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CONTENTS _____ *Pests & Diseases*

_____ *Invasive Plants*

1, rue Le Nôtre
75016 Paris

Tel. : 33 1 45 20 77 94
Fax : 33 1 42 24 89 43

E-mail : hq@eppo.fr
Web : www.eppo.org

2007/187 New data on quarantine pests and pests of the EPPO Alert List

By browsing through the literature, the EPPO Secretariat has extracted the following new data concerning quarantine pests and pests included on the EPPO Alert List. The situation of the pest concerned is indicated in bold, using the terms of ISPM no. 8.

New records

Brenneria quercina (formerly EPPO Alert List) occurs in Italy. Its presence was reported in the province of Viterbo (Lazio region) together with other pests on declining hazelnut (*Corylus avellana*) trees (Bucini *et al.*, 2005). **Present, found in Lazio region**.

Moko disease of banana, caused by *Ralstonia solanacearum* (EPPO A2 List), was reported for the first time in June 2007 on the island of St Vincent, St Vincent and the Grenadines (ProMED, 2007). **Present, no detail.**

Raoiella indica (Acari: Tenuipalpidae – EPPO Alert List) was reported for the first time in Puerto Rico in 2006 and St Thomas Island (US Virgin Islands) in 2007 (USDA-ASR, 2007). **Present, no detail.**

In Austria *Scaphoideus titanus* (Homoptera: Cicadellidae), vector of grapevine flavescence dorée phytoplasma (EPPO A2 List) was recorded for the first time in 2004. However, grapevine flavescence dorée has never been found in Austria. *S. titanus* was found in Styria in vineyards close to the Slovenian border (Steffek *et al.*, 2007). **Present, first found in 2004 in Styria.**

Tomato yellow leaf curl virus (*Begomovirus* – EPPO A2 List) is reported for the first time from China. It was detected in March 2006 in tomato plants showing symptoms of yellow mosaic, in the province of Shanghai. Disease incidence reached up to 90% (Wu *et al.*, 2006). **Present, first found in 2006 in Shanghai province.**

Detailed records

In July 2007, a single male *Bactrocera dorsalis* (EPPO A1 List) was caught in Valrico, Florida (US). Eradication measures are being applied (DOACS press release, 2007).

In 2005, *Iris yellow spot virus* (*Tospovirus* – EPPO Alert List) was reported for the first time on onion plants in Texas, USA (Miller *et al.*, 2006).

In 2003, *Phakopsora euvitis* (EPPO Alert List) was found for the first time in Rio Grande do Sul, Brazil (Bayer and Dressler da Costa, 2006).

In the USA, two outbreaks of *Puccinia horiana* (EPPO A2 List) were reported in September 2006 and February 2007 in Pennsylvania and California respectively. In both cases, eradication measures were immediately taken (NAPPO, 2006 and 2007).

Tomato yellow leaf curl virus (*Begomovirus* – EPPO A2 List) was reported for the first time from the state of Sinaloa, Mexico, in autumn 2005 (Brown and Idris, 2006).

During surveys carried out in 2000/2001 on virus diseases of vegetable crops, *Tomato spotted wilt virus* (*Tospovirus,* TSWV – EPPO A2 List) was detected in the central part of

Albania on outdoor vegetable crops (*Capsicum*, tomato, courgette) and weeds (*Solanum nigrum*). Surprisingly, it was not detected in glasshouse vegetable crops. As a result of these surveys, TSWV infections were considered moderately important in Albania (Finetti-Sialer *et al.*, 2006).

Xylella fastidiosa (EPPO A1 List) was reported in Taiwan in 1993, causing leaf scorch on pear (see EPPO RS 94/049). Strains from Taiwan were compared with strains isolated from North and South America causing grapevine Pierce's disease, almond leaf scorch and citrus variegated chlorosis. Comparison of PCR amplicon sequences showed that strains from Taiwan formed a cluster which was distinct from the other known clusters of *X. fastidiosa* (Chen *et al.*, 2006).

Host plants

Chrysanthemum stunt viroid (*Pospiviroid* – EPPO A2 List) was detected for the first time in *Solanum jasminoides* in the Netherlands (Verhoeven *et al.*, 2006).

Huanglongbing, caused by '*Candidatus* Liberibacter asiaticus' is reported for the first time on kumquat (*Fortunella margarita*) in Taiwan (Tsai *et al.*, 2006).

In Mexico, *Phakopsora pachyrhizi* (EPPO Alert List) was detected for the first time in the State of Veracruz. The disease was found on *Pachyrhizus erosus* (yam bean) near Papantla, in January 2007 (NAPPO Pest Alert System, 2007).

