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## CONTENTS

*Pests & Diseases*

- [2009/021](#) - New data on quarantine pests and pests on the EPPO Alert List
  - [2009/022](#) - First record of *Epitrix similaris* in Portugal: addition to the EPPO Alert List
  - [2009/023](#) - First record of *Tuta absoluta* in Italy
  - [2009/024](#) - *Tuta absoluta* caught in a tomato packing station in the Netherlands
  - [2009/025](#) - Situation of *Toxoptera citricida* in Portugal and Spain
  - [2009/026](#) - Situation of *Diabrotica virgifera virgifera* in France in 2008
  - [2009/027](#) - Details on the situation of *Rhynchophorus ferrugineus* in France in 2008
  - [2009/028](#) - Situation of *Rhagoletis completa* in Germany in 2008
  - [2009/029](#) - New species of Cerambycidae identified in Israel
  - [2009/030](#) - First record of Tomato torrado virus in Panama
  - [2009/031](#) - First record of Tomato torrado virus in Australia
  - [2009/032](#) - Tomato torrado virus: addition to the EPPO Alert List
  - [2009/033](#) - Eradication of *Tobacco ringspot virus* from the Netherlands
  - [2009/034](#) - *Potato spindle tuber viroid* no longer occurs in Argentina
  - [2009/035](#) - Macroarray detection of potato viruses and *Potato spindle tuber viroid*
  - [2009/036](#) - EPPO Standards on efficacy evaluation of plant protection products: a new web-based database
  - [2009/037](#) - Severe outbreak of lime witches' broom in Iran: creation of a research network (IWBDLN)
- 
- Invasive Plants*
- [2009/038](#) - New records of exotic plants in Spain
  - [2009/039](#) - Pathway risk analysis: invasive alien plants imported with live animals and unprocessed fibres from sheep and goats in New Zealand
  - [2009/040](#) - The situation of *Rudbeckia laciniata* in the EPPO region
  - [2009/041](#) - *Delairea odorata* in the EPPO region: addition to the EPPO Alert List

2009/021 New data on quarantine pests and pests on 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 from ISPM no. 8.

- New records

In Chile, during surveys carried out in commercial crops *Arabid mosaic virus* (*Nepovirus* - EU Annexes) was detected on *Rubus idaeus* and *Ribes sanguineum*. In addition, *Tobacco ringspot virus* (*Nepovirus* - EPPO A2 List) was detected in *Vaccinium corymbosum* (Medina *et al.*, 2006). Present, no details.

*Diaphorina citri* (Homoptera: Aphalaridae - EPPO A1 List, vector of citrus huanglongbing) is reported from the northeast of Argentina (Augier *et al.*, 2006). Present, in the northeast.

*Glomerella acutata* (anamorph *Colletotrichum acutatum* - formerly EU Annexes) is reported for the first time on strawberry (*Fragaria ananassa* cv. 'Elsanta') in the Czech Republic (Novotný *et al.*, 2007). Present, no details.

In Bosnia and Herzegovina, *Liriomyza bryoniae* (Diptera: Agromyzidae - EU Annexes), *L. trifolii* (Diptera: Agromyzidae - EPPO A2 List), and *Frankliniella occidentalis* (Thysanoptera: Thripidae - EPPO A2 List) are reported as damaging pests on vegetable crops grown under glasshouses (Kohnić *et al.*, 2006). Present, no details.

*Tomato chlorotic dwarf viroid* (*Pospiviroid*) is reported for the first time in Japan. It was detected causing leaf chlorosis and stunting on commercial tomato plants in Hiroshima Prefecture, Honshu (Matsushita *et al.*, 2008). Present, first reported in 2008 in Honshu.

*Xanthomonas axonopodis* pv. *citri* (EPPO A1 List) is reported for the first time from Ethiopia (Eshetu and Sijam, 2007). The host range of citrus canker in Ethiopia was limited to Mexican lime (*Citrus aurantiifolia*) and sour orange (*C. aurantium*). Present, no details.

- Detailed records

*Anastrepha obliqua* (Diptera: Tephritidae - EPPO A1 List) and *Ceratitis capitata* (EPPO A2 List) occur in the State of Tocantins, Brazil (do Bomfim *et al.*, 2007).

In Mexico, *Arceuthobium vaginatum* subsp. *durangense* (EPPO A1 List) is reported to occur in the states of Durango, Sinaloa and Jalisco (mainly on the western edge of the Sierra Madre Occidental). Recently, this dwarf mistletoe was observed for the first time on *Pinus cooperi* and *P. engelmanni* in the central part of Sierra Madre Occidental, in the state of Durango (Mathiasen, 2007).

*Curtobacterium flaccumflaciens* pv. *flaccumfaciens* (EPPO A2 List) occurs in the State of Santa Catarina, Brazil (de Theodoro and Maringoni, 2006).

Surveys carried out from 2002 to 2004 showed that *Eutetranychus orientalis* (Acari: Tetranychidae - EPPO A2 List) occurs on vegetable crops in Jharkhand, India (Rabindra *et al.*, 2006).

In South Africa, *Gibberella circinata* (anamorph *Fusarium circinatum* - EPPO A1 List) is reported for the first time on a plantation of *Pinus radiata* in the West Cape Province. So far in South Africa, *G. circinata* was only present in pine nurseries (Coutinho *et al.*, 2007).

In Russia, *Ips amitinus* (Coleoptera: Scolytidae - EU Annexes) occurs in Central Russia (Bryansk, Leningrad, Novgorod) and Northern Russia (Kareliya, Murmansk) (Zoological Institute St Petersburg website).

*Tomato yellow leaf curl virus* (*Geminivirus* - EPPO A2 List) occurs in Arizona and California, USA (Rojas *et al.*, 2007).

*Tomato spotted wilt virus* (*Tospovirus* - EPPO A2 List) occurs on tomatoes (*Lycopersicon esculentum*) in Baja California, Mexico (Holguín-Peña and Rueda-Puente, 2007).

*Xanthomonas translucens* pv. *translucens* (EPPO A2 List) occurs in Rajasthan, India (Hemant and Maharshi, 2006).

- Host plants

*Chrysanthemum stunt viroid* (*Pospiviroid* - EPPO A2 List) was detected for the first time in commercial bulbs of *Dahlia* spp. in Japan. It was detected in 77% of the tested plants (Nakashima *et al.*, 2007).

*Murraya paniculata* (Rutaceae, grown for ornamental purposes) is known to be a host of *Diaphorina citri*, a vector of huanglongbing (caused by ‘*Candidatus Liberibacter* spp.’ - EPPO A1 List). However the presence of these phytoplasmas in *M. paniculata* remained uncertain. In China (Guangdong Province), 3 plants of *M. paniculata* showing yellowing and mottling symptoms were observed near a citrus orchard affected by huanglongbing. The presence of ‘*Candidatus Liberibacter asiaticus*’ was detected by PCR in these symptomatic plants (Deng *et al.*, 2007).

*Tomato spotted wilt virus* (*Tospovirus*, TSWV - EPPO A2 List) has been detected in *Stevia rebaudiana* (Asteraceae) and potato (*Solanum tuberosum*) in Greece. *S. rebaudiana* is reported as a host plant for the first time, and in Greece, it is the first time that a natural infection of TSWV is observed on potato (Chatzivassiliou *et al.*, 2007).

- Source:
- Augier L, Gastaminza G, Lizondo M, Argañaraz M, Acosta M, Willink E (2006) [Detection of the vector of huanglongbing *Diaphorina citri* Kuwayama in northeast Argentina.] *Avance Agroindustrial* 27(4), 10-12 (abst.).
  - Chatzivassiliou EK, Peters D, Lolas P (2007) Occurrence of *Tomato spotted wilt virus* in *Stevia rebaudiana* and *Solanum tuberosum* in Northern Greece. *Plant Disease* 91(9), p 1205.
  - Coutinho TA, Steenkamp ET, Mongwaketsi K, Wilmot M, Wingfield MJ (2007) First outbreak of pitch canker in a South African pine plantation. *Australasian Plant Pathology* 36(3), 256-261 (abst.).
  - Deng X, Zhou G, Li H, Chen J, Civerolo EL (2007) Nested-PCR detection and sequence confirmation of ‘*Candidatus Liberibacter asiaticus*’ from *Murraya paniculata* in Guangdong, China. *Plant Disease* 91(8), p 1051.
  - De Theodoro GF, Maringoni AC (2006) [*Curtobacterium* bean wilt: description and control.] *Agropecuária Catarinense* 19(1), 62-64.
  - Do Bomfim DA, Uchôa-Fernandez MA, Bragança MAL (2007) [Biodiversity of fruit flies (Diptera: Tephritoidea) in native forests and orchards in two counties of the state of Tocantins, Brazil.] *Revista Brasileira de Entomologia* 51(2), 217-223 (abst.).

- Eshetu D, Sijam K (2007) Citrus canker: a new disease of Mexican lime (*Citrus aurantiifolia*) and sour orange (*C. aurantium*) in Ethiopia. *Fruits* 62(2), 89-98 (abst.).
- Hemant S, Maharshi RP (2006) Seed transmission of *Xanthomonas campestris* pv. *translucens*, the inducer of bacterial stripe and black chaff in barley. *Indian Phytopathology* 59(3), 287-289 (abst.).
- Holguín-Peña RJ, Rueda-Puente EO (2007) Detection of *Tomato spotted wilt virus* in tomato in the Baja California Peninsula of Mexico. *Plant Disease* 91(12), p 1682.
- Kohnić A, Ostojić I, Karić N (2006) [Vegetable pests in greenhouses in territory of Herzegovina.] *Radovi Poljoprivrednog Fakulteta Univerziteta u Sarajevu* 51(2), 139-140 (abst.).
- Mathiasen R (2007) First report of Durangan dwarf mistletoe (*Arceuthobium vaginatum* subsp. *durangense*, on *Pinus cooperi* and *P. engelmannii* in Mexico. *Plant Disease* 91(9), p 1201.
- Matsushita Y, Kanda A, Usugi T, Tsuda S (2008) First report of a *Tomato chlorotic dwarf viroid* disease on tomato plants in Japan. *Journal of General Plant Pathology* 74(2), 182-184 (abst.).
- Medina C, Matus JT, Zúñiga M, San-Martín C, Arce-Johnson P (2006) Occurrence and distribution of viruses in commercial plantings of *Rubus*, *Ribes* and *Vaccinium* species in Chile. *Ciencia e Investigación Agraria* 33(1), 23-28 (abst.).
- Nakashima A, Hosokawa M, Maeda S, Yazawa S (2007) *Journal of General Plant Pathology* 73(3), 225-227 (abst.).
- Novotný D, Křížková I, Krátká J, Salava J (2007) First report of anthracnose caused by *Colletotrichum acutatum* on strawberry in the Czech Republic. *Plant Disease* 91(11), p 1516.
- Rabindra P, Sanjay K, Devendra P (2006) An account of mite pest fauna associated with common vegetables grown in Ranchi. *Journal of Plant Protection and Environment* 3(1), 149-151 (abst.)
- Rojas MR, Kon T, Natwick ET, Polston JE, Akad F, Gilbertson RL (2007) First report of *Tomato yellow leaf curl virus* associated with Tomato yellow leaf curl disease in California. *Plant Disease* 91(8), p 1056.
- INTERNET (last retrieved 2008-03)
- Zoological Institute RAS, St Petersburg, Russia. Beetles (Coleoptera) and Coleopterists. Two new bark beetles (Scolytidae) pests in fauna of Russia by Michail Mandelshtam, 2001-10-12.  
[http://www.zin.ru/Animalia/Coleoptera/eng/sl\\_pest2.htm](http://www.zin.ru/Animalia/Coleoptera/eng/sl_pest2.htm)

