosis of foliage and defoliation. It has been shown that xylem function and hydraulic conductivity were significantly impaired by *R. lauricola* infection. Glasshouse and field experiments conducted on several avocado cultivars have also shown that a single inoculation resulted in most cases, in extensive colonization and symptom expression. It is not known how many individuals of *X. glabratus* are needed to result in lethal infection, but observations suggest that one or only a few beetles are required. Laurel wilt has caused widespread mortality of *P. borbonia* and *P. palustris* in the USA, killing nearly all trees within 3-5 years after *X. glabratus* becomes established and detected. In some areas, up to 90% tree mortality has been noticed. In some areas in Georgia, the composition of forest communities was altered by *R. lauricola*, as after the destruction of *P. borbonia*, other tree species (e.g. *Magnolia virginiana* and *Gordonia lasianthus*) became dominant.

X. glabratus makes pinhole-sized entrance holes in the bark that either bleed or produce light-coloured boring dust. It bores characteristic galleries in the wood of infested trees. *X. glabratus* can produce frass tubes that resemble 'tooth picks' extending out from the bark. However, it is more common to see piles of sawdust around the base of the tree than the tubes themselves. Adults are small beetles, 2-3 mm long, slender, and brown-black in colour. Larvae are white coloured, c-shaped, legless with an amber-coloured head capsule. Little information is available about the life cycle of *X. glabratus*. Generation time is uncertain but observations indicated that brood development can occur in 50-60 days in Southeastern USA. Ambrosia beetles are usually found on dead or weakened trees, but *X. glabratus* is able to attack healthy trees. It is considered that young trees with a diameter less than 2.5 cm cannot sustain populations of *X. glabratus*.

Dissemination: *R. lauricola* moves primarily via its vector, *X. glabratus*. Fungal spores are carried in the insect mycangia (specialized structures found at the base of each mandible) and are dispersed in the xylem as the adult female constructs her galleries and lay eggs. Adults and larvae feed on the conidia produced by the fungus. In the USA, it is suspected that *X. glabratus* (carrying *R. lauricola*) was introduced with wood packing material from Asia. Once introduced, the movement of infested firewood is considered to be an important means of dissemination within the USA. The survival of *X. glabratus* and *R. lauricola* in wood chips made from infested *P. borbonia* trees has been studied. Chipping can significantly reduce the number of *X. glabratus* and limit the persistence of *R. lauricola* but does not completely eliminate them.

Pathway: Plants for planting, wood and bark, wood chips, wood packaging material of host trees from countries where *R. lauricola* and *X. glabratus* occur. According to preliminary studies, avocado fruit is not a pathway.

Possible risks: Avocado is not widely grown in the EPPO region but is of economic importance at least in Israel and Spain. Laurel forests (including Lauraceae genera such as *Apollonias*, *Ocotea*, *Persea*) are found in the Azores, Madeira (PT) and Islas Canarias (ES). Although their susceptibility to *R. lauricola* and *X. glabratus* is not known, they are of high patrimonial value. The insect vector, *X. glabratus* has cryptic habits and is therefore difficult to detect. In the USA, laurel wilt is perceived as a serious threat to the avocado production. In Florida, expected losses in the absence of control measures were estimated at 27 to 54 million USD. In infected avocado groves, control strategies rely on the following methods: destruction of infected trees, control of *X. glabratus* (insecticides, attractants

(e.g. manuka and phoebe oil lures) or repellents), and severing of root grafts. For the moment, it seems that no tolerant or resistant avocado cultivars are available.

Finally, recent studies have shown that the transfer of *R. lauricola* from diseased trees to insects other than *X. glabratus* was possible (e.g. *Xyleborus affinis*, *Xyleborus ferrugineus*, *Xyleborus volvulus*, *Xyleborinus gracilis*, *Xyleborinus saxeseni*, *Xylosandrus crassiusculus*), and that transmission to healthy trees was in some cases obtained. Although more studies are needed to confirm these preliminary results, this indicates that ‘new’ vectors might play a role in the disease epidemiology. Considering the significant mortality observed in the USA on several Lauraceae species and the general lack of effective control measures, it is desirable to avoid the introduction of *R. lauricola* and its vector, *X. glabratus* in the EPPO region.

Sources

- Brar GS, Capinera JL, Kendra PE, McLean S, Peña JE (2013) Life cycle, development, and culture of *Xyleborus glabratus* (Coleoptera: Curculionidae: Scolytinae). *Florida Entomologist* **96**(3), 1158-1167.
- Carrillo D, Crane JH, Peña JE (2013) Potential of contact insecticides to control *Xyleborus glabratus* (Coleoptera: Curculionidae), a vector of laurel wilt disease in avocados. *Journal of Economic Entomology* **106**(6), 2286-2295.
- Fraedrich SW, Harrington TC, Bates CA, Johnson J, Reid LS, Best GS, Leininger TD, Hawkins TS (2011) Susceptibility to laurel wilt and disease incidence in two rare plant species, pondberry and pondspice. *Plant Disease* **95**(9), 1056-1062.
- Fraedrich SW, Harrington TC, Rabaglia RJ, Ulyshen MD, Mayfield AE III, Hanula JL, Eickwort JM, Miller DR (2008) A fungal symbiont of the redbay ambrosia beetle causes a lethal wilt in redbay and other Lauraceae in the Southeastern United States. *Plant Disease* **92**, 215-224.
- INTERNET
- Florida Department of Agriculture and Consumer Services, Division of Plant Industry. The redbay Ambrosia beetle, *Xyleborus glabratus* Eichhoff (Scolytinae: Curculionidae) by AE Mayfield III and MC Thomas (dated 2009) <http://freshfromflorida.s3.amazonaws.com/xyleborus-glabratus.pdf>
 - University of Florida. IFAS Extension. Redbay ambrosia beetle-laurel wilt pathogen: a potential major problem for the Florida avocado industry by JH Crane, J Peña and JL Osborne (July 2013) <http://edis.ifas.ufl.edu/pdf/HS/HS37900.pdf>
 - USDA-Forest Service
- EXFOR Datasheet on *Xyleborus glabratus*.
<http://spfnic.fs.fed.us/exfor/data/pestreports.cfm?pestidval=148&langdisplay=english>
 Forest Health Protection, Southern Region. Laurel wilt. Distribution map.
http://www.fs.fed.us/r8/foresthealth/laurelwilt/dist_map.shtml
- Harrington TC, Fraedrich SW, Aghayeva DN (2008) *Raffaelea lauricola*, a new ambrosia beetle symbiont and pathogen on the Lauraceae. *Mycotaxon* **104**, 399-404.
- Harrington TC, Yun HY, Lu SS, Goto H, Aghayeva DN, Fraedrich SW (2011) Isolations from the redbay ambrosia beetle, *Xyleborus glabratus*, confirm that the laurel wilt pathogen, *Raffaelea lauricola*, originated in Asia. *Mycologia* **103**, 1028-1036.
- Hughes MA, Brar G, Ploetz RC, Smith JA (2013) Field and growth chamber inoculations demonstrate *Persea indica* as a newly recognized host for the laurel wilt pathogen, *Raffaelea lauricola*. *Plant Health Progress* <http://sfrc.ufl.edu/forestpathology/wp-content/uploads/2013/12/Hughes-et-al-2013.pdf>.
- Hughes MA, Shin K, Eickwort J, Smith JA (2012) First report of laurel wilt disease caused by *Raffaelea lauricola* on silk bay in Florida. *Plant Disease* **96**(6), p 910-911.
- Hulcr J, Lou QZ (2013) The redbay ambrosia beetle (Coleoptera: Curculionidae) prefers Lauraceae in its native range: records from the Chinese National Insect Collection. *Florida Entomologist* **96**(4), 1595-1596.
- Inch SA, Ploetz RC (2012) Impact of laurel wilt, caused by *Raffaelea lauricola*, on xylem function in avocado, *Persea americana*. *Forest Pathology* **42** doi:10.1111/j.1439-0329.2011.00749.x
- Kendra PE, Niogret J, Montgomery WS, Sanchez JS, Deyrup MA, Pruett GE, Ploetz RC, Epsky ND, Heath RR (2012) Temporal analysis of sesquiterpen emissions from manuka and phoebe oil lures and efficacy for attraction of *Xyleborus glabratus* (Coleoptera: Curculionidae: Scolytinae). *Journal of Economic Entomology* **105**(2), 659-669.
- Mayfield AE III, Brownie C (2013) The redbay ambrosia beetle (Coleoptera: Curculionidae: Scolytinae) uses stem silhouette diameter as a visual host-finding cue. *Environmental Entomology* **42**(4), 743-750.
- Mayfield AE III, Hanula JL (2012) Effect of tree species and end seal on attractiveness and utility of cut bolts to the redbay ambrosia beetle and granulate ambrosia beetle (Coleoptera: Curculionidae: Scolytinae). *Journal of Economic Entomology* **105**(2), 461-470.
- Ploetz RC, Inch SA, Pérez Martínez JM, White Jr TL (2012) Systemic infection of avocado, *Persea americana*, by *Raffaelea lauricola*, does not progress into fruit pulp or seed. *Journal of Phytopathology* **160**(9), 491-495.