Triticum dicoccum (emmer wheat) is reported to be a potential host plant of *Tilletia indica* (EPPO A1 List). In a recent study, several Italian emmer wheat cultivars were found to be highly susceptible to *T. indica* (Riccioni *et al.*, 2006).

Tobacco ringspot virus (*Nepovirus* – EPPO A2 List) was identified for the first time in symptomatic pumpkins (*Cucurbita pepo*) in Illinois, USA. Affected plants showed mild mosaic and leaf yellowing (Jossey and Babadoost, 2006).

In Florida (US), *Ralstonia solanacearum* (EPPO A2 List) was detected in the aquatic weeds *Hydrocotyle ranunculoides* (EPPO List of Invasive Alien Plants), *H. bonariensis* and *Polygonum pennsylvaticum* growing in irrigation ponds (Hong *et al.*, 2006).

Source:

Bayer TM, Dressler da Costa IF (2006) [Occurrence of *Phakopsora euvitis* Ono, Santa Maria, Rio Grande do Sul]. *Ciência Rural, Santa Maria* **36**(4), 1307-1308 (in Portuguese).

Brown JK, Idris AM (2006) Introduction of the exotic monopartite *Tomato yellow leaf curl virus* into West Coast Mexico. *Plant Disease* **90**(10), p 1360.

Bucini D, Balestra GM, Pucci C, Paparatti B, Speranza S, Proietti Zolla C, Varvaro L (2005) *Acta Horticulturae* no. 686, 435-443 (abst.).

Chen J, Su C, Chang C (2006) Multigenic sequence comparison of *Xylella fastidiosa* pear leaf scorch strains from Taiwan to strains from Americas. *Phytopathology* **96**(6) S23.

DOACS (Florida Department of Agriculture and Consumer Services) Press Release (2007-07-12) Fruit fly found in Valrico. http://www.doacs.state.fl.us/press/2007/07122007.html

Finetti-Sialer M, Mërkuri J, Tauro G, Myrta A, Gallitelli D (2006) Viruses of vegetable crops in Albania. *Bulletin OEPP/EPPO Bulletin* **35**(3), 491-495.

Hong J, Ji P, Momol TM, Olson SM, Jones JB (2006) Association of *Ralstonia solanacearum* in irrigation ponds and on semi-aquatic weeds in North Florida. *Phytopathology* **96**(6) S51.

Jossey S, Babadoost M (2006) First report of *Tobacco ringspot virus* in pumpkin (*Cucurbita pepo*) in Illinois. *Plant Disease* **90**(10), p 1361.
Miller ME, Saldana RR, Black MC, Pappu HR (2006) First report of *Iris yellow spot virus* on onion (*Allium cepa*) in Texas. *Plant Disease* **90**(10), p 1359.
NAPPO Pest Alert System. Official Pest Reports (2006-09-27) Chrysanthemum white rust, *Puccinia horiana*, found in Pennsylvania - United States. http://www.pestalert.org/oprDetail_print.cfm?oprid=231
NAPPO Pest Alert System. Official Pest Reports (2007-03-09) Chrysanthemum white rust (CWR) in California. http://www.pestalert.org/oprDetail_print.cfm?oprid=256
NAPPO Pest Alert System. Official Pest Reports (2007-07-12) Detection of Asian soybean rust (*Phakopsora pachyrhizi*) in yam bean crops in Papantla, Veracruz, Mexico. http://www.pestalert.org/oprDetail_print.cfm?oprid=267
ProMED posting of 2007-06-05 (20070606.1825). Moko disease, banana – Saint Vincent and the Grenadines. http://www.promedmail.org
Riccioni L, Valvassori, M, di Giambattista G, Porta-Puglia A (2006) Emmer wheat, a potential new host of *Tilletia indica*. *European Journal of Plant Pathology* **116**(2), 167-170.
Steffek R, Reisenzein H, Zeisner N (2007) Analysis of the pest risk from Grapevine flavescence dorée phytoplasma to Austrian viticulture. *Bulletin OEPP/EPPO Bulletin* **37**(1), 191-203.
Tsai CH, Su HJ, Liao YC, Hung TH (2006) First report of the causal agent of huanglongbing ('*Candidatus* Liberibacter asiaticus') infecting kumquat in Taiwan. *Plant Disease* **90**(10), p 1360.
USDA-ARS (2007) A tiny menace island-hops the Caribbean. http://www.ars.usda.gov/is/AR/archive/may07/island0507.htm?pf=1
Verhoeven JTJ, Jansen CCC, Roenhorst JW (2006) First report of *Potato virus M* and *Chrysanthemum stunt viroid* in *Solanum jasminoides*. *Plant Disease* **90**(10), p 1359.
Wu JB, Dai FM, Zhou XP (2006) First report of *Tomato yellow leaf curl virus* in China. *Plant Disease* **90**(10), p 1359.