Additional key words: new records, detailed records,  
new host plants

Computer codes: ANSTLU, ANSTOB, AREVA, ARMV00, CERTCA,  
COLLAC, CORBFL, CSVD00, DIAACI, EUTEOR, FRANOC, GIBBCI,  
IPXSAM, LIBEAS, LIRIBO, LIRITR, TCDVDO, TRSV00, TSWV00, TYLCVO,  
XANTCI, XANTTR, AR, BA, BR, CL, CZ, ET, IN, JP, MX, US, ZA

## 2009/022 First record of *Epitrix similaris* in Portugal: addition to the EPPO Alert List

The NPPO of Portugal recently informed the EPPO Secretariat of the first record of *Epitrix similaris* (Coleoptera: Chrysomelidae) on its territory. The identification was done by the Portuguese National Institute of Biological Resources. The insect is reported to be quite widespread in potato production areas. The proposed control measures are: crop rotation without any Solanaceae crops, and destruction of plant debris and weeds. Chemical control is targeted against the adults, to prevent new life cycles from being initiated especially at the beginning of the season.

EPPO note: *Epitrix similaris* is a North American insect which had so far never been reported in Europe, and for which there is very little information in the literature about its

geographical distribution, host plants or economic importance. It can be recalled that on the EPPO A1 List, only *E. cucumeris* and *E. tuberis* are included. Arnett (2000) mentions that among the 12 *Epitrix* species which occur in North America, only 5 are considered as pests (i.e. *E. cucumeris*, *E. fuscula*, *E. hirtipennis*, *E. subcrinita* and *E. tuberis*) and this list does not include *E. similaris*. Seeno and Andrews (1972) recorded the occurrence of *E. similaris* together with *E. hirtipennis*, *E. subcrinita* and *E. tuberis* in California (US), and stated that these species were primarily associated with solanaceous crops, although adults appeared intermittently on beans, sugarbeet and cucurbits. Although much data is lacking on the biology and economic impact of *E. similaris* on potatoes and other solanaceous crops, the EPPO Secretariat decided to add it to the Alert List to draw the attention of the NPPOs to the introduction of this new potato pest in the EPPO region.

*Epitrix similaris* (Coleoptera: Chrysomelidae)

Why	In Portugal, unusual damage to potato crops (superficial lesions on the tubers) started to be observed in 2004 in the north of the country (near Porto). In the following years, damage continued to spread towards the south but the causal agent remained unknown. In 2008, <i>Epitrix similaris</i> was identified in Portugal and was considered to be responsible for this unusual type of damage. However, at this point, it still cannot be excluded that other species of <i>Epitrix</i> might be also be involved because of the difficulties encountered in identification (members of the Alticinae sub-family are small insects with similar morphology). Studies are continuing in Portugal to better understand the biology of this new pest and its association with the damage observed. Considering the importance of potato crops in Europe, and the possible similarities that <i>E. similaris</i> could present with other listed pests ( <i>E. cucumeris</i> and <i>E. tuberis</i> - both EPPO A1 List), the EPPO Secretariat decided to add it to the Alert List.
Where	EPPO region: Portugal (mainly in the north and centre; <i>E. similaris</i> is reported to be widespread in potato-growing areas). North America: USA (at least California). <i>E. similaris</i> is considered to originate from North America, but very little data is available on its geographical distribution in its area of origin.
On which plants	Potato ( <i>Solanum tuberosum</i> ) and other Solanaceae, such as tomato ( <i>Lycopersicon esculentum</i> ), aubergine ( <i>S. melongena</i> ), tobacco ( <i>Nicotiana tabacum</i> ), <i>Capsicum</i> sp., and weeds ( <i>Datura stramonium</i> , <i>S. nigrum</i> ). Adults can occasionally feed on leaves of other plant families (Chenopodiaceae, Cucurbitaceae, Fabaceae).
Damage	Affected potato tubers show long corky lesions and small superficial warts. These lesions are caused by larvae (whitish, slender, with a brown head) which feed under the epidermis, these galleries usually remain superficial and do not affect the flesh of the tuber. Adults (small, black beetles 1.5-2 mm long) cut characteristic shot-holes in potato leaves (1-1.5 mm diameter). In Portugal, the yield of potato crops is apparently not affected but the commercial value of the tubers is reduced. Severely disfigured tubers are rejected in trade. Concerning the pest's impact in its native area, the EPPO Secretariat could not find any record of economic damage caused by <i>E. similaris</i> on potatoes or other solanaceous crops in North America. Although data is lacking on the life cycle of <i>E. similaris</i> , it is probably similar to other <i>Epitrix</i> species. Adults overwinter in the soil and crop debris, and emerge in spring. Eggs are laid in the soil near the base of potato plants. Newly hatched larvae move towards the root system and start to feed on tubers. Pupation then takes place in the soil. It is considered that under favourable conditions, there may be at least two generations per year.
Dissemination	Adults can fly actively and it can be noted that the spread of <i>E. similaris</i> in Portugal has been rather fast. Potato tubers or soil attached to the tubers could carry the pest (as larvae, pupae or overwintering adults) over long distances.
Pathway	Potato tubers from countries where <i>E. similaris</i> occurs, soil from countries where the pest occurs.

Possible risks	Potatoes are widely grown across Europe and are of major economic importance. Other solanaceous hosts, such as tomato, aubergine and capsicum might also be at risk but so far in Portugal, damage is only reported on potato. Cultural and chemical control measures are likely to be effective against <i>E. similaris</i> but more practical experience is needed to verify this assumption. More studies are also needed to determine the economic impact of <i>E. similaris</i> on potato and eventually on other solanaceous crops. Although it is unlikely that the natural spread of <i>E. similaris</i> can be stopped, it seems advisable that precautions should be taken to delay it and to prevent introductions of other <i>Epitrix</i> species into the EPPO region.
Source(s)	<p>NPPO of Portugal, 2009-01.</p> <p>Arnett RH Jr (2000) American Insects. A handbook of the insects of America North of Mexico, 2<sup>nd</sup> edition, CRC Press (US), 1003 pp.</p> <p>Oliveira R, Chatot C, Dedryver CA (2008) Détectée en Europe, une nouvelle altise. <i>Potato Planet</i>, juillet, 30-34.</p> <p>Seeno T, Andrews F (1972) Alticinae of California, Part 1: <i>Epitrix</i> spp. (Coleoptera: Chrysomelidae). <i>The Coleopterist's Bulletin</i> 26(2), 53-61 (abst.).</p> <p>Silva N (2008) Novo praga ameaça batata portuguesa. <i>Frutas, Legumes e Flores</i>, no. 101, 12-13. INTERNET</p> <p>Centro Operativo e Tecnológico Hortofrutícola Nacional. Balanço da campanha batata. Relatório. <a href="http://www.cothn.pt/files/7762_Relatori_4939003baf4de.pdf">http://www.cothn.pt/files/7762_Relatori_4939003baf4de.pdf</a></p> <p>Instituto Nacional de Investigação Agrária e das Pescas (Portugal) Pragas - <i>Epitrix similaris</i>. <a href="http://www.iniap.min-agricultura.pt/ficheiros_noticias/folhetoEpitrixemBatateira.pdf">http://www.iniap.min-agricultura.pt/ficheiros_noticias/folhetoEpitrixemBatateira.pdf</a></p> <p>Moreira J, Belchior A (2007) Estudo comparativo de cultivares de batata em dois modos de fertilização azotada, conduzido em sistema de produção integrada. <a href="http://www.drapc.min-agricultura.pt/base/geral/files/reatorio_batata_2007.pdf">http://www.drapc.min-agricultura.pt/base/geral/files/reatorio_batata_2007.pdf</a></p>
EPPO RS 2009/022 Panel review date	- <span style="float: right;">Entry date 2009-02</span>

### 2009/023 First record of *Tuta absoluta* in Italy

In Italy, the presence of *Tuta absoluta* (Lepidoptera: Gelechiidae - EPPO A1 List) was first noted in spring 2008 in the province of Cosenza (Calabria), on glasshouse tomatoes (*Lycopersicon esculentum*). In autumn 2008, *T. absoluta* was reported from Sardegna, in field and glasshouse tomatoes, and is now considered as widespread. In November 2008, an outbreak was reported in Campania (Portici, Napoli) in an experimental tomato glasshouse. In December 2008, *T. absoluta* was discovered in several tomato glasshouses in the southern part of Sicilia (Caltanissetta, Ragusa) and preliminary surveys confirmed that the pest has a high potential for natural spread and could also infest aubergine (*Solanum melongena*). Research is being initiated on control strategies.

The situation of *Tuta absoluta* in Italy can be described as follows: Present, first found in 2008, reported from Calabria, Campania, Sardegna and Sicilia.