- Ploetz RC, Konkol J (2013) First report of gulf licaria, *Licaria trianda*, as a suspect of Laurel wilt. *Plant Disease* **97**(9), 1248-1249.
- Ploetz RC, Pérez Martínez JM, Smith JA, Hughes M, Dreaden TJ, Inch SA, Fu Y (2012) Responses of avocado to laurel wilt, caused by *Raffaelea lauricola*. *Plant Pathology* **61**(4), 801-808.
- Riggins JJ, Fraedrich SW, Harrington TC (2011) First report of laurel wilt caused by *Raffaelea lauricola* on sassafras in Mississippi. *Plant Disease* **95**(11), p 1479.
- Spence DJ, Smith JA, Ploetz R, Hulcr J, Stelinski LL (2013) Effect of chipping on emergence of the redbay ambrosia beetle (Coleoptera: Curculionidae: Scolytinae) and recovery of the laurel wilt pathogen from infested wood chips. *Journal of Economic Entomology* **106**(5), 2093-2100.
- Spiegel KS, Legee LM (2013) Impacts of laurel wilt disease on redbay (*Persea borbonia* (L.) Spreng.) population structure and forest communities in the coastal plain of Georgia, USA. *Biological Invasions* **15**(11), 2467-2487.
- Stocks S (2011) Laurel wilt detected in Miami-Dade country. *NPDN First Detector Network News* **6**(3), 3-4.

EPPO RS 2014/086
Panel review date -

Entry date 2014-05

2014/087 First report of *Scyphophorus acupunctatus* in Cyprus

The NPPO of Cyprus recently informed the EPPO Secretariat of the first record of *Scyphophorus acupunctatus* (Coleoptera: Curculionidae - formerly EPPO Alert List) on its territory. *S. acupunctatus* originates from the Americas, but it has been introduced to many other parts of the world (mainly arid and tropical regions), probably with the introduction of *Agave sisalana* for the production of sisal. It can attack many species of *Agave*, *Beaucarnea*, *Dasyllirion* and *Dracaena*. In Cyprus, *S. acupunctatus* was captured in 2013 and 2014 across the island in *Rhynchophorus ferrugineus* pheromone traps when these were placed on the ground. The identity of the pest was confirmed by the Entomology Laboratory of the Agricultural Research Institute of Cyprus. For the moment, *S. acupunctatus* has only been caught in traps but has not been observed on plants, although *Agave americana* can be found as a wild plant at altitudes ranging from 0 to 300 m. The most likely pathway of introduction into Cyprus is probably the import of infested host plants. No phytosanitary measures were taken against *S. acupunctatus*.

The pest status of *Scyphophorus acupunctatus* in Cyprus is officially declared as: **Widespread**.

Source: NPPO of Cyprus (2014-02).

Additional key words: new record

Computer codes: SCYPIN, CY

2014/088 Incursion of *Potato spindle tuber viroid* in potato breeding material in the Netherlands

The NPPO of the Netherlands recently informed the EPPO Secretariat of a finding of *Potato spindle tuber viroid* (*Pospiviroid*, PSTVd - EPPO A2 List) in breeding material of potato (*Solanum tuberosum*) at an *in vitro* propagation company. In March 2014, the presence of PSTVd was confirmed in *in vitro* plantlets of one potato accession line. This breeding company was subjected to systematic official controls which are part of the official surveillance system of the Netherlands for safeguarding the entire potato production chain against PSTVd. The possible origin of this finding remains unclear and thus far, no direct links have been identified with any commercially available potato cultivar. It is the first time since more than 30 years that PSTVd has been detected in potato in the Netherlands. During the 1970s and 1980s, several accession lines had been found positive in potato collections throughout the world (see EPPO RS no.381 of 1974). Following these findings,

measures were taken and successfully eradicated PSTVd. Since the beginning of the 1980s, an official annual PSTVd testing scheme has been put into place for all candidate potato material in the Netherlands (as well as all pre-basic nuclear stock over a 3 year-period). For this purpose, more than 3 000 tests are performed every year. In addition, each parent plant of *in vitro* propagated potato material is tested for PSTVd. In order to prevent any further spread, phytosanitary measures have been applied to all potato breeding material at the company concerned.

The pest status of *Potato spindle tuber viroid* (on potato) in the Netherlands is officially declared as: **Incidental finding in potato (*Solanum tuberosum*) at a breeding company. Under eradication.**

Source: NPPO of the Netherlands (2014-03).

Additional key words: incursion

Computer codes: PSTVD0, NL

2014/089 First report of ‘*Candidatus Phytoplasma ulmi*’ in the United Kingdom

The NPPO of the United Kingdom recently informed the EPPO Secretariat of the first record of ‘*Candidatus Phytoplasma ulmi*’ (EPPO A1 List, initially listed as ‘Elm phloem necrosis’*) on its territory. *Ulmus* hybrid plants (*Ulmus chenmoui* x [(*Ulmus glabra* x *Ulmus minor*) x *Ulmus minor*] clone Morfeo) showing unusual symptoms (dwarf shoots) were noticed by the grower. Samples were taken and ‘*Ca. Phytoplasma ulmi*’ was detected and identified by sequencing in January 2014. These infected plants were derived from 10 mother plants which had been imported from Italy in 2010/2011. Investigations showed that more than 500 trees had been propagated from the original 10 mother plants, and these potentially infected plants are now being traced and destroyed. As of February 2014, 4 locations having received these plants have been identified in the Central and Southern parts of the UK.

The pest status of ‘*Candidatus Phytoplasma ulmi*’ in the United Kingdom is officially declared as: **Transient, actionable, under eradication.**

* **Note:** Although phytoplasma diseases observed in elms in North America (elm phloem necrosis) and in several European countries (elm yellows) have different symptomatologies, the phytoplasmas associated with them are very closely related if not belonging to the same species ‘*Ca. Phytoplasma ulmi*’. Therefore the inclusion of this pathogen on the A1 List (absent from the EPPO region) might need to be reconsidered (see also EPPO RS 2009/217).

Source: NPPO of the United Kingdom (2014-02).

Additional key words: new record

Computer codes: PHYFUL, GB

2014/090 PPV-CR: a new strain of *Plum pox virus* described from sour cherry in Russia

Until 2012, seven strains of *Plum pox virus* (*Potyvirus* - EPPO A2 list) were known:

- PPV-D (Dideron)
- PPV-M (Marcus)
- PPV-C (Cherry)
- PPV-W (Winona)
- PPV-EA (El Amar)
- PPV-Rec (recombinant between PPV-D and PPV-M)
- PPV-T (Turkey)

Recent studies have showed that PPV isolates naturally infecting sour cherry trees (*Prunus cerasus*) in the Samara and Saratov oblasts of the Volga Basin in Russia corresponded to a new type of strain which was called PPV-CR (PPV Cherry Russia). Affected sour cherry trees showed mid-rib yellowing on the lower leaves; chlorotic or light-green patterns as well as ring spots on leaves in the middle part of the tree; and slight spotting and leaf deformation on top leaves. This new strain is not limited to the Volga basin, as later studies detected 9 isolates of PPV-CR in the Greater Moscow area.