Source:	<p>Regional Plant Protection Services of Campania, Sardegna, Sicilia (IT), 2009-02.</p> <p>Tropea Garzia G, Siscaro G, Colombo A, Campo G (2009) Rinvenuta in Sicilia <i>Tuta absoluta</i>. <i>L'Informatore Agrario</i> no. 4, p 71.</p> <p>Viggiani G, Filella F, Delrio G, Ramassini W, Foxi C (2009) <i>Tuta absoluta</i>, nuovo lepidottero segnalato anche in Italia. <i>L'Informatore Agrario</i> no. 2, 66-67.</p>
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Additional key words: new record

Computer codes: GNORAB, IT

2009/024 *Tuta absoluta* caught in a tomato packing station in the Netherlands

In January 2009, 3 specimens of *Tuta absoluta* (Lepidoptera: Gelechiidae - EPPO A1 List) were caught in pheromone traps during a survey carried out in a tomato packing station in the Netherlands. This packing station is specialized in sorting and packaging bulk vine tomatoes produced in the Netherlands and Spain, but at the time of capture most tomato fruits originated from Spain. The NPPO considered this report as an incidental finding because only a very small number of insects was found (not a population) and because it seemed very unlikely that *T. absoluta* could spread from the packing station to nearby glasshouses during wintertime.

The pest status of *Tuta absoluta* in the Netherlands is officially declared as: Absent, confirmed by surveys. Incidental finding in January 2009.

Source: NPPO of the Netherlands, 2009-02. <http://www.minlnv.nl>

Additional key words: incursion

Computer codes: GNORAB, IT

2009/025 Situation of *Toxoptera citricida* in Portugal and Spain

In the EPPO region, *Toxoptera citricida* (Homoptera: Aphididae - EPPO A2 List) one of the most efficient vectors of *Citrus tristeza virus* (*Closterovirus*, CTV - EPPO A2 List), was first detected in 1994 in Madeira (Portugal - EPPO RS 95/007), in 2002 in Asturias (Spain, in water traps), in 2003 in the north of Portugal (RS 2004/130), and in 2004 in the south of Galicia (Spain). From 2006 to 2007, surveys were carried out in the northwest of the Iberian Peninsula to determine the distribution of the pest, its host plants and natural enemies. Results showed that *T. citricida* occurs all along the northwest coast of the Iberian Peninsula from northern Portugal to Cantabria (with 1 capture in Pais Vasco in 2006). In Spain, *T. citricida* was detected in Asturias, Cantabria, Galicia (provinces of La Coruña, Lugo, Pontevedra), and in Pais Vasco (province of Vizkaia, only 1 capture in 2006 and none in 2007). In Portugal, *T. citricida* was found mainly in Entre-Douro e Minho, and a few specimens were caught in adjoining areas in Beira Litoral and Trás-os-Montes. During these studies, it was observed that *Chaenomeles speciosa* (Rosaceae) was an occasional host for *T. citricida*, which had not been reported previously. It was also noted that *T. citricida* was attacked by a relatively large number of natural enemies commonly occurring along the Atlantic coast (mainly Syrphidae and Coccinellidae). Observations showed that *T. citricida* overwintered in Northern Spain as nymphs or adults on shoots, spines, or at the insertion point of the fruit peduncle, and mainly on lemon trees growing in sheltered areas. Finally, surveys on CTV were conducted from 2005 to 2007 in northern Spain. The virus was only detected in 3 trees (out of 1123 tested trees; i.e. 0.26% rate of infection) and no disease spread was noticed.

The situation of *Toxoptera citricida* in Spain can be described as follows: Present, found in Asturias, Cantabria, Galicia (provinces of La Coruña, Lugo, Pontevedra), and in Pais Vasco (province of Vizkaia), under official control.

The situation of *Toxoptera citricida* in Portugal can be described as follows: Present, found in Madeira and in the northern part of the mainland (mainly Entre-Douro e Minho, and adjoining areas in Beira Litoral and Trás-os-Montes).

Source: Hermoso de Mendoza A, Alvarez A, Michelena JM, Gonzáles P, Cambra M (2008) Spread, biology and natural enemies of *Toxoptera citricida* (Kirkaldy) (Homoptera, Aphididae) in Spain. *Boletín de Sanidad Vegetal - Plagas* 34(1), 77-87 (in Spanish).

Additional key words: detailed record

Computer codes: TOXOCI, ES, PT



2009/026 Situation of *Diabrotica virgifera virgifera* in France in 2008

In summer 2008, the presence of *Diabrotica virgifera virgifera* (Coleoptera: Chrysomelidae - EPPO A2 List) was detected again in France. It can be recalled that in 2007, *D. virgifera* had been reported in Alsace, Bourgogne and Rhône-Alpes regions (see EPPO RS 2007/169). In 2008, the insect was no longer found in Bourgogne but it was caught in Alsace and Rhône-Alpes in the areas where it had been detected before. Although it had not been seen in 2006 and 2007 in Ile-de-France, *D. virgifera virgifera* was caught again in this region in 2008.

The situation of *Diabrotica virgifera virgifera* in France can be described as follows: Present, few specimens caught in Alsace, Ile-de-France and Rhône-Alpes regions in 2008, under eradication.

Note: the 2008 distribution map of *Diabrotica virgifera virgifera* in Europe prepared for IWGO by CR Edwards and J Kiss (based on data from Baufeld, Bažok, Bertossa, Boriani, Cean, Cobos, Çota, Eyre, Furlan, Grabenweger, Ivanova, Karic, Kubic, Konefal, Konstantinova, Markotić, Melnik, Palmieri, Potting, Ripka, Schaub, Sivcev, Streito, Urek, Vahala, van Eester, and Záruba) can be viewed on the EPPO website. [http://www.eppo.org/QUARANTINE/Diabrotica\\_virgifera/diabrotica\\_virgifera.htm](http://www.eppo.org/QUARANTINE/Diabrotica_virgifera/diabrotica_virgifera.htm)

Source: Anonymous (2008) Phyto Régions. Alsace, Ile-de-France, Rhône-Alpes... Elle court, elle court, *Diabrotica. Phytoma - La Défense des Végétaux* No. 618, p 2.

Additional key words: detailed record

Computer codes: DIABVI, FR

2009/027 Details on the situation of *Rhynchophorus ferrugineus* in France in 2008

In 2008, *Rhynchophorus ferrugineus* (Coleoptera: Curculionidae - EPPO A2 List) was detected in the city of Antibes, thus confirming its presence in the department of Alpes-Maritimes. In 2008, the pest was found on palm trees in Var and Corse as in 2007 (see EPPO RS 2008/051). However since September 2008, no captures have been made in any of the 116 traps placed in Languedoc-Roussillon.

The situation of *Rhynchophorus ferrugineus* in France can be described as follows: Present, few outbreaks in Corsica (Corse-du-Sud), Provence-Alpes-Côte d'Azur (Alpes-Maritimes, Var), under eradication.

Source: Anonymous (2008) Phyto Régions. Provence-Alpes-Côte d'Azur. Charançon rouge dans les rue d'Antibes. *Phytoma - La Défense des Végétaux* No. 618, p 2.

Additional key words: detailed record

Computer codes: RHYCFR, FR

2009/028 Situation of *Rhagoletis completa* in Germany in 2008

In Germany, *Rhagoletis completa* (Diptera: Tephritidae - EU Annexes) was first reported in Baden-Württemberg (EPPO RS 2004/133) in 2004. In September and October 2008, *R. completa* was detected on several trees of *Juglans regia* in private gardens, in Hessen and Bayern. The fruits showed typical symptoms caused by *R. completa*: husks were discoloured, soft, slimy and remained attached to the nutshell. The identity of the pest was determined morphologically. It is assumed that this infestation was the result of the natural spread of the pest in Germany. In some areas, phytosanitary measures were taken (e.g. nuts of infested trees were collected and destroyed).



The pest status of *Rhagoletis completa* in Germany is officially declared as: Present, widespread in Baden-Württemberg, fewer occurrences in some other areas. In general, no eradication measures are taken.

Source: NPP0 of Germany, 2009-02.

Additional key words: detailed record

Computer codes: RHAGCO, DE

### 2009/029 New species of Cerambycidae identified in Israel

Longhorned beetles (Coleoptera: Cerambycidae) which develop inside the wood or under the bark are easily transported over long distances by wood and wood products. The introduction of such insects into new areas may lead to their establishment, and some of them may become pests. Until now in Israel, it was considered that wood imports have led to the introduction and establishment of 3 species of Cerambycidae: *Phoracantha semipunctata* (formerly EPPO A2 List, eucalyptus borer), *Batocera rufomaculata* (fig borer) and *Xylotrechus smeji* (which was erroneously recorded as *Xylotrechus stebbingi*). Recent studies have showed that 5 new species of Cerambycidae could be added to this list of introduced longhorned beetles. *Phoracantha recurva* and *Xystrocera globosa* were collected in the wild and are thus considered as established in Israel, whereas *Chlorophorus annularis*, *Neoplocaederus basalis* and *Rhagium inquisitor* were reared on imported timber and should be regarded as interceptions only. In their paper, Friedman *et al.* (2008), provide the following details about geographical distribution and host plants of these insect species.

- Intercepted species

#### *Chlorophorus annularis*

In Israel, *C. annularis* was reared on a 2 m-long musical instrument (resembling a flute) made of a single bamboo stem, brought by a tourist from India in 1997. Approximately 100 adults emerged in May 1998. *C. annularis* is a borer of bamboo (*Bambusa*, *Dendracalamus*, *Sinobambusa*, *Sinocalamus* and *Phyllostachys*) which has also been reported on other hosts. In Asia it is considered as a minor pest of stored bamboo (it does not damage living plants). *C. annularis* is widely distributed in Asia, and also occurs in Oceania. It has been intercepted in North America and Europe on consignments of bamboo and bamboo products.

Asia: Cambodia, China (North-East and South including Hainan Islands), East Timor, India (Assam, Punjab), Indonesia (Java, Sumatra), Japan (including Ryukyu and Bonin Islands), Korea Republic, Laos, Malaysia (West, Sarawak), Myanmar, Nepal, Philippines, Singapore, Sri Lanka, Taiwan, Thailand.

North America: USA (Hawaii).

Oceania: Australia, Guam, Northern Mariana Islands, Papua New Guinea.

#### *Neoplocaederus basalis*

In Israel, *N. basalis* was reared on a tree trunk imported from West Africa to the port of Haifa (2 adult specimens emerged in July 1966\*). This insect is reported to occur in West, Central and East Africa.

Africa: Angola, Benin, Cameroon, Côte d'Ivoire, Nigeria, Tanzania, Uganda.

*Rhagium inquisitor*

In Israel, *R. inquisitor* was reared from one larva found in December 2006 under the bark of a tree trunk imported from Russia (the adult emerged in May 2007). This species is a pest of conifers (*Abies*, *Larix*, *Picea*, *Pinus*), and is occasionally found on broadleaved trees (*Betula*, *Fagus*, *Quercus*, *Populus*). It is reported from Europe, Northern Asia (excluding China) and North America (Canada, USA).

- Established species

*Phoracantha recurva*

In Israel since 2001, 3 specimens have been collected in natural habitats, sometimes near eucalyptus, in lower Galilee, Samaria and the Central coastal plain, but is it likely that it has spread to other areas. *P. recurva* is a pest of eucalyptus trees which originates from Australia but which has largely expanded its range of distribution during the last 20 years.

EPPO region: Israel, Greece, Morocco, Spain, Tunisia.

Africa: Malawi, South Africa, Zambia.

South America: Argentina, Brazil, Chile, Uruguay.

Oceania: Australia, New Zealand, Papua New Guinea.

*Xystrocera globosa*

In Israel, *X. globosa* was first detected in Nizzanim (March 2002) and Tel Aviv (June 2006). It has now become abundant in the Southern coastal plain, developing in the wood of ornamental Fabaceae trees. *X. globosa* is a pest of Asian origin which attacks a wide range of wild and cultivated trees belonging to Fabaceae (*Acacia*, *Albizia*, *Bauhinia*, *Cassia* etc.), Malvaceae (*Grewia*, *Salmaia*) and Rosaceae (*Prunus*).

EPPO region: Egypt, Israel.

Africa: Egypt, Madagascar, Mauritius (including Rodrigues Island), Seychelles.

Asia: India (including Andaman Islands), Indonesia (Java, Sulawesi, Sumatra), Japan, Laos, Malaysia, Myanmar, Pakistan, Philippines, Republic of Korea, Saudi Arabia, Sri Lanka, Taiwan, Thailand.

North America: USA (Hawaii).

Central America and Caribbean: Puerto Rico.

Oceania: Australia (Northern Territory), Papua New Guinea.

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\* These specimens were 'rediscovered' after the insect collection to which they were added in 1966 was moved to another place in Israel.

Source: Friedman ALL, Rittner O, Chikatunov VI (2008) Five new invasive species of longhorn beetles (Coleoptera: Cerambycidae) in Israel. *Phytoparasitica* 36(3), 242-246.

Additional key words: new record, detailed record

Computer codes: CHLHAN, PHOARE, RHAIIN, XYSTGL, IL

2009/030 First record of Tomato torrado virus in Panama

In February 2008, unusual disease symptoms were observed in field-grown tomatoes (*Solanum lycopersicum*) from the central regions of Coclé, Herrera, Los Santos, and Veraguas of Panama. Tomato production was seriously damaged. Symptoms were characterized by leaf deformation, necrosis, discoloration (purple margins, interveinal yellowing), necrotic lines in sepals and branches, fruits deformation, and severe stunting. To verify the identity of the disease, 5 symptomatic tomato plants from 4 fields of the affected regions were selected and tested (DAS-ELISA, PCR) for the presence of the following viruses: *Cucumber mosaic virus* (*Cucumovirus*, CMV), *Potato virus X* (*Potexvirus*), *Potato virus Y* (*Potyvirus*), *Tomato mosaic virus* (*Tobamovirus*), *Tomato spotted wilt virus* (*Tospovirus* - EPPO A2 List), *Pepino mosaic virus* (*Potexvirus*), *Tomato torrado virus* (ToTV - EPPO Alert List). ToTV was detected in all tested samples and CMV was found in 3 of these samples. No difference in symptomatology could be observed between samples infected by ToTV only or with both viruses. This is the first time that ToTV is detected in Panama and also the first report of mixed infections with CMV and ToTV.

Source: Herrera-Vasquez JA, Alfaro-Fernández A, Cordoba-Selles MC, Cebrian MC, Font MI, Jorda C (2009) First report of Tomato torrado virus infecting tomato in single and mixed infections with *Cucumber mosaic virus* in Panama. *Plant Disease* 93(2), p 198.

Additional key words: new record

Computer codes: TOTV00, PA

2009/031 First record of Tomato torrado virus in Australia

In October 2008, the presence of Tomato torrado virus was reported for the first time in Australia. The virus was detected in glasshouse tomatoes in the Northern Adelaide Plains of South Australia. Affected tomato plants showed leaf mottling, yellow spotting followed by necrosis at the base of leaflets and in some cases, stem necrosis. But unlike reports from other parts of the world, no fruit symptoms were observed. Although ToTV was first described in 2007 as a virus new to science (see EPPO RS 2007/128), there is evidence that it may have been present in Australia at least since 2005. Similar symptoms had been noticed in 2005 and when preserved samples were tested they were found positive for ToTV. Observations made in South Australia indicated that many commonly grown tomato varieties seemed to be resistant/tolerant to the virus.

The pest status of Tomato torrado virus in Australia is officially declared as: Present, only in protected cultivation, only in some areas.

Source: International Phytosanitary Portal (IPPC, FAO, Rome)  
Detection of Tomato torrado virus in South Australia (report AU-14/1 of 2008-10-10).  
<https://www.ippc.int>

Additional key words: new record

Computer codes: TOTV00, AU

2009/032 Tomato torrado virus: addition to the EPPO Alert List

Considering that Tomato torrado virus is an emerging disease of tomato crops, the EPPO Panel on Phytosanitary Measures recommended its addition to the Alert List.

Tomato torrado virus

Why	<p>Since spring 2001, a new disease called ‘cribado’, or ‘torrao’, has been observed on tomatoes grown under protected conditions in the region of Murcia, in Spain. This disease was found associated with high population levels of whiteflies. Recent studies have identified the causal agent as a new virus species (possibly belonging to a new genus) which was tentatively called Tomato torrado virus (ToTV). Since its initial description in 2007, the virus has been detected in a few other countries from distant continents (Europe, America and Oceania). Interestingly, a similar disease called ‘tomato marchitez’ is currently emerging in Mexico (Sinaloa, Sonora and Baja California). The causal agent was identified as a new virus species related to ToTV. As for ToTV, the disease was also associated with high populations of whiteflies (see EPPO RS 2008/080). Considering that ToTV is an emerging disease of tomato crops, the EPPO Panel on Phytosanitary Measures recommended its addition to the Alert List.</p>
Where	<p>EPPO region: Spain (Murcia and Islas Canarias), Hungary (eradicated), Poland (glasshouse tomatoes).</p> <p>In Spain, ToTV was first detected in Murcia in 2007 (but disease symptoms had been observed since 2001) and in Islas Canarias (observed since 2003 in glasshouse tomatoes in Las Palmas, Gran Canaria). Disease symptoms have also been observed to a lesser extent in Almeria (Andalucia), Alicante (Comunidad Valenciana) and Baleares (Mallorca) but the presence of ToTV has not been confirmed by testing in these regions. However, this might suggest that the virus could be more widespread than originally thought. In Poland, ToTV was detected for the first time in 2003 and 2004 on glasshouse tomatoes in the Wielkopolska region. In Hungary, a single tomato plant showing symptoms was found infected by ToTV at the end of the 2007 growing season. Because all tomato plants of the glasshouse were destroyed (as part of routine practice) and no further infection was detected, the virus was considered eradicated.</p> <p>Central America: Panama (field tomatoes in several regions). Oceania: Australia (glasshouse tomatoes in South Australia).</p>
On which plants	<p>Tomato (<i>Lycopersicon esculentum</i>), and several weed species belonging to various plant families (Amaranthaceae, Caryophyllaceae, Chenopodiaceae, Cruciferae, Malvaceae, and Polygonaceae). In inoculation studies, it was observed that ToTV could systemically infect aubergine (<i>Solanum melongena</i>), and capsicum (<i>Capsicum annuum</i>). Inoculated aubergine plants remained symptomless but capsicum plants showed severe symptoms (conspicuous mosaic, stunting, but no necrosis). However for the moment, natural infections have only been reported in tomato crops and several weed species. Further studies are needed to better define the host range of ToTV, both on cultivated and wild plants (as the latter may act as reservoirs for the virus).</p>
Damage	<p>Affected plants show necrotic lesions at the base of the leaflets, which later turn into shot holes (hence the Spanish name ‘cribado’). Longitudinal necrotic lesions also appear on the stems, necrotic line patterns or blotches followed by deformations appear on the fruits rendering them unmarketable. Affected plants present a general burnt-like appearance (hence the Spanish name ‘torrao’). In some cases, ToTV has been detected in mixed infections with other viruses (i.e. <i>Pepino mosaic virus</i> in Spain, and <i>Cucumber mosaic virus</i> in Panama), but it is not known whether this might play a role in the disease severity. Although severe symptoms have been observed on some tomato crops, the economic impact of the disease remains to be determined.</p>