Source: Glasa M, Prikhodko Y, Predajňa L, Nagyová A, Shneyder Y, Zhivaeva T, Šubr Z, Cambra M, Candresse T (2013) Characterization of sour cherry isolates of *Plum pox virus* from the Volga Basin in Russia reveals a new cherry strain of the virus. *Phytopathology* 103(9), 972-979.
 Prikhodko YN, Zhivaeva T, Shneyder YA, Morozova ON, Mazurin ES (2013) A new plum pox virus (PPV) strain - Cherry Russian (PPV(CR)). *Plant Health Research and Practice* 2(4), 26-33.

Additional key words: detailed record

Computer codes: PPV000, RU

2014/091 EPPO report on notifications of non-compliance

The EPPO Secretariat has gathered below the notifications of non-compliance for 2014 received since the previous report (EPPO RS 2014/054). Notifications have been sent via Europhyt for the EU countries and Switzerland. The EPPO Secretariat has selected notifications of non-compliance made because of the detection of pests. Other notifications of non-compliance due to prohibited commodities, missing or invalid certificates are not indicated. It must be pointed out that the report is only partial, as many EPPO countries have not yet sent their notifications. When a consignment has been re-exported and the country of origin is unknown, the re-exporting country is indicated in brackets. When the occurrence of a pest in a given country is not known to the EPPO Secretariat, this is indicated by an asterisk (*).

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
<i>Acalolepta</i>	<i>Taxus cuspidata</i>	Plants for planting	Japan	Germany	1
Agromyzidae	<i>Apium graveolens</i>	Vegetables	Cambodia	Switzerland	2
	<i>Apium graveolens</i>	Vegetables	Vietnam	Switzerland	1
<i>Aleurocanthus woglumi</i>	<i>Citrus, Musaceae</i>	Plants for planting	Ghana	Bulgaria	1
<i>Anthonomus eugenii</i>	<i>Capsicum</i>	Vegetables	Dominican Rep.	France	1
	<i>Capsicum</i>	Vegetables	Dominican Rep.	Germany	4
	<i>Capsicum frutescens</i>	Vegetables	Dominican Rep.	Germany	2
	<i>Capsicum frutescens</i>	Vegetables	Dominican Rep.	Netherlands	1

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Aphididae	<i>Vaccinium</i>	Plants for planting	Morocco	Spain	2
	<i>Vaccinium corymbosum</i>	Plants for planting	Morocco	Spain	2
<i>Bemisia tabaci</i>	<i>Acorus</i> and other spp. ¹	Plants for planting	Morocco	Spain	1
	<i>Alternanthera sessilis</i>	Vegetables (leaves)	Sri Lanka	United Kingdom	2
	<i>Amaranthus</i>	Vegetables (leaves)	Bangladesh	United Kingdom	1
	<i>Amaranthus tricolor</i>	Vegetables (leaves)	Bangladesh	United Kingdom	1
	<i>Anubias</i>	Aquatic plants	Thailand	United Kingdom	1
	<i>Cestrum</i>	Cut flowers	Israel	Netherlands	1
	<i>Colocasia esculenta</i>	Vegetables	Ghana	United Kingdom	1
	<i>Corchorus</i>	Vegetables (leaves)	Ghana	United Kingdom	4
	<i>Corchorus</i>	Vegetables (leaves)	Jordan	United Kingdom	2
	<i>Corchorus olitorius</i>	Vegetables (leaves)	Bangladesh	United Kingdom	2
	<i>Corchorus olitorius</i>	Vegetables (leaves)	Ghana	United Kingdom	1
	<i>Corchorus olitorius</i>	Vegetables (leaves)	India	United Kingdom	3
	<i>Corchorus olitorius</i>	Vegetables (leaves)	Nigeria	United Kingdom	4
	<i>Corchorus olitorius</i>	Vegetables (leaves)	Sierra Leone	United Kingdom	2
	<i>Cryptocoryne</i>	Plants for planting	Malaysia	United Kingdom	1
	<i>Dipladenia</i>	Plants for planting	Spain	United Kingdom	1
	<i>Elsholtzia, Ocimum, Polygonum</i>	Vegetables (leaves)	Cambodia	Netherlands	1
	<i>Eryngium foetidum</i>	Cut flowers	Cambodia	Ireland	2
	<i>Eryngium foetidum</i>	Vegetables (leaves)	Cambodia	Sweden	4
	<i>Eryngium foetidum</i>	Vegetables (leaves)	Thailand	Sweden	1
	<i>Eryngium foetidum, Ocimum</i>	Vegetables (leaves)	Cambodia	Sweden	2
	<i>Eryngium foetidum, Ocimum tenuiflorum</i>	Vegetables (leaves)	Cambodia	Sweden	1
	<i>Eustoma grandiflorum</i>	Cut flowers	Israel	Switzerland	1
	<i>Hibiscus</i>	Cuttings	Vietnam	Netherlands	1
	<i>Houttuynia cordata</i>	Vegetables (leaves)	Cambodia	United Kingdom	2
	<i>Hygrophila polysperma</i>	Aquatic plants	Sri Lanka	United Kingdom	1
	<i>Ipomoea batatas</i>	Vegetables	Ghana	United Kingdom	7
	<i>Ipomoea batatas</i>	Vegetables	Nigeria	United Kingdom	1
	<i>Lisianthus</i>	Cut flowers	Israel	Switzerland	1
	<i>Lisianthus</i>	Cut flowers	Netherlands	United Kingdom	1
	<i>Manihot</i>	Vegetables	Ghana	United Kingdom	1
	<i>Mentha</i>	Vegetables (leaves)	Vietnam	Switzerland	1
	<i>Mentha piperita</i>	Vegetables (leaves)	Nigeria	United Kingdom	1
	<i>Nerium oleander</i>	Plants for planting	Netherlands	United Kingdom	1
	<i>Nerium oleander</i>	Plants for planting	Spain	United Kingdom	1
	<i>Ocimum</i>	Vegetables (leaves)	Cambodia	Sweden	2
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Cambodia	Netherlands	1
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Cambodia	Sweden	1
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Cambodia	United Kingdom	1
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Israel	Belgium	1
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Israel	Spain	2
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Israel	Switzerland	1
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Kenya	United Kingdom	1
<i>Ocimum basilicum</i>	Vegetables (leaves)	Malaysia	United Kingdom	1	
<i>Ocimum gratissimum</i>	Vegetables (leaves)	Bangladesh	United Kingdom	1	
<i>Ocimum gratissimum</i>	Vegetables (leaves)	Ghana	United Kingdom	1	
<i>Ocimum sanctum</i>	Vegetables (leaves)	Cambodia	Sweden	4	
<i>Ocimum tenuiflorum</i>	Vegetables (leaves)	Cambodia	Sweden	3	
<i>Ornithogalum</i>	Plants for planting	Israel	France	1	
<i>Paederia</i>	Vegetables	Cambodia	United Kingdom	1	
<i>Paederia chinensis</i>	Vegetables	Cambodia	United Kingdom	1	

¹ *Alternanthera sessilis*, *Bacopa monnieri*, *Ceratophyllum demersum*, *Echinodorus cordifolius*, *Echinodorus subulatus*, *Heteranthera zosterifolia*, *Hygrophila corymbosa*, *Hygrophila polysperma*, *Lagarosiphon cordophanus*, *Lilaeopsis*, *Limnophila sessiliflora*, *Ludwigia palustris*, *Lysimachia nummularia*, *Ophiopogon japonicus*, *Sagittaria subulata*, *Vallisneria gigantea*, *Vallisneria spiralis*.