Transmission	Preliminary transmission trials strongly suggested that both <i>Bemisia tabaci</i> and <i>Trialeurodes vaporariorum</i> can transmit the virus. For the moment, it is not known whether ToTV can be transmitted by seeds. Many aspects of the disease epidemiology remain to be studied. Over long distances, trade of infected plants can spread the virus.
Pathway	Tomato plants for planting, seeds? viruliferous whiteflies?
Possible risks	Tomatoes are widely grown across the EPPO region (indoors and outdoors) and are of significant economic importance. Although the economic impact of ToTV has not been yet determined, the virus can cause severe symptoms. Its whitefly vectors are present in the EPPO region ( <i>T. vaporariorum</i> is widespread across the region, <i>B. tabaci</i> has a more limited distribution). Although data is lacking on its distribution, host range, epidemiology and possible interactions with other viruses, it seems desirable to prevent any further spread of ToTV in tomato crops.
Source(s)	<p>Alfaro-Fernández A, Córdoba Sellés MC, Cebrián Micó MC, Font I, Juárez M, Medina V, Lacasa A, Sánchez Navarro, Pallás V, Jordá Gutiérrez C (2006) [Tomato necrosis disease: 'torrao' or 'cribado']. <i>Boletín de Sanidad Vegetal, Plagas</i> 32(4), 545-562.</p> <p>Alfaro-Fernández A, Córdoba Sellés MC, Cebrián Micó MC, Font I, Juárez M, Medina V, Lacasa A, Sánchez Navarro, Pallás V, Jordá Gutiérrez C (2007) [Advances in the study of tomato 'Torrao' or 'Cribado' syndrome.]. <i>Boletín de Sanidad Vegetal, Plagas</i> 33(1), 99-109.</p> <p>Alfaro-Fernández A, Córdoba-Sellés C, Cebrián MC, Sánchez-Navarro JA, Espino A, Martín R, Jordá C (2007) First report of Tomato torrado virus in tomato in the Canary Islands, Spain. <i>Plant Disease</i> 91(8), p 1060.</p> <p>Alfaro-Fernández A, Córdoba-Sellés C, Cebrián MC, Herrera-Vásquez JA, Sánchez-Navarro JA, Juárez M, Espino A, Martín R, Jordá C (2008) First Report of Tomato torrado virus on weed hosts in Spain. <i>Plant Disease</i> 92(5), p 831.</p> <p>Amari K, Gonzalez-Ibeas D, Gómez P, Sempere RN, Sanchez-Pina MA, Aranda MA, Diaz-Pendon JA, Navas-Castillo J, Moriones E, Blanca J, Hernandez-Gallardo MD, Anastasio G (2008) Tomato torrado virus is transmitted by <i>Bemisia tabaci</i> and infects pepper and eggplant in addition to tomato. <i>Plant Disease</i> 92(7), p 1139.</p> <p>Jordá C, Martínez L, Córdoba MC, Martínez O, Juárez M, Font I, Lacasa A, Guerrero MM, Cano A, Monserrat A, Barceló N, Alcázar A (2003) El 'cribado' o 'torrao', ¿una nueva enfermedad del cultivo del tomate? <i>Phytoma España</i> no.152, 130-136.</p> <p>NPPO of Hungary, 2008-06.</p> <p>Pospieszny H, Borodynko N, Obreplowska A, Hasiów B (2007) The first report of Tomato torrado virus in Poland. <i>Plant Disease</i> 91(10), p 1364.</p> <p>Verbeek M, Dullemans AM, van den Heuvel JFJM, Maris PC, van der Vlugt RAA (2007) Identification and characterization of tomato torrado virus, a new plant picorna-like virus from tomato. <i>Archives of Virology</i> 152(5), 881-890 (abst.).</p>
EPPO RS 2007/128, 2007/174, 2008/129, 2009/032	
Panel review date	-
	Entry date 2009-02

### 2009/033 Eradication of Tobacco ringspot virus from the Netherlands

In 2006, an outbreak of *Tobacco ringspot virus* (*Nepovirus*, TRSV - EPPO A2 List) was detected in the Netherlands on *Hemerocallis* and *Iris* plants (EPPO RS 2007/007). Although the origin of this outbreak could not be identified, it was suspected that it was related to imports from the USA. The outbreak concerned 4 cultivars of *Hemerocallis* (out of a total of 912) grown by 3 companies and 2 species of *Iris* (*Iris siberica* and *I. ensata*) grown by 1 company. In total, 56 soil samples associated with infected plants were tested for the presence of the nematode vector *Xiphinema americanum* (which is not known to occur in the Netherlands). All tested samples were negative. Monitoring surveys for TRSV are routinely carried out in the Netherlands, but in 2007 and 2008 a more specific surveillance programme was implemented. Samples of ornamental plants (*Bacopa*, *Gladiolus*, *Hemerocallis*, *Hosta*, *Lilium*, *Lobelia*, *Phlox*, *Portulaca*) were tested for the presence of TRSV. All tested samples gave negative results. It is noted that *Iris* species were not included in this survey because all commercially available cultivars had already been tested after the first detection of the virus in 2006. The NPPO of the Netherlands considers that TRSV has been eradicated.

The pest status of *Tobacco ringspot virus* in the Netherlands is officially declared as: Absent, eradicated.

Source: NPPO of the Netherlands, 2008-12.

INTERNET (last retrieved in 2009-02)

Website of the Dutch Ministry of Agriculture, Nature and Food Quality. Pest record - Completion of specific surveillance for Tobacco ringspot virus confirming pest freedom. [http://www/minlvn.nl/](http://www.minlvn.nl/)

Additional key words: absence, eradication

Computer codes: TRSV00, NL

### 2009/034 *Potato spindle tuber viroid* no longer occurs in Argentina

In Argentina, the presence of *Potato spindle tuber viroid* (PSTVd, EPPO A2 List) had been reported in the literature in the 1960s. According to Fernandez Valiela (1969), PSTVd was probably first recorded in 1934 on stored potatoes (based on a publication from Marchionatto & Millán which can no longer be accessed), but no symptoms could be observed in commercial crops. PSTVd was later detected on an imported consignment of potatoes which was subsequently destroyed (Fernandez Valiela & Carderoni, 1965). In these publications from the 1960s no diagnostics methods were described, therefore these records are now considered unreliable. In 1993, an outbreak of PSTVd was detected in a potato breeding glasshouse which belonged to the Experimental Station of the National Institute of Agriculture Technology (EEA-INTA Balcarce, province of Buenos Aires). All potato material from this experimental station was placed under the responsibility of the Argentinian NPPO and eradication measures were taken. In 1994, a survey was initiated on plant material belonging to the breeding programme and to the germplasm bank of the EEA-INTA Balcarce station. From 1994 to 1999, intensive surveys were conducted in potato-growing areas across Argentina, including testing of *in vitro* plants, mother plants and potato breeding material of the EEA-INTA Balcarce station. As a result of these surveys, PSTVd was only detected in breeding material maintained at the EEA-INTA Balcarce station. All material was destroyed and the disease was eradicated. PSTVd was not detected on potato commercial crops during these surveys. Based on these results, COSAVE recognized in 2002 that the pest status of PSTVd in Argentina was: Absent, quarantine pest for the Argentine Republic. In May 2003, Argentina officially declared the eradication of PSTVd and its whole territory was considered as an area free from PSTVd. Since its eradication, the viroid has not been reported by the National Surveillance System (SINAVIMO) which is being implemented in Argentina.

Source: NPPO of Argentina, 2009-02.

Fernandez Valiela MV (1969) Introducción a la Fitopatología. Vol 1 Virus. 3º edición. INTA, 796-802.

Fernandez Valiela MV, Carderoni AV, (1965) Búsqueda de zonas semilleras de Papa en la República Argentina. Estn exp. agropec., Delta del Paraná, Argentina. Atas Inst. Micol., 1965, Vol. 2, 60-76.

Additional key words: absence, eradication

Computer codes: PSTVD0, AR

**2009/035 Macroarray detection of potato viruses and *Potato spindle tuber viroid***

In the USA, a macroarray was developed for the simultaneous detection of 11 potato viruses and 1 viroid: *Alfalfa mosaic virus (Alfamovirus)*, *Cucumber mosaic virus (Cucumovirus)*, *Potato mop-top virus (Pomovirus)*, *Potato leafroll virus (Polerovirus)*, *Potato latent virus (Carlavirus)*, *Potato virus A (Potyvirus)*, *Potato virus M (Carlavirus)*, *Potato virus S (Carlavirus)*, *Potato virus X (Potexvirus)*, *Potato virus Y (Potyvirus)*, *Tobacco rattle virus (Nepovirus)*, *Potato spindle tuber viroid (Pospiviroid, EPPO A2 List)*. The objectives were to develop and validate a new diagnostic tool for the pathogens which are normally included in North American potato seed certification programs and to make progress in the development of new methodologies for simultaneously testing pathogens of solanaceous crops. It was concluded that this macroarray usefully complemented the existing serological tests but could not be proposed as a replacement for them yet. However, it was considered that, in the longer term, the microarray will offer a cost-effective approach for the detection of multiple pathogens in solanaceous crops.

Source: Agindotan B, Perry KL (2008 Macroarray detection of eleven potato-infecting viruses and *Potato spindle tuber viroid*. *Plant Disease* 92(5), 730-740.

Additional key words: diagnostics

Computer codes: PSTVD0

**2009/036 EPPO Standards on efficacy evaluation of plant protection products: a new web-based database**

The EPPO standards for the efficacy evaluation of plant protection products (PP1) describe the conduct of trials carried out to assess the efficacy of plant protection products against specific pests. They are addressed to all institutions, official registration authorities, public institutes or private firms carrying out such trials. Until 2008, these Standards were published as paper brochures but following numerous demands, the EPPO Secretariat has released, in February 2009, a new database which contains the whole series of EPPO PP1 Standards (more than 260 standards covering a wide range of crops and pests). In this new database, all Standards can be easily retrieved as PDF files by using a simple search tool.

All general Standards (e.g. design, conduct, reporting and analysis of trials, phytotoxicity, effects on succeeding crops, analysis of resistance risk, minor uses) can be accessed free of charge. Access to specific Standards (e.g. aphids on potato, weeds in cereals) is provided for an annual fee. Subscriptions should be made directly online via the database. For more information on the detailed contents of the database and subscriptions, please consult our web page: <http://www.eppo.org/DATABASES/pp1/pp1.htm>

Direct access to the database: <http://pp1.eppo.org>

Source: EPPO Secretariat, 2009-02.



2009/037 Severe outbreak of lime witches' broom in Iran: creation of a research network (IWBDLN)

In Iran, lime (*Citrus aurantifolia*) is an economically important fruit crop which is cultivated over a total area of approximately 41 800 ha. Lime trees are mainly grown in the Southern part of the country and 50% of the national production is located in the province of Hormozgan (covering an area of 19 100 ha). Lime witches' broom (caused by 'Candidatus 'Phytoplasma aurantifoliae' - EU Annexes) was first observed in 1997 in the province of Sistan & Balouchestan. In 1998, it was found in the Hormozgan province, at first on a limited number of trees (51 trees) but in the absence of control measures the disease rapidly affected numerous orchards. In 2008, it was estimated that the disease has resulted in the death of more than 500 000 trees and that it continues to spread.

Because of the severity of the disease and of the immediate threat it represents to the lime growers, a network (IWBDLN: Iranian Witches' Broom Disease of Lime Network) has been established under the supervision of the Iranian Ministry of Agriculture. This network was created to encourage researchers around the world to compile information about lime witches' broom and assist in research programmes about disease management in Iran.

Contact: Dr Mohsen Mardi  
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Website: [www.iwbdln.ir](http://www.iwbdln.ir)

Source: Personal communication with Dr Mohsen Mardi, Genomics Department, Agricultural Biotechnology Research Institute of Iran (ABRII - [www.abrii.ac.ir](http://www.abrii.ac.ir)), 2009-02.

2009/038 New records of exotic plants in Spain

The three following Poaceae have been found naturalized in the wild in Spain:

- *Megathyrsus maximus* var. *vubiglumis* (Poaceae, common name Guinea grass) (= *Urochloa maxima* var. *trichoglume* = *Panicum maximum* var. *pubiglume*), a native of (sub)tropical Africa, was recorded in Spain in the provinces of Castellón and Valencia. This plant is a tall grass of about 2 m high, with a large branched panicle. The species is widely used in the tropics as a fodder plant and is therefore present in many countries (Australia, China, Ecuador, Indonesia, Japan, Malaysia, New Caledonia, Philippines, Puerto Rico, Republic of Korea, Taiwan, Thailand, United States, Vietnam, etc.). In Spain, the species is thought to have been planted for roadside vegetation and stabilization as it is present on a stretch of over 30 km along the road going from Torreblanca to Castelló de la Plana. This species seems to thrive in Spain and locally escapes. In its native area, this plant occurs from sea level to 1800 m. It can tolerate a wide range of habitats and colonizes agricultural areas, riparian zones and disturbed areas. This species has a strong allelopathic effect and reproduces profusely by seeds which are spread by wind, birds, flowing waters or as a contaminant of soil. It has been reported to suppress or displace local plants on fertile soils in pastures.
- *Pennisetum clandestinum* (Poaceae, common name Kikuyu grass) originates from Africa and is extensively cultivated as a forage or lawn grass in the sub-tropics. It is extensively sown in lawns in south-eastern Spain. Since 1992, *P. clandestinum* has been reported as established in mainland Spain, Islas Baleares and Greece. In Spain, it is reported as an escapee from cultivation in the provinces of Alicante and Valencia. In both areas, *P. clandestinum* forms dense, almost monospecific stands in or near riverbeds. As this species does not have conspicuous flowers, it might have been overlooked in other locations.
- *Pennisetum setaceum* (Poaceae) most probably originates in north-eastern Africa and Arabia, and is grown as an ornamental in the arid areas of southern Europe. The species is reported as established in Italy (including Sardinia), Spain (including Islas Canarias, and Islas Baleares). In Spain, the species has escaped in the wild in the provinces of Alicante, Granada, Malaga and Valencia. *P. setaceum* is considered one of the most aggressive alien invaders in Islas Canarias, especially in the coastal area. Its management there has proven very expensive and time-consuming. Since climatological and environmental conditions are rather similar in Islas Canarias and the south of Spain, *P. setaceum* is very likely to become invasive in mainland Spain as well.

Considering the invasive potential of these three alien species, a monitoring programme should be carried out to better understand their geographical distribution and impact.

Source: Delivering Invasive Alien Species Inventories for Europe (DAISIE) Database.  
<http://www.europe-aliens.org/>

Global Invasive Species Database - *Pennisetum clandestinum*

<http://www.invasivespecies.net/database/species/ecology.asp?si=183&fr=1&sts=sss&lang=EN>

Global Invasive Species Database - *Pennisetum setaceum*

<http://www.invasivespecies.net/database/species/ecology.asp?si=309&fr=1&sts=sss&lang=EN>

Global Invasive Species Database - *Urochloa maxima*

<http://www.invasivespecies.net/database/species/ecology.asp?si=398&fr=1&sts=&lang=EN>

Verloove F (2006) Exotic grasses running wild: *Megathyrsus maximus* var. *pubiglumis* (Poaceae, Paniceae) - new to Spain. *Bouteloua* 1, 55-60.

Additional key words: invasive alien plants, new records

Computer codes: PESCL, PESSA, ES

**2009/039 Pathway risk analysis: invasive alien plants imported with live animals and unprocessed fibres from sheep and goats in New Zealand**

A non-quantitative analysis of the biosecurity risks posed by the importation of live animals and fibres from sheep and goats into New Zealand has been performed using a sample of plant species known to have weedy characteristics and have dispersal mechanisms that utilize animals and animals fibres. Fruits and seeds are the primary means by which angiosperms are dispersed, and the main agents for this dispersal are wind, water and animals. Animals disperse fruits and seed either by ingesting and subsequently excreting them, or by passively transporting them once they have adhered to an external part of the body, such as the fur. This study considers a sample of the many species present in the world that could potentially be spread by animals.

These species are presented in the table below with their description, distribution and habitat, their occurrence in the EPPO region (according to DAISIE, NOBANIS and Flora Europaea), as well as their status indicated in the Global Compendium of Weeds:

Species native to the EPPO region (or at least a part of it):

Species	Description	Distribution and habitats	EPPO	GCW
<i>Adonis macrocarpa</i> (Ranunculaceae)	Erect, much branched annual herb which can compete strongly cereal crops and pastures. Toxic. Seeds adhere to wool and fur.	Native to the Mediterranean region and occurring in warm-temperate regions.	Widely distributed in S-Eur.	W, QW, NW
<i>Chondrilla juncea</i> (Asteraceae)	Erect, much branched perennial which became a major weed in cereal crops in Australia, while it is of little importance in its indigenous area. Seeds attach to wool.	Native from Russia, Asia Minor to the Mediterranean. Occurs in temperate, subhumid and semi-arid open scrubland.	Widely distributed in S-Eur.	W, NW, QW, EW
<i>Dittrichia graveolens</i> (Asteraceae)	Erect, much branched, aromatic annual herb up to 1 m high. When mature, the plant is not very palatable. Flower heads, when eaten by sheep can cause irritation and puncturing of digestive organs. Seeds attach to wool and fur.	Native to the Mediterranean region, occurs in warm-temperate and subtropical regions.	Widely distributed in S-Eur.	W, NW, EW
<i>Heliotropium amplexicaule</i> (Boraginaceae)	Hairy, summer growing annual herb. Toxic to sheep, cattle and horses. Seeds adhere to wool and fur and pass through the digestive tract unharmed.	Native to Central Europe, Western Asia and Northern Africa and occurring in temperate regions.	Widely distributed	W, QW, NW

Species	Description	Distribution and habitats	EPPO	GCW
<i>Reseda lutea</i> (Resedaceae)	A biennial or short lived perennial herb with a woody base and deep taproot. It competes with pastures and crops for light and nutrients but is mainly a weed of waste land. Some seed is dispersed when eaten by animals and later excreted.	Native to Europe, and occurring in the temperate regions, preferably with warm dry summers.	Widely distributed	W, QW, NW
<i>Sorghum halepense</i> (Poaceae)	Erect perennial grass, 0.5 to 2 m high, reproducing by seed and rhizomes. It is considered one of the worst weeds: it causes severe crop losses, it has the potential to harbour diseases and insect pests of sorghum and maize, to contaminate grain sorghum and to poison stock. Seeds stick to wool and fur of animals, and pass relatively unharmed through animal digestive tracts.	Native to Indo-European regions, this species occurs in subtropical and tropical regions and can invade cultivated and irrigated pastures.	Widely present	W, QW, NW, EW
<i>Tribulus terrestris</i> (Zygophyllaceae)	Prostrate summer growing annual herb. Spines of the fruit damage the feet of animals, and the plant is a nuisance in environmental and recreational areas. Fruit can get entangled in wool.	Large native range, occurs in almost all areas of the world.	Widely present	W, NW, NatW
<i>Xanthium strumarium</i> & <i>X. strumarium</i> subsp. <i>italicum</i> (Asteraceae)	Erect annual herb up to 2.5 m high. The burrs are entangled in wool.	Native to the Americas, Europe, Asia occurs in unshaded, warm situations in temperate regions.	Widely present	W, NW, QW, NatW, EW

Alien species present in the EPPO region:

Species	Description	Distribution and habitats	EPPO	GCW
<i>Ambrosia psilostachya</i> (Asteraceae)	Erect robust perennial herb with creeping roots and forming dense colonies. It is strongly competitive, often resulting in productivity reductions in crops and pasture. Aerial growths are allelopathic and the pollen causes allergic inflammations. The fruit of this species can get entangled in wool or stick to fur.	Native to the Americas, occurs in semi-arid grasslands.	Widely distributed: BE, ES, FR, DE, GB, IT, NL, PL, SE, etc.	W, NW, NatW

Species	Description	Distribution and habitats	EPPO	GCW
<i>Alternanthera pungens</i> (Amaranthaceae)	Prostrate creeping perennial herb reproducing by seeds, stems producing roots at the nodes. The prickly burrs attach to animals.	Native to tropical America, it is found in disturbed areas.	ES	W, QW, NW
<i>Amsinckia</i> spp. (Boraginaceae)	Erect annuals very competitive with cereal crops, cause impurities in wool and are potentially toxic to stock. The fruit calyx attaches to wool, fur and hair of animals. Seeds are also believed to remain viable after passing through the digestive tract of sheep.	Native to the Americas, occur in temperate regions in moderately warm, unshaded situations.	/	W, NW, QW
<i>Cenchrus incertus</i> (Poaceae)	Erect annual, serious weed of maize and pastures. It produces spiny seeds containing burrs which fall at maturity and adhere to wool and fur.	Native to tropical America, extending from Southern USA to the Caribbean and Central America. Occurs in humid and subhumid tropical lowlands.	Azores (PT), ES, FR (incl. Corsica), GR, HU, IT, RO, TR	W, QW, NW
<i>Cenchrus longispinus</i> (Poaceae)	Annual reproducing by seeds which are contained within a burr with barbed spines which detach from the plant at maturity and adhere to wool and fur.	Native to North and Central America and occurs in temperate subhumid and semi-arid regions. It is a pioneer of disturbed sandy soils.	IT	W, QW, NW, NatW
<i>Chrysanthemoides monilifera</i> (Asteraceae)	Perennial shrub, 3 m high. It can invade native vegetation and coastal vegetation systems. Seeds remain viable after passing through the digestive tract of cattle, birds, and other animals.	Native to S and SE of South Africa, and occurs in sub humid scrubland. It prefers disturbed areas and can grow near the sea since it is tolerant of saline conditions.	ES, FR, Sicilia (IT)	W, NW, QW, NatW, EW
<i>Cuscuta</i> spp. (Convolvulaceae)	Parasitic plants affecting a wide range of broad-leaved plants which can grow in a wide range of environmental conditions. Seeds can pass through the digestive tract of animals in a viable state.	Many species originate from the Americas.	/	W, QW, NW,
<i>Malvella leprosa</i> (Malvaceae)	Semi-erect, deep rooted perennial, competing strongly with pasture species. Capsule can be caught in wool.	Native to Western North-America, occurring on canal banks and irrigated annual pastures, mainly on alkaline soils in arid and semi-arid warm-temperate regions.	ES	W, QW, NW