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
B. tabaci (cont.)	<i>Polygonum</i>	Vegetables	Cambodia	United Kingdom	1
	<i>Rosmarinus officinalis</i>	Cuttings	Ethiopia	Netherlands	1
	<i>Rotala</i>	Aquatic plants	Sri Lanka	United Kingdom	1
	<i>Solanum melongena</i>	Vegetables	Mexico	United Kingdom	2
	<i>Vernonia</i>	Vegetables (leaves)	Ghana	United Kingdom	2
	<i>Vernonia amygdalina</i>	Vegetables (leaves)	Ghana	United Kingdom	1
	<i>Vernonia amygdalina</i>	Vegetables (leaves)	Nigeria	United Kingdom	1
Bemisia tabaci, Thrips palmi	<i>Ocimum</i>	Vegetables (leaves)	Cambodia	Belgium	1
Blissus diplopterus	<i>Prunus persica</i> var. <i>nucipersica</i>	Fruits	South Africa	United Kingdom	2
	<i>Pyrus</i>	Fruits	South Africa	United Kingdom	3
Bruchidae	<i>Caesalpinia</i>	Leaves	Dominican Rep.	Italy	1
Clavibacter michiganensis subsp. michiganensis	<i>Solanum lycopersicum</i>	Seeds	China	Germany	1
Colletotrichum, Parlatoria	Ornamentals	Plants for planting	China	Bulgaria	1
Deanolis sublimbalis	<i>Mangifera indica</i>	Fruits	Bangladesh	Italy	1
Diaphania	<i>Cucurbita maxima</i>	Vegetables	Panama	Spain	3
	<i>Momordica</i>	Vegetables	Cambodia	United Kingdom	2
	<i>Momordica</i>	Vegetables	Kenya	United Kingdom	1
Globodera pallida	<i>Solanum tuberosum</i>	Ware potatoes	Cyprus	Croatia	5
	<i>Solanum tuberosum</i>	Ware potatoes	Italy	Croatia	1
Globodera pallida, Globodera rostochiensis	<i>Solanum tuberosum</i>	Ware potatoes	Cyprus	Croatia	1
Guignardia citricarpa	<i>Citrus macroptera</i>	Fruits	Bangladesh	United Kingdom	1
	<i>Citrus sinensis</i>	Fruits	Ghana	United Kingdom	1
Helicoverpa armigera, Spodoptera litura	<i>Ocimum basilicum</i>	Vegetables (leaves)	Cambodia	Sweden	1
Hirschmanniella caudacrena	<i>Vallisneria</i>	Plants for planting	Indonesia	Romania	1
Lepidoptera	<i>Psidium guajava</i>	Fruits	Pakistan	Italy	1
	<i>Solanum</i>	Vegetables	Sri Lanka	Italy	2
Leucinodes orbonalis	<i>Solanum melongena</i>	Vegetables	Sri Lanka	Italy	1
	<i>Solanum melongena</i>	Vegetables	Uganda	Belgium	1
Liriomyza	<i>Allium fistulosum</i>	Vegetables	Jamaica	United Kingdom	1
	<i>Amaranthus</i>	Vegetables (leaves)	Sri Lanka	United Kingdom	1
	<i>Chrysanthemum</i>	Cut flowers	Colombia	United Kingdom	3
	<i>Coriandrum sativum</i>	Vegetables (leaves)	Cambodia	United Kingdom	3
	<i>Eryngium</i>	Cut flowers	Ecuador	United Kingdom	1
	<i>Gypsophila</i>	Cut flowers	Ethiopia	Italy	2
	<i>Gypsophila</i>	Cut flowers	Ethiopia	Netherlands	3
	<i>Ocimum basilicum</i>	Vegetables (leaves)	(Cambodia)	Germany	2
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Cambodia	Germany	1
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Cambodia	United Kingdom	2
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Ethiopia	United Kingdom	1
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Israel	Ireland	1
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Israel	United Kingdom	1
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Jordan	United Kingdom	2

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
<i>Liriomyza</i>	<i>Ocimum basilicum</i>	Vegetables (leaves)	Kenya	United Kingdom	1
	<i>Oenanthe javanica</i>	Vegetables (leaves)	Vietnam	United Kingdom	1
	<i>Pisum sativum</i>	Vegetables	Kenya	Ireland	2
<i>Liriomyza huidobrensis</i>	<i>Aster</i>	Cut flowers	Ecuador	Netherlands	1
	<i>Eryngium</i>	Cut flowers	Ecuador	Netherlands	1
	<i>Eryngium</i>	Cut flowers	Kenya	Netherlands	2
	<i>Gypsophila</i>	Cut flowers	Ecuador	Italy	1
	<i>Gypsophila</i>	Cut flowers	Ecuador	Netherlands	5
	<i>Gypsophila</i>	Cut flowers	Kenya	Netherlands	1
	<i>Gypsophila paniculata</i>	Cut flowers	Kenya	Netherlands	1
	<i>Solidago</i>	Cut flowers	Ecuador	Netherlands	1
	<i>Solidago</i>	Cut flowers	Kenya	Netherlands	2
	<i>Trachelium</i>	Cut flowers	Ecuador	Netherlands	1
<i>Liriomyza sativae</i>	<i>Apium graveolens</i>	Vegetables	Surinam*	Netherlands	1
	<i>Ocimum americanum</i>	Vegetables (leaves)	Cambodia*	Sweden	1
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Cambodia*	France	5
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Laos*	Switzerland	1
	<i>Ocimum sanctum</i>	Vegetables (leaves)	Cambodia*	Sweden	1
<i>Liriomyza sativae</i> , <i>Liriomyza trifolii</i>	<i>Gypsophila</i>	Cut flowers	Ecuador	Sweden	1
<i>Liriomyza trifolii</i>	<i>Gypsophila</i>	Cut flowers	Ethiopia	Netherlands	2
	<i>Ocimum basilicum</i>	Vegetables (leaves)	Cambodia*	France	1
	<i>Solidago</i>	Cut flowers	Kenya	Netherlands	1
<i>Megastigmus spermatrophus</i>	<i>Pseudotsuga menziesii</i>	Seeds	USA	Poland	1
<i>Meloidogyne enterolobii</i>	<i>Ficus lyrata</i>	Plants for planting	USA	Belgium	1
<i>Phytophthora ramorum</i>	<i>Pieris japonica</i>	Plants for planting	Netherlands	United Kingdom	1
	<i>Rhododendron</i>	Plants for planting	Finland	Estonia	1
	<i>Rhododendron</i>	Plants for planting	Germany	Estonia	4
	<i>Rhododendron</i>	Plants for planting	Germany	Slovenia	2
	<i>Rhododendron</i>	Plants for planting	Netherlands	Estonia	1
	<i>Rhododendron</i>	Plants for planting	Netherlands	Latvia	4
	<i>Rhododendron</i>	Plants for planting	Poland	Estonia	2
<i>Plasmopara halstedii</i>	<i>Helianthus annuus</i>	Seeds	Serbia	Hungary	1
<i>Plum pox virus</i>	<i>Prunus armeniaca</i>	Plants for planting	Serbia	Hungary	1
	<i>Prunus domestica</i>	Plants for planting	Serbia	Hungary	5
	<i>Prunus domestica</i>	Plants for planting	Serbia	Romania	2
	<i>Prunus persica</i>	Plants for planting	Serbia	Hungary	9
	<i>Prunus persica</i> var. <i>nucipersica</i>	Plants for planting	Serbia	Romania	1
	<i>Prunus persica</i> , <i>Prunus persica</i> var. <i>nucipersica</i>	Plants for planting	Serbia	Romania	1
	<i>Prunus pumila</i>	Plants for planting	Poland	Germany	1
<i>Potato spindle tuber viroid</i>	<i>Solanum lycopersicum</i>	Seeds	China	Slovenia	1
<i>Pseudoaonidia trilobitiformis</i> , <i>Planococcus</i> and other Coccidae	<i>Ficus</i>	Plants for planting	Thailand	Italy	1
Pseudococcidae	<i>Mangifera indica</i>	Fruits	Sri Lanka	Italy	1

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
<i>Psylliodes punctifrons</i> <i>Puccinia horiana</i>	<i>Eutrema wasabi</i>	Plants for planting	Japan	Austria	1
	<i>Chrysanthemum</i>	Cuttings	Korea, Rep. of	Netherlands	1
<i>Ralstonia solanacearum</i>	<i>Solanum tuberosum</i>	Ware potatoes	Egypt	Italy	1
<i>Spodoptera frugiperda</i>	<i>Capsicum</i>	Vegetables	Dominican Rep.	Netherlands	1
	<i>Capsicum frutescens</i>	Vegetables	Dominican Rep.	Netherlands	1
	<i>Capsicum frutescens</i>	Vegetables	Mexico	Netherlands	1
<i>Spodoptera littoralis</i>	<i>Corchorus olitorius</i>	Vegetables (leaves)	Ghana	United Kingdom	1
	<i>Eryngium</i>	Cut flowers	Zimbabwe	Netherlands	1
	<i>Pelargonium</i>	Cuttings	Tanzania	Netherlands	1
	<i>Rosa</i>	Cut flowers	Uganda	Belgium	1
	<i>Rosa</i>	Cut flowers	Uganda	Netherlands	3
	<i>Rosa</i>	Cut flowers	Zambia	Netherlands	1
	<i>Rosa</i>	Cut flowers	Zimbabwe	Netherlands	2
<i>Solidago</i>	Cut flowers	Kenya	Netherlands	2	
<i>Spodoptera litura</i>	<i>Corchorus olitorius</i>	Vegetables (leaves)	India	United Kingdom	1
<i>Spodoptera, Thrips</i>	<i>Amaranthus</i>	Vegetables (leaves)	India	Ireland	1
<i>Sternochetus mangiferae</i>	<i>Mangifera indica</i>	Fruits	Sri Lanka	Italy	7
<i>Tetranychus urticae</i> , Thripidae	<i>Alstroemeria, Rosa</i>	Cut flowers	Kenya	Portugal	1
<i>Thaumatotibia leucotreta</i>	<i>Capsicum</i>	Vegetables	Rwanda	Netherlands	1
	<i>Capsicum</i>	Vegetables	Uganda	Netherlands	3
	<i>Capsicum</i>	Vegetables	Zimbabwe	Netherlands	1
	<i>Capsicum annum</i>	Vegetables	Uganda	Netherlands	2
	<i>Capsicum frutescens</i>	Vegetables	Uganda	Netherlands	5
	<i>Capsicum frutescens</i>	Vegetables	Zimbabwe	Netherlands	1
<i>Thaumatotibia leucotreta</i> , Tephritidae	<i>Capsicum frutescens</i>	Vegetables	Uganda	Netherlands	1
Thripidae	<i>Abelmoschus esculentus</i>	Vegetables	India	United Kingdom	5
	<i>Amaranthus</i>	Vegetables (leaves)	Bangladesh	United Kingdom	1
	<i>Corchorus</i>	Vegetables (leaves)	India	United Kingdom	2
	<i>Luffa</i>	Vegetables	Ghana	United Kingdom	8
	<i>Luffa acutangula</i>	Vegetables	Ghana	United Kingdom	29
	<i>Momordica</i>	Vegetables	Bangladesh	United Kingdom	12
	<i>Momordica</i>	Vegetables	Cambodia	United Kingdom	2
	<i>Momordica</i>	Vegetables	Dominican Rep.	United Kingdom	1
	<i>Momordica</i>	Vegetables	Pakistan	United Kingdom	2
	<i>Momordica charantia</i>	Vegetables	Pakistan	Spain	1
	<i>Momordica cochinchinensis</i>	Vegetables	Bangladesh	United Kingdom	1
	Orchidaceae	Cut flowers	Thailand	United Kingdom	2
	<i>Paederia</i>	Vegetables	Cambodia	United Kingdom	1
	<i>Solanum melongena</i>	Vegetables	Bangladesh	United Kingdom	4
	<i>Solanum melongena</i>	Vegetables	Dominican Rep.	United Kingdom	3
	<i>Solanum melongena</i>	Vegetables	Ghana	United Kingdom	25
	<i>Solanum melongena</i>	Vegetables	Pakistan	United Kingdom	1
<i>Thrips</i>	<i>Dianthus</i>	Cut flowers	India	Spain	1
	<i>Momordica charantia</i>	Vegetables	Dominican Rep.	Germany	5
	<i>Momordica charantia</i>	Vegetables	Pakistan	Italy	1
<i>Thrips palmi</i>	<i>Chrysanthemum</i>	Cut flowers	Thailand	Netherlands	1
	<i>Dendrobium</i>	Cut flowers	Thailand	Netherlands	1
	<i>Luffa acutangula</i> ,	Vegetables	Bangladesh	Sweden	1

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
<i>T. palmi</i> (cont.)	<i>Momordica charantia</i>				
	<i>Momordica balsamina</i>	Vegetables	Dominican Rep.	Belgium	1
	<i>Momordica charantia</i>	Vegetables	Cambodia	France	2
	<i>Momordica charantia</i>	Vegetables	Dominican Rep.	Belgium	1
	<i>Momordica charantia</i>	Vegetables	Dominican Rep.	France	2
	<i>Momordica charantia</i>	Vegetables	Dominican Rep.	Germany	2
	<i>Momordica charantia</i> , <i>Solanum melongena</i>	Vegetables	Dominican Rep.	France	1
	<i>Solanum melongena</i>	Vegetables	Dominican Rep.	France	1
	<i>Solanum melongena</i>	Vegetables	Surinam	Netherlands	1
	<i>Solanum melongena</i>	Vegetables	Thailand	Netherlands	1
<i>Thrips palmi</i> (suspected)	<i>Momordica balsamina</i>	Vegetables	Dominican Rep.	Germany	6
	<i>Momordica charantia</i>	Vegetables	Dominican Rep.	Germany	3
<i>Thrips parvispinus</i>	<i>Momordica charantia</i>	Vegetables	Cambodia	France	1
<i>Thysanoptera</i>	<i>Argyranthemum</i> , <i>Lantana</i>	Cuttings	Israel	Germany	1
	<i>Momordica charantia</i>	Vegetables	Cambodia	France	3
	<i>Momordica charantia</i>	Vegetables	Dominican Rep.	France	1
	<i>Solanum melongena</i>	Vegetables	Dominican Rep.	France	3
<i>Tomato spotted wilt virus</i>	<i>Chrysanthemum morifolium</i>	Cuttings	Kenya	Netherlands	1
<i>Tribolium</i> , <i>Sitophilus</i>	<i>Ceratonia siliqua</i>	Stored products	Morocco	Spain	1
<i>Xanthomonas axonopodis</i> pv. <i>citri</i>	<i>Citrus</i>	Fruits	Malaysia	United Kingdom	1
	<i>Citrus latifolia</i>	Fruits	Bangladesh	United Kingdom	2
	<i>Citrus reticulata</i>	Fruits	Pakistan	United Kingdom	9
	<i>Citrus reticulata</i>	Stored products	Pakistan	United Kingdom	1
<i>Xanthomonas axonopodis</i> pv. <i>vesicatoria</i>	<i>Capsicum annuum</i>	Seeds	China	Germany	1
	<i>Solanum lycopersicum</i>	Seeds	China	Germany	1

• **Fruit flies**

Pest	Consignment	Country of origin	Destination	nb
<i>Anastrepha</i>	<i>Feijoa sellowiana</i>	Colombia	United Kingdom	1
	<i>Malus domestica</i>	Brazil	Netherlands	1
	<i>Mangifera indica</i>	Dominican Rep.	United Kingdom	1
	<i>Mangifera indica</i>	Jamaica	United Kingdom	5
	<i>Mangifera indica</i>	Mexico	United Kingdom	1
	<i>Mangifera indica</i>	Peru	France	2
	<i>Mangifera indica</i>	Peru	Netherlands	1
	<i>Anastrepha fraterculus</i>	<i>Mangifera indica</i>	Peru	France
<i>Bactrocera</i>	<i>Luffa acutangula</i>	Bangladesh	Sweden	1
	<i>Luffa acutangula</i>	Ghana	United Kingdom	2
	<i>Mangifera indica</i>	India	United Kingdom	1
	<i>Mangifera indica</i>	Sri Lanka	United Kingdom	1
	<i>Momordica</i>	India	United Kingdom	1
	<i>Momordica</i>	Kenya	United Kingdom	1
	<i>Momordica charantia</i>	Sri Lanka	Switzerland	1
	<i>Psidium guajava</i>	Bangladesh	Sweden	1
	<i>Psidium guajava</i>	Cambodia	Sweden	1
	<i>Psidium guajava</i>	Pakistan	United Kingdom	1
	<i>Syzygium</i>	Sri Lanka	United Kingdom	1
	<i>Trichosanthes</i>	Sri Lanka	United Kingdom	1