Species	Description	Distribution and habitats	EPPO	GCW
<i>Nassella trichotoma</i> (Poaceae)	Grass heavily reducing pasture quality. The coat of the seed and hairs at its base allow the seed to cling to wool.	Native to South-America. Occurs in subhumid and warm-temperate regions in open pastures and lightly timbered areas.	FR (incl. Corsica), IT	W, QW, NW, EW
<i>Parkinsonia aculeata</i> (Fabaceae)	A branching spiny shrub or small tree, 2 to 8 m high, often forming dense thickets, especially along creeks and rivers. Dispersed by birds and animals eating the seed, often enhancing germination capacity.	Native to Southern USA, Central America and Northern South America. It occurs in semi-arid to subhumid tropics and subtropics.	ES (incl. Balears, Islas, Canarias), CY, IT	W, QW, NW, EW
<i>Pennisetum villosum</i> (Poaceae)	Erect grass of up to 70 cm high. Mature plants are unpalatable, stands of the plant tend to dominate the pasture. Seeds held within involucre bristles can adhere to wool and fur.	Native to North Africa and the Arabian Peninsula, occurs in moister semi-arid or arid subtropics.	Balears (ES), FR (incl. Corsica), IT (incl. Sardinia), PT (incl. Azores, Madeira)	W, NW, EW
<i>Proboscidea louisianica</i> (Martyniaceae)	Erect low growing annual herb which can be strongly competitive with summer crops. Hard and woody fruits can injure stock and can attach to the feet or mouth. The hooked fruit can attach to animals, particularly sheep.	Native from the Americas and occurring in humid, temperate to tropical regions. Grows on disturbed sites.	ES, PT, RU	W, QW, NW, NatW
<i>Sagittaria montevidensis</i> (Alismataceae)	Emergent perennial aquatic herb. It can produce dense infestations, blocking channels and drainage ditches. While seeds spread primarily through waterways, it can also occur in mud sticking to hooves and fur.	Native to North and South America.	ES	W, SW, QW, NW, EW
<i>Sida rhombifolia</i> (Malvaceae)	Erect perennial sub-shrub up to 1 m, principally a weed in moist disturbed areas. It is a serious competitor in crops and pastures in warmer regions. Seeds catch on wool and fur.	Native throughout the tropics, it occurs in tropical to warm-temperate savannah.	PT (incl. Azores, Madeira)	W, QW, NW, NatW
<i>Solanum elaeagnifolium</i> (Solanaceae - EPPO A2 List)	Summer growing perennial herb reducing the production of winter crops such as cereals. Fruits are eaten by animals, and seeds remain viable.	Native to Central and South-America, occurring in warm temperate regions.	AL, HR, CY, ES, FR, GR, IL, IT, RS, ME, MA, TN	W, QW, NW, NatW, EW
<i>Solanum rostratum</i> (Solanaceae)	Erect annual herb, poisonous and bearing numerous prickles. Burrs stick to wool.	Native to Mexico and the Southern United USA and occurring in semi-arid and subhumid warm-temperate regions.	FR, IT (incl. Sardinia), SK, TR	W, NW, NatW

Species	Description	Distribution and habitats	EPPO	GCW
<i>Sporolobus africanus</i> (Poaceae)	Unpalatable perennial herb reproducing by seed. It can seriously reduce pasture production. At maturity, seeds can attach to animal fur.	Native to South Africa, occurs in moist areas of southern semi-arid to subhumid subtropics. It invades degraded pastures, particularly in wet or swampy areas.	Azores, Madeira (PT)	W, QW, NW, NatW, EW
<i>Verbesina encelioides</i> (Asteraceae - EPPO Alert List)	Erect branching summer-growing annual herb. It can potentially affect some cereal crop production and is toxic. Seeds have wings and fine bristles that can attach to wool and fur.	Native to North and South America and occurring in temperate to subtropical open scrubland.	DE, ES, IL, MA	W, NW, QW, EW
<i>Xanthium spinosum</i> (Asteraceae)	Erect annual herb up to 1 m high. Dense growth reduces pasture productivity. The burrs are entangled in wool.	Native to South America and occurring in exposed, moderately warm situations in temperate regions.	Widely present	W, NW, QW, EW

Species absent from the EPPO region:

Species	Description	Distribution and habitats	EPPO	GCW
<i>Acanthospermum hispidum</i> (Asteraceae)	Erect annual reproducing by seed. This herb seriously competes with several crops for water and nutrients, and impedes harvesting. Hooked spines attach to wool and fur of animals.	Native to South-America and present in humid and subhumid tropics.	Not recorded	W, QW, NW
<i>Achnatherum brachychaetum</i> (Poaceae)	Perennial grasses without rhizome reproducing by seeds. It can reduce yields, particularly in lucerne. Fine hairs allow the seed to stick to wool.	Native to South-America, occurs in temperate grasslands.	Not recorded	W, QW, NW
<i>Ambrosia confertiflora</i> (Asteraceae)	Erect perennial herb forming large colonies from creeping roots. This plant is competitive and suppresses pasture species. Its burrs contaminate wool and because of hooked spines, they are not easily removed.	Native to the semi-arid plains of the USA and Mexico, occurring in plains of temperate regions.	Not recorded	W, NW, QW
<i>Cyperus aromaticus</i> (Cyperaceae)	Aggressive perennial reproducing by seeds and rhizomes. Unpalatable, capable of smothering many tropical pasture species. Long distance spread is mainly by seeds passing through the digestive tract of animal and birds, or being carried in mud attached to hooves and pelt.	Native to tropical Africa, Madagascar, Mauritius and Seychelles. Occurs in tropical pastures.	Not recorded	W, QW, NW



Species	Description	Distribution and habitats	EPPO	GCW
<i>Gmelina asiatica</i> (Verbenaceae)	Highly variable thorny shrub or small tree, 2 to 4 m high that tends to form thickets.	Native to Asia where it is widely distributed occurs in open deciduous or wet scrubby forests of subtropical areas.	Not recorded	W, QW, NW
<i>Gorteria personata</i> (Verbenaceae)	Spiny burrs entangle in wool and other fibrous material.	Native to SW Africa, occurs in undisturbed sub-tropical and warm-temperate open woodlands.	Not recorded	W, QW, NW
<i>Homeria flaccida</i> (Iridaceae)	Erect perennial reproducing from corms and seed. All parts of the plant (green or dry) are poisonous to cattle, sheep and goats. When seeds are ingested they remain viable, seeds also adhere to wool.	Native to South Africa. Occurs in semi-arid and subhumid subtropical scrubland.	Not recorded	W, QW, NW, NatW, EW
<i>Hyptis capitata</i> (Lamiaceae)	Erect aromatic perennial herb. The fruits adhere to wool and fur.	Native to Central America, occurring in the humid tropics and subtropics.	Not recorded	W, QW, NW
<i>Hyptis suaveolens</i> (Lamiaceae)	Erect branched woody-based annual herb. It is not palatable to stock. The spined burrs catch on wool and fur.	Native to tropical America and occurring in the subhumid or semi-arid tropics, in areas not subject to waterlogging.	Not recorded	W, QW, NW
<i>Ibicella lutea</i> (Martyniaceae)	Erect low growing annual herb which can be strongly competitive with summer crops. Hard and woody fruits can injure stock and attach to the feet or mouth. The hooked fruit can attach to animals, particularly sheep.	Native from the Americas and occurring in humid, temperate to tropical regions. Grows on disturbed sites.	Not recorded	W, QW, NW
<i>Martynia annua</i> (Martyniaceae)	Erect annual herb growing up to 2 m high. Seed remains in a seed pod which can catch on to animals.	Native to Mexico and occurring in subhumid to semi-arid scrub and steppe.	Not recorded	W, QW, NW
<i>Pennisetum macrourum</i> (Poaceae)	Erect perennial, 1 to 1.8 m high, reproducing by seed and rhizome. This plant is of low palatability. Seeds have bristles that cling to wool and hair of animals.	Native to South Africa.	Not recorded	W, QW, NW, EW
<i>Physalis viscosa</i> (Solanaceae)	Erect perennial herb which can compete with other vegetation for moisture and nutrients. It has an extensive root system. The fruit can be eaten by stock and it seems that germination is enhanced after seeds pass through the digestive tract.	Native from the America and occurring in warm-temperate regions.	Not recorded	W, QW, NW

Species	Description	Distribution and habitats	EPPO	GCW
<i>Sclerolaena muricata</i> (Chenopodiaceae)	Small erect bushy rounded shrub. Burrs contaminate wool.	Native to semi-arid areas of Eastern Australia.	Not recorded	W, QW, NW, NatW
<i>Sorghum almum</i> (Poaceae)	Summer growing perennial herb, 1 to 3.5 m high, reproducing by seed and rhizome. This plant has the potential to harbour diseases and insect pests of sorghum and maize, to contaminate grain sorghum and to poison stock. Seeds stick to wool and fur of animals.	Thought to be native to Argentina where it was widely cultivated. Occurs in subtropical and semi-arid high fertility soils.	Not recorded	W, NW
<i>Stevia eupatoria</i> (Asteraceae)	Perennial herb unpalatable and producing dense infestations limiting grazing and pasture production. Seeds attach to wool and fur.	Native to Mexico, occurring in subtropical to temperate mountainous woodland or grassland above 500 m.	Not recorded	W, QW, NW

\* Abbreviations for the Global Compendium of Weeds column:

W: weed; SW: sleeper weed; NW: noxious weed; NatW: native weed; EW: environmental weed.

Source: A Global Compendium of Weeds.  
[http://www.hear.org/gcw/alpha\\_select\\_gcw.htm](http://www.hear.org/gcw/alpha_select_gcw.htm)

Delivering Invasive Alien Species Inventories for Europe (DAISIE) Database.  
<http://www.europe-aliens.org/>

NOBANIS - Network on Invasive Alien Species.  
<http://www.nobanis.org>

Royal Botanic Garden Edinburgh - Flora Europaea  
<http://rbg-web2.rbge.org.uk/FE/fe.html>

Randall J (1999) Import Risk Analysis - Importation of weed species by live animals and unprocessed fibre of sheep and goats. Ministry of Agriculture and Forestry of New Zealand. 25 p.  
<http://www.biosecurity.govt.nz/files/regs/imports/risk/weeds-seeds-ra.pdf>

Additional key words: pathway analysis

Computer codes: 1AMSG, 1CVCG, ACNHI, ADOMI, ALRRE, CCHPA, CCHLO, CHOJU, CSMMO, CYPAT, FRSCO, HEOAM, HOMFL, HPYCA, HYPUS, IBILU, INUGR, MAYAN, PAKAC, PESMA, PHYVI, PROLO, RESLU, SAGMO, SIDHE, SIDRH, SKLMU, SOLEL, SORAL, SPZAF, STDBR, STDTR, TRBTE, VEEEN, XANSI, XANSP

2009/040 The situation of *Rudbeckia laciniata* in the EPPO region

*Rudbeckia laciniata* (Asteraceae) is a rhizomatous perennial originating from the Eastern USA and which was introduced in Europe as an ornamental plant at the beginning of the 17<sup>th</sup> century. It spread in Central Europe during the 18<sup>th</sup> and 19<sup>th</sup> centuries.