Pest	Consignment	Country of origin	Destination	nb
<i>Bactrocera</i>	<i>Trichosanthes cucumerina</i>	Bangladesh	United Kingdom	1
	<i>Trichosanthes cucumerina</i>	Sri Lanka	United Kingdom	3
<i>Bactrocera correcta</i>	<i>Syzygium samarangense</i>	Vietnam	Switzerland	1
<i>Bactrocera cucurbitae</i>	<i>Momordica</i>	Bangladesh	Sweden	1
	<i>Momordica charantia</i>	Bangladesh	Sweden	1
	<i>Momordica charantia</i>	Sri Lanka	France	1
<i>Bactrocera dorsalis</i>	<i>Mangifera indica</i>	India	France	1
	<i>Mangifera indica</i>	Sri Lanka	France	1
	<i>Mangifera indica</i>	Sri Lanka	Switzerland	1
	<i>Psidium guajava</i>	Côte d'Ivoire*	France	1
	<i>Syzygium samarangense</i>	Vietnam	Switzerland	1
<i>Bactrocera latifrons</i>	<i>Capsicum annum</i>	Laos	France	1
	<i>Solanum melongena</i>	Thailand	Netherlands	1
<i>Bactrocera zonata</i>	<i>Annona squamosa</i>	Mauritius	France	1
	<i>Psidium guajava</i>	Pakistan	Sweden	2
Tephritidae (non-European)	<i>Annona</i>	Mauritius	United Kingdom	1
	<i>Annona muricata</i>	Sri Lanka	Switzerland	1
	<i>Annona muricata</i>	Vietnam	Netherlands	1
	<i>Annona muricata</i> ,	Cameroon	Belgium	1
	<i>Mangifera indica</i>			
	<i>Annona squamosa</i>	Mauritius	France	1
	<i>Averrhoa carambola</i>	Malaysia	Netherlands	2
	<i>Capsicum annum</i>	Cambodia	Ireland	2
	<i>Capsicum frutescens</i>	Cambodia	Netherlands	2
	<i>Capsicum frutescens</i>	Malaysia	Netherlands	1
	<i>Chrysophyllum cainito</i>	Cambodia	United Kingdom	1
	<i>Diospyros kaki</i>	Brazil	France	1
	<i>Litchi chinensis</i>	Thailand	Netherlands	1
	<i>Luffa</i>	Ghana	United Kingdom	4
	<i>Luffa acutangula</i>	Bangladesh	Sweden	1
	<i>Luffa acutangula</i>	Ghana	United Kingdom	5
	<i>Malus domestica</i>	Brazil	Netherlands	1
	<i>Mangifera indica</i>	Cameroon	Belgium	3
	<i>Mangifera indica</i>	Costa Rica	Netherlands	1
	<i>Mangifera indica</i>	Côte d'Ivoire	Belgium	12
	<i>Mangifera indica</i>	Côte d'Ivoire	France	6
	<i>Mangifera indica</i>	Côte d'Ivoire	Netherlands	2
	<i>Mangifera indica</i>	Dominican Rep.	France	6
	<i>Mangifera indica</i>	Dominican Rep.	Netherlands	3
	<i>Mangifera indica</i>	Dominican Rep.	United Kingdom	1
	<i>Mangifera indica</i>	Ghana	United Kingdom	1
	<i>Mangifera indica</i>	India	United Kingdom	1
	<i>Mangifera indica</i>	Jamaica	United Kingdom	6
	<i>Mangifera indica</i>	Kenya	Sweden	1
	<i>Mangifera indica</i>	Kenya	United Kingdom	3
	<i>Mangifera indica</i>	Mali	France	1
	<i>Mangifera indica</i>	Mexico	United Kingdom	1
	<i>Mangifera indica</i>	Peru	France	2
<i>Mangifera indica</i>	Peru	Netherlands	4	
<i>Mangifera indica</i>	Sri Lanka	Switzerland	2	
<i>Mangifera indica</i>	Sri Lanka	United Kingdom	1	
<i>Mangifera indica</i>	Surinam	Netherlands	1	
<i>Momordica</i>	Gambia	United Kingdom	2	
<i>Momordica</i>	Kenya	United Kingdom	15	
<i>Momordica</i>	Sri Lanka	United Kingdom	1	
<i>Momordica charantia</i>	Gambia	Belgium	1	
<i>Momordica charantia</i>	Sri Lanka	France	2	

Pest	Consignment	Country of origin	Destination	nb
Tephritidae (non-European)	<i>Olea europaea</i> subsp. <i>africana</i>	Morocco	Spain	1
	<i>Psidium</i>	Sri Lanka	Italy	1
	<i>Psidium guajava</i>	India	France	1
	<i>Psidium guajava</i>	Pakistan	United Kingdom	1
	<i>Psidium guajava</i>	Sri Lanka	Switzerland	2
	<i>Syzygium</i>	Jamaica	United Kingdom	1
	<i>Syzygium</i>	Sri Lanka	United Kingdom	1
	<i>Syzygium</i>	Surinam	Netherlands	1
	<i>Syzygium</i>	Vietnam	Netherlands	1
	<i>Syzygium samarangense</i>	Cambodia	France	1
	<i>Syzygium samarangense</i>	Cambodia	Germany	1
	<i>Syzygium samarangense</i>	Cambodia	Sweden	2
	<i>Syzygium samarangense</i>	Cambodia	Switzerland	1
	<i>Syzygium samarangense</i>	Vietnam	Netherlands	1
	<i>Trichosanthes</i>	Sri Lanka	United Kingdom	1
<i>Trichosanthes cucumerina</i>	Sri Lanka	United Kingdom	3	

• **Wood**

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
<i>Anoplophora glabripennis</i>	Unspecified	Wood packing material (crate)	China	Switzerland	1
	Unspecified	Wood packing material (pallet)	China	Switzerland	1
<i>Aphelenchoides</i>	Unspecified	Wood packing material (pallet)	Russia	Lithuania	1
<i>Apriona germari</i>	Unspecified	Wood packing material	China	Netherlands	11
	Unspecified	Wood packing material (crate)	China	Netherlands	1
<i>Aromia moschata</i> ssp. <i>ambrosiaca</i> , <i>Lyctus</i>	Unspecified	Wood packing material (pallet)	China	Germany	1
Bostrichidae	Unspecified	Wood packing material	China	Belgium	1
	Unspecified	Wood packing material	China	Germany	1
Bostrichidae (suspect <i>Sinoxylon</i>)	Unspecified	Wood packing material	Indonesia	Germany	1
<i>Bursaphelenchus mucronatus</i>	Unspecified	Wood packing material (crate)	China	Germany	1
Cerambycidae	Larix	Wood and bark	Russia	Finland	1
	Unspecified	Dunnage	China	United Kingdom	1
	Unspecified	Wood packing material	China	Belgium	1
	Unspecified	Wood packing material	China	Germany	2
Cerambycidae	Unspecified	Wood packing material	China	Netherlands	2
	Unspecified	Wood packing material	China	United Kingdom	1
	Unspecified	Wood packing material	India	Germany	1
Cerambycidae (Hesperophanini)	Unspecified	Wood packing material (pallet)	China	Germany	2
	Unspecified	Wood packing material	China	Netherlands	1
Cerambycidae (Lamiinae)	Unspecified	Wood packing material	China	Netherlands	1