Geographical distribution

EPPO region: Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Italy, Latvia, Lithuania, the Netherlands, Norway, Poland, Russia, Slovakia, Sweden, Switzerland, United Kingdom.

Asia: China, Japan

Oceania: New Zealand

North America (native): USA (Alabama, Arkansas, Arizona, Colorado, Connecticut, District of Columbia, Delaware, Florida, Georgia, Iowa, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Maryland, Maine, Michigan, Minnesota, Mississippi, Montana, North Carolina, North Dakota, Nebraska, New Hampshire, New Jersey, New Mexico, New York, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Vermont, Washington, Wisconsin, West Virginia, Wyoming), Canada (British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Prince Edward Island, Quebec).

Note: in Belgium, the species has not extended its distribution (E. Branquart, pers. comm., 2009).

Morphology

*R. laciniata* is a large perennial herb, which grows up to 3 m tall, with slightly glaucous leaves, and composite yellow flowers.

Biology and ecology

The species reproduces very efficiently by rhizome fragmentation. It flowers from June to September and produces copious amounts of achenes (1600 seeds per plant), but they can only germinate on disturbed sites.

Habitats

Riverbanks, damp areas, slopes, waste ground, areas with temperate climates, it mainly colonizes places at altitudes lower than 700 m. It prefers humid soils and semi-shade. According to the Corine Land Cover nomenclature, these habitats correspond to: banks of continental water, riverbanks / canalsides (dry river beds), road and rail networks and associated land, other artificial surfaces (wastelands)

Impacts

*R. laciniata* forms monospecific stands, out competing other plant species, having an adverse impact on biodiversity. It can also alter the habitat dynamic of trees colonization in alluvial areas. It is toxic, and can be lethal to animals (horses, sheep, pigs) if ingested. It is considered an agricultural and environmental weed in the Global Compendium of Weeds.

**Control**

Removing rhizomes from the soil can prove efficient but is very time consuming and only possible on small surfaces. Furthermore, this method perturbs the habitat and enhances the germination of seeds present in the soil.

Repeated cutting over several years leads to a statistically significant but small decrease in the abundance and vigour of the plant. Nevertheless, it also allows the germination of individuals from the seed bank.

Planting pioneer forest trees, in particular *Alnus* spp. and *Salix* spp., create a shaded environment in which *R. laciniata* would slowly regress. It is necessary in this case to cut the vegetation that would limit the growth of those trees.

Considering the wide distribution of this species in the EPPO region, the EPPO Secretariat decided not to include *R. laciniata* in the EPPO Alert List.

Source: A Global Compendium of Weeds.  
[http://www.hear.org/gcw/alpha\\_select\\_gcw.htm](http://www.hear.org/gcw/alpha_select_gcw.htm)

Delivering Invasive Alien Species Inventories for Europe (DAISIE) Database.  
<http://www.europe-aliens.org/>

NOBANIS - Network on Invasive Alien Species.  
<http://www.nobanis.org>

Muller S (2004) *Rudbeckia laciniata* In: (2004) *Plantes invasives en France*. (Ed. Muller S) pp. 114-115. 2004 Muséum national d'Histoire naturelle, Paris (FR), (Patrimoines naturels, 62).

USDA - Plants Profile, *Rudbeckia laciniata*  
<http://plants.usda.gov/java/profile?symbol=RULA3>

Wittenberg R (ed.) (2005) An inventory of alien species and their threat to biodiversity and economy in Switzerland. CABI Bioscience Switzerland Centre report to the Swiss Agency for Environment, Forests and Landscape.  
<http://www.nobanis.org/files/invasives%20in%20CH.pdf>

Additional key words: invasive alien plant

Computer codes: RUDLA

**2009/041 *Delairea odorata* in the EPPO region: addition to the EPPO Alert List**

*Delairea odorata* (Asteraceae, Cape ivy, syn: *Senecio mikanioides*) is a perennial evergreen vine originating from South Africa which is used as an ornamental plant, particularly for groundcover. Within the EPPO region, its distribution is still limited. Because this plant has shown invasive behaviour in North America and in Australia and is of limited distribution in the EPPO region, it can be considered an emerging invader in Europe.

**Geographical distribution**

EPPO region: France, Ireland, Italy, Portugal (incl. Azores, Madeira), Spain (incl. Islas Canarias), United Kingdom.

North America: USA (invasive) (California, Hawaii, Montana, Oregon).

Africa: South Africa (native).

Oceania: Australia (invasive) (New South Wales, Queensland, South Australia, Tasmania, Victoria, Western Australia), Federal States of Micronesia, New Zealand (invasive).

Note: the species is also recorded in North Africa, but no precise data could be found. There is a record of the species in Denmark, but its status is unknown.

### Morphology

*D. odorata* is a fleshy, perennial, evergreen vine, woody at the base, the stem can reach 3 to 6 m long. Roots can be 90 cm deep in the ground. Leaves are green, glabrous, alternate, broadly deltate to “ivy-shaped”, 3-10 cm long, 3.6 cm wide with 3 to 10 lobes. Both leaves and stems store water. Flowers are yellow, grouped on terminal and axillary cymes, disk florets 4-5 mm long arranged in clusters, ray flowers absent. Fruits are achenes about 2 mm long, often with a pappus or a crown of hairs.

### Biology and ecology

*D. odorata* reproduces both vegetatively or through seed production. Vegetative reproduction can occur at any time when the nodes of the stem, stolon, or leaf petiole are in contact with the soil. Small fragmented pieces of 1.3 cm can root easily and quickly. *D. odorata* can also produce 40 000 seeds per plant which are dispersed by the wind, water and soil movement. Nevertheless this seed production has only been observed in South Africa and Australia, no viable seed is produced in species that have invaded the coasts of California (USA). It is thought that because the flowers of *D. odorata* are self-compatible, only a few genetic lines have been introduced, which inhibits viable seed production.

*D. odorata* is tolerant to drought and freezing. It can grow in full sun or in shade and can establish in dry as well as in moderately wet sites. It is usually found in fertile and high pH soils.

*D. odorata* has a rapid vegetative growth between the months of February and June and tends to dieback during dry periods when there is a lack of available water. The species spreads quite rapidly: in the Golden Gate National Recreation Area (California), the species colonized 3.6 ha in 1987, and expanded to 27.7 ha in 1996. In California, it now covers more than 200 000 ha.

### Habitats

In South Africa, *D. odorata* grows in moist mountain forests. Where it naturalized, it extended its habitat range and is found in coastal areas, riparian zones and wetlands, dry forests and moist forests, shrublands and ruderal habitats, and grows very well in early successional forests. Typically found below 200 m elevation, it prefers shady, disturbed sites with year-round moisture. According to the Corine Land Cover nomenclature, these habitats correspond to: natural grassland, mixed forests, broad-leaved forests, sclerophyllous vegetation (e.g. garrigue, maquis), inland wetlands (marshes, peat bogs), continental waters (water courses, water bodies), banks of continental water, riverbanks / canalsides (dry river beds), road and rail networks and associated land, and other artificial surfaces (wastelands).

### Impacts

*D. odorata* can form dense vegetative groundcover mats that can prevent seeding of native plants. It can also smother native vegetation and affect regeneration, forming stands of over 75% cover and competing with other plants for water and nutrients. Native plant species richness can be reduced about 50 percent, with greater impact on annual than on woody perennial species. The weight of large masses of climbing vines can bring down trees. Higher trophic levels can also be affected, like several sensitive species of insects

and predators. The dense vegetation can also displace burrowing shorebirds like little penguins (e.g. *Eudyptula minor*) by taking available space used for nesting. Furthermore, flood control function along streams is impacted by *D. odorata*. In riparian communities, it can increase soil erosion along watercourses due to its shallow root system not capable of holding soil. *D. odorata* also contains substances toxic to humans, mammals, and particularly to aquatic organisms, decreasing survival of fish and aquatic insects. When the plant is present in pastures, it also reduces forage quality.

### Control

Mechanical removal of *D. odorata* is difficult and time consuming and difficult since the vine can resprout from any node that is not disposed off properly. When using mechanical control, the species has to be dug out, a containment zone should be established to prevent further spread and all plant debris should be removed.

Chemical control of *D. odorata* depends on location of the infestation, sensitivity of the associated species, and the surface covered by the plant. Application of chemicals at times when the plant is actively growing is recommended. Glyphosate and triclopyr are both effective in controlling the plant. Two applications every four months for several years are recommended to ensure proper control or eradication. Chemical control is therefore considered difficult.

Research is currently being conducted between the USA and South Africa on a biological control program for *D. odorata*.

Considering the areas where this species is invasive (California, Australia), and its ecology, this plant is thought to have the potential to become invasive in the Mediterranean and Atlantic areas of the EPPO region.

Source: Australia's Virtual Herbarium  
<http://www.rbg.vic.gov.au/>

Delivering Alien Invasive Species Inventories for Europe (DAISIE) - *Delairea odorata*  
<http://www.europe-aliens.org/speciesFactsheet.do?speciesId=23676#>

Global Invasive Species Database.  
<http://www.issg.org/database/species/ecology.asp?si=1187&fr=1&sts=&lang=EN>

Hawaiian Ecosystems at Risk Project - *Delairea odorata*  
[http://www.hear.org/species/delairea\\_odorata/](http://www.hear.org/species/delairea_odorata/)

NOBANIS - Network on Invasive Alien Species - *Delairea odorata*  
<http://www.nobanis.org/speciesInfo.asp?taxalD=7762>

Sanz Elorza M, Dana Sánchez ED, Sobrina Vesperinas E Eds (2004) Atlas de las plantas alóctonas invasoras en España. Dirección General para la Biodiversidad. Madrid, p. 266-267.

Weber E (2003) Invasive Plant Species of the World. pp. 138. CABI Publishing Wallingford, (UK).

Additional key words: invasive alien plant

Computer codes: SENMI