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Cerambycidae, Platypodidae, Scolytinae	Unspecified	Wood packing material (pallet)	China	Germany	1
Coleoptera	<i>Copaifera mildbraedii</i>	Wood and bark	Congo	Spain	1
	<i>Guarea cedrata</i>	Wood and bark	Congo	Spain	1
	Magnoliaceae	Wood and bark	Congo	Spain	1
	<i>Millettia laurentii</i> , <i>Entandrophragma cylindricum</i>	Wood and bark	Congo	Spain	1
Curculionidae	Unspecified	Wood packing material	China	Netherlands	1
<i>Endoclita</i>	Unspecified	Wood packing material	China	Netherlands	1
<i>Formica</i>	<i>Juglans regia</i>	Wood and bark	USA	Spain	1
Insecta	<i>Entandrophragma cylindricum</i>	Wood and bark	Central African Republic	Spain	1
	Unspecified	Wood packing material	(India)	Netherlands	1
	Unspecified	Wood packing material	China	Switzerland	1
	Unspecified	Wood packing material	Turkey	United Kingdom	1
<i>Lyctus</i>	Unspecified	Wood packing material	China	Belgium	2
	Unspecified	Wood packing material (pallet)	China	Germany	2
Platypodidae	<i>Entandrophragma cylindricum</i> , <i>Guarea cedrata</i>	Wood and bark	Congo	Spain	1
	Unspecified	Wood packing material (pallet)	China	Germany	1
Platypodidae, Scolytidae	<i>Entandrophragma cylindricum</i>	Wood and bark	Cameroon	Spain	1
Scolytidae, Curculionidae, Siricidae, Lepidoptera, Nematoda	Unspecified	Wood packing material (crate)	Turkey	United Kingdom	1
<i>Sinoxylon</i>	Unspecified	Object with wooden parts	India	Netherlands	1
	Unspecified	Wood packing material (pallet)	India	Germany	1
	Unspecified	Wood packing material (pallet)	India	Netherlands	1
	Unspecified	Wood packing material (pallet)	Malaysia	Germany	1
	Unspecified	Wood packing material (pallet)	Taiwan	Germany	1
<i>Sinoxylon</i> , grub holes > 3 mm	Unspecified	Wood packing material	India	Belgium	1
<i>Trichoferus cf. campestris</i> , <i>Lyctus</i>	Unspecified	Wood packing material (pallet)	China	Germany	1
<i>Xyleborus</i>	Unspecified	Wood packing material (crate)	Vietnam	Lithuania	1
• Bonsais					
Pest	Consignment	Country of origin	Destination	nb	
Cerambycidae	<i>Taxus cuspidata</i>	Japan	Germany	2	
Source:	EPPO Secretariat, 2014-05.				

2014/092 *Ailanthus altissima* occurs in Turkey

Ailanthus altissima (Simaroubaceae, EPPO List of Invasive Alien Plants) was recorded in 2013 in two apple orchards in Turkey, growing next to apple trees in the Iğdir province. The plant has initially been planted as an ornamental and forestation tree in the Iğdir province as well as in other locations in Turkey. *A. altissima* is present in many parts of Turkey.

Source: Uludag A, Pehlivan M, Dogru B (2014) A new weed in fruit orchards: tree of heaven (*Ailanthus altissima* (Mill.) Swingle). Abstract of the 4th International Symposium on Environmental Weeds and Invasive Plants, Montpellier (FR), 2014-06-19/23.

Additional key words: invasive alien plants, new record

Computer codes: AILAL, TR

2014/093 Control methods against *Acer negundo*

Acer negundo (Sapindaceae) is a tree native to North America which was introduced in Europe in the 17th century and which has been used as an ornamental tree, particularly in urban environments. *A. negundo* is widely spread in Europe. The species forms monospecific stands outcompeting riparian native trees.

In Southwestern France, several mechanical control methods were tested. Although the most efficient control methods would consist in the use of herbicides, these were not tested as most substances are not allowed in wetland areas.

The following control methods were tested: stem-base cut, 1 m height cut, girdling (removal of a strip of bark around the tree trunk), and stem cut with an application of juglone (an organic compound used as an herbicide). Tree mortality was assessed during 3 years. Girdling resulted in the highest mortality rate, varying from 32% to 100% according to the site, suggesting that with a longer application time this could be reach full success in the field.

Source: Merceron N, Lamarque LJ, Brogniez S, Ducournau Y, Buyle S, Degrave L, Roudie J, Felis O, Moreau A, Vernin P, Guengant Y, Delzon S, Porté AJ (2014) Control of *Acer negundo* L.: insights from experimental and physiological studies. Abstract of the 4th International Symposium on Environmental Weeds and Invasive Plants, Montpellier (FR), 2014-06-19/23.

Additional key words: invasive alien plants, management

Computer codes: ACRNE, FR

2014/094 Is the proportion of alien species in man-made habitats influenced by city size?

Little is known about the possible relationships between the proportion of alien plant species and the size of cities. A study was carried out in 3 types of human settlements all located in Central Europe: cities with more than 100 000 inhabitants, towns with populations between 20 000 to 50 000 inhabitants and villages with less than 5000 inhabitants. In each settlement, 3 types of habitats were chosen: paved settlement centre, residential area and abandoned area with perennial grassland and shrubs. Alien species were categorized as native, archaeophytes (species introduced before 1500) and neophytes.

This study highlighted that the total number of alien plant species in studied habitats was affected by city size. The proportion of neophytes increased with city size especially in residential areas, where human activities serve as a source of propagules of neophytes. In contrast, the proportion of archaeophytes did not depend on the population size of the city. Archaeophytes represented a well-established part of the flora of settlements and their surroundings because these species are not dependent on the repeated human introduction to urban habitats.

Source: Čeplovà N, Lososovà Z, Kalusovà V (2014) Is the proportion of alien species in man-made habitats influenced by city size? Abstract of the 4th International Symposium on Environmental Weeds and Invasive Plants, Montpellier (FR), 2014-06-19/23.

Additional key words: invasive alien plants

2014/095 Variation in seed traits and germination potential of *Solanum elaeagnifolium* in Greece

Solanum elaeagnifolium (Solanaceae, EPPO A2 List) is a widespread weed in Northern Greece which was introduced on various occasions from southwestern USA. High propagule pressure, including both the size and number of introductions, shaped its genetic structure in Greece and increased its genetic diversity. The plant can produce high numbers of seeds.

The differences between seed production, seed traits and germination potential in invasive populations in Greece and in native populations in Texas were explored. The origin had no effect on the fruit diameter and on the number of seeds per fruit. However, Greek seeds were thicker and heavier than Texan seeds. Greek seeds may then have a survival advantage over Texan seeds during seedling establishment, and a subset of seeds may be able to withstand new and possibly unfavorable conditions.

Source: Oukhouia F, Guermache F, Kashefi J, Fried G, Bon MC (2014) Variation in seed traits and germination potential of *Solanum elaeagnifolium* Cav. following its invasion in Greece. Abstract of the 4th International Symposium on Environmental Weeds and Invasive Plants, Montpellier (FR), 2014-06-19/23.

Additional key words: invasive alien plants

Computer codes: SOLEL, GR

2014/096 The response of *Parthenium hysterophorus* and of its biological control agent *Epiblema strenuana* under a changing climate

Studies were conducted to evaluate the possible consequences of climate change on *Parthenium hysterophorus* (Asteraceae, EPPO Alert List) and on the efficacy of its biological control agent *Epiblema strenuana* (Lepidoptera: Tortricidae). *P. hysterophorus* was grown under an elevated CO₂ concentration. Under such conditions, the plant produced significantly greater biomass, grew taller, produced more branches, produced 37% more seeds per plant and photosynthesized at a greater rate when compared with plants grown at an ambient CO₂ concentration. The better water use efficiency of *P. hysterophorus* under an elevated CO₂ concentration suggests that the plant has a greater ability to withstand prolonged periods of drought in the future.

E. strenuana has been used successfully as a biological control agent against *P. hysterophorus* in Australia and China. *E. strenuana* significantly reduced the height,

biomass and seed production of *P. hysterophorus* when grown under both the ambient and the elevated CO₂ concentration. However, under an elevated CO₂ concentration, *P. hysterophorus* produced more seeds even in the presence of *E. strenuana*.

Source: Shabbir A, Dhileepan K, Adkins SW (2014) The response of an invasive weed and its biological control agent under a changing climate of CO₂ enrichment: management challenges for the future. Abstract of the 4th International Symposium on Environmental Weeds and Invasive Plants, Montpellier (FR), 2014-06-19/23.

Additional key words: invasive alien plants, climate change

Computer codes: EPIBST, PTNHY

2014/097 Alterations in soil microbial community and chemical parameters in ecosystems invaded by *Acacia dealbata*

The impact of *Acacia dealbata* (Fabaceae, EPPO List of Invasive Alien Plants) on soils of mixed forests and shrublands was studied. It appeared that soil chemical parameters were modified in the invaded sites. Total C and N, Ca₂₊, Mg₂₊, NO₃⁻ and NH₄⁺ contents were significantly higher in invaded sites of both mixed forests and shrublands. Soil microbial community activities were affected by the presence of *A. dealbata* which may lead to an increase in the decomposition and mineralization rates. Modifications were greater in shrublands than in mixed forests.

Source: Souza-Alonso P, Novoa A, González L (2014) Alterations in microbial community function and nutrient composition in ecosystems invaded by *Acacia dealbata* Link. Abstract of the 4th International Symposium on Environmental Weeds and Invasive Plants, Montpellier (FR), 2014-06-19/23.

Additional key words: invasive alien plants, impacts

Computer codes: ACADA

2014/098 Impacts of *Acacia mearnsii* on pastures and grazing capacity

The ecological impacts resulting from the invasion by *Acacia mearnsii* (Fabaceae) and of the management measures applied in South African rangelands were investigated. The impacts of *A. mearnsii* in uninvaded, lightly invaded, densely invaded and cleared sites were examined in a grassland ecosystem in the Eastern Cape. The impacts of treatments on forage quality and quantity, as well as on soil resources were also examined.

The study revealed that invasion by *A. mearnsii* reduced grazing capacity by 56% and 72% on lightly and densely invaded sites respectively. Loss of grazing capacity during invasions was largely due to reduction in total groundcover (by up to 42%) and of herbaceous biomass. Subsequent clearing of invaded sites allowed both basal cover and biomass to return to pre-invasion levels. Soil moisture was also found to be significantly lower on densely invaded sites. Following invasion, plant litter increased (from 1.3 to 4.2%), carbon content of the soil increased (from 2 to 4%), and nitrogen concentrations (from 0.1 to 0.2%). Overall, the grazing capacity was reduced from 2 ha per livestock unit in uninvaded sites to 4 ha in lightly invaded sites, and from 2 ha to 8 ha in densely invaded sites.

Source: Yapi T, O'Farrell P, Dziba L, Esler K (2014) Alien tree invasion into grassland ecosystems: impacts on range land condition and livestock production. Abstract of the 4th International Symposium on Environmental Weeds and Invasive Plants, Montpellier (FR), 2014-06-19/23.

Additional key words: invasive alien plants, impacts

Computer codes: ACAMR, ZA

2014/099 Comparing levels of invasion in North American and in European habitats

In the last decades, several quantitative studies have revealed that habitats differ in their levels of invasion. To consider whether invasion patterns observed at regional scale are also valid at larger scales, levels of invasion in different habitats were compared between temperate parts of North America and Europe. Native and alien vascular plant species were identified within 4165 vegetation plots randomly selected from vegetation-plot databases. Levels of invasion were calculated as the proportion of alien species in vegetation plots assigned to a specific habitat.

The comparison revealed that on both continents, the most invaded habitats were alluvial forests, riverine fringes and freshwater marshes whereas the least invaded habitats were mires, waterlogged and coniferous woodlands. A consistent pattern of invasion of different habitats between the two continents indicates similar mechanisms influencing the invasion in habitats despite differences in biogeographical and socio-economic features between the regions. Habitats with high levels of invasion have high resource availability, frequent disturbances, strong human impact and a large alien species pool. In contrast, habitats in sparsely populated areas with low nutrient availability, low disturbance and a limited pool of alien species show low proportions of aliens.

Source: Kalusova V (2014) Intercontinental comparison of habitat levels of invasion between North-America and Europe. Abstract of the 4th International Symposium on Environmental Weeds and Invasive Plants, Montpellier (FR), 2014-06-19/23.

Additional key words: invasive alien plants, habitats

2014/100 The presence of three fortuitously arrived insects have an impact on invasive alien plants in Spain

The populations in Spain of the invasive alien plants *Opuntia maxima* (Cactaceae), *Azolla filiculoides* (Salviniaceae) and *Agave americana* (Asparagaceae) have been noted to be damaged by the fortuitously arrived insect species: *Dactylopius opuntiae* (Hemiptera: Dactylopiidae), *Stenopelmus rufinusus* (Coleoptera: Curculionidae) and *Scyphophorus acupunctatus* (Coleoptera: Curculionidae) respectively. These insects have different impacts and spread at different rates.

D. opuntiae has progressed at a rate of 30 km per year since 2009, leading to the local extinction of *O. maxima*. The local government of Valencia has started to use this insect for the control of the local infestations of *O. maxima*, located in the coastal sandstone natural park of Calderona and Espadán. Observations showed an initial expansion rate of the insect of 5 m per month with evidence of clear visual damage (chlorosis and necrosis) within 6 months.

S. rufinusus has colonized 6 wetlands in less than 1 year along a coastal strip of 80 km and curbed *A. filiculoides* populations from 16 occupied ha to a small residual presence.

S. acupunctatus shows a lower rate of dispersal despite the flying ability of the adults, but the mortality of infested *Agave americana* plants is high. This species was formerly registered on the EPPO Alert list and has recently been detected in Cyprus (see EPPO RS 2014/087)

Source: Deltoro V, Torres C, Pérez P, Jiménez J (2014) Dispersal, impact and use of the three fortuitously arrived parasites in the control of invasive exotic plants in Valencia. Abstract of the 4th International Symposium on Environmental Weeds and Invasive Plants, Montpellier (FR), 2014-06-19/23.

Additional key words: invasive alien plants, biological control

Computer codes: AGVAM, AZOFI, DACLTO, OPUMX, SCYPIN, STNPRU, ES

2014/101 Control strategy against *Cyperus esculentus* in Switzerland

Cyperus esculentus (Cyperaceae, EPPO List of Invasive Alien Plants) originates from subtropical regions and is widespread in Europe. The plant reproduces through small tubercules in the ground which can survive very low temperatures. The species can grow in a wide range of environments.

In Switzerland, *C. esculentus* has recently spread due to different factors. First, the plant is usually identified too late as in its juvenile stage it is often confused with other species. Second, as tubercules occur in the 20 cm of upper soil layer and can remain viable for 5 years, they adhere to vegetable roots, and are therefore very easily spread via harvested vegetables, machinery and shoes. Finally, the position of the leaves does not allow a good adherence of herbicides, although the control with such products may in some cases prove successful.

As there is no efficient long term control method, the following measures are recommended:

- New outbreaks should be identified and reported as early as possible and managed.
- Farmers and any staff involved in field activities should be informed about the threat of the species and be able to recognize it.
- Spread of the species from one field to another should be prevented. Vehicles should not be moved from infested fields to non-infested ones. Shoes should be cleaned. Infested fields should be mapped, and these maps should be made available. Wastes and residues from root vegetables grown in infested plots should not be moved to uninfested plots.
- Ploughing should be undertaken before *C. esculentus* grows to reduce turbercule formation.
- Heavily infested plots should be removed from crops rotations and treated.

It is recommended that *C. esculentus* be regulated and that reporting new findings and management become mandatory.

Source: Bohren C (2014) Searching for a control strategy against yellow nutsedge (*Cyperus esculentus* L.). Abstract of the 4th International Symposium on Environmental Weeds and Invasive Plants, Montpellier (FR), 2014-06-19/23.

Bohren C (2013) Souchet comestible (*Cyperus esculentus* L.): situation actuelle en Suisse. Agroscope. Confédération Suisse.

<http://www.agroscope.admin.ch/publikationen/einzelpublikation/index.html?lang=fr&aid=33027&pid=33001>

Additional key words: invasive alien plants, management

Computer codes: CYPES, CH