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

Computer codes: CSVD0, DACUDO, ERWIQU, IYSV00, LIBEAS, NEOVIN, PHAKPA, PHALLAM, PSDMSO, RAOIIN, SCAPLI, TRSV00, TSWV00, TYLCV0, AL, AT, BR, CN, IT, MX, NL, PR, TW, US, VC, VI

2007/188 First record of *Phytophthora ramorum* in Lithuania

The NPPO of Lithuania recently informed the EPPO Secretariat of the first finding of *Phytophthora ramorum* (EPPO Alert List). It was detected on pot plants of *Rhododendron catawbiense* grown in a nursery in Marijampole region. As part of the annual survey, samples were collected in October 2007 from two *R. catawbiense* plants which were showing *Phytophthora* symptoms. The Phytosanitary laboratory of Lithuania confirmed the presence of *P. ramorum* on the 2007-11-12. Investigations showed that the infected plants were part of two lots (1038 plants and 100 plants) which had been imported from Poland in April 2007. In accordance with the EU and Lithuanian regulations*, phytosanitary measures were applied. All infested plants and susceptible plants located within a radius of 2 metres were destroyed.
The situation of *Phytophthora ramorum* in Lithuania can be described as follows: **Present, first found in 2007 in 1 nursery on potted *Rhododendron* which had been imported, under eradication.**

* Commission Decision 2007/201/EC of 27 March 2007 amending Decision 2002/757/EC on provisional emergency phytosanitary measures to prevent the introduction into and the spread within the

Community of *Phytophthora ramorum* Werres, De Cock & Man in't Veld sp. nov. http://www.eppo.org/ABOUT_EPPO/EPPO_MEMBERS/phytoreg/eu_texts/2007-201-EC-e.pdf
Order of the Minister of Agriculture of the Republic of Lithuania No. 3D-458 of 2007-10-16 adopting phytosanitary measures against *Phytophthora ramorum* Werres, De Cock & Man in't Veld sp. nov.

Source: NPPO of Lithuania, 2007-11.

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

2007/189 Details on the situation of *Ceratocystis fimbriata* f.sp. *platani* in Greece

In Greece, *Ceratocystis fimbriata* f.sp. *platani* (EPPO A2 List) was first observed in autumn 2003 on *Platanus orientalis* in the Messinia prefecture, south western Peloponnese (see EPPO RS 2004/009). The disease has caused substantial mortality of *P. orientalis* in natural stands along streams and rivers, as well as in ornamental plantings of *P. orientalis* and *P. acerifolia*. Among *Platanus* species, *P. orientalis* is considered as very susceptible to *C. fimbriata* f.sp. *platani* (more than *P. acerifolia* and *P. occidentalis*). From spring 2004 to autumn 2005, dead and dying plane trees were observed over an area of approximately 400 km^2. Although the disease was also observed in residential and recreational areas, its impact was greater in natural stands. Hundreds of dead and dying *P. orientalis* trees were found along rivers and streams. Many of the recently dead and dying trees were found infested by wood boring Ambrosia beetles (e.g. *Platypus cylindrus*).
Genetic studies of Greek isolates suggested that the recent introduction in Greece probably originated from other European countries (Italy, France or Switzerland), rather than from eastern North America where the fungus is native. The introduction of *C. fimbriata* f.sp. *platani* in Greece raises serious concerns as the pathogen occurs in natural populations of *P. orientalis*. It is considered that containment and eradication programmes should urgently be implemented.

Source: Ocasio-Morales RG, Panaghiotis T, Harrington TC (2007) Origin of *Ceratocystis platani* on native *Platanus orientalis* in Greece and its impact on natural forests. *Plant Disease* **91**(7), 901-904.

Additional key words: detailed record **Computer codes:** CERAFP, GR

2007/190 First record of *Tomato spotted wilt virus* in Jordan

In Jordan, tomatoes showing necrotic and chlorotic ring patterns were observed in many vegetable markets in 2003. In 2004 and 2005, severe disease symptoms resembling those of *Tomato spotted wilt virus* (*Tospovirus*, TSWV – EPPO A2 List) were observed in tomato fields in the Jordan Valley. Molecular tests (RT-PCR, IC-RT-PCR, sequencing) confirmed the presence of TSWV. This is the first report of TSWV in Jordan
The situation of *Tomato spotted wilt virus* in Jordan can be described as follows: **Present, first found in 2004 in the Jordan Valley.**

Source: Anfoka GH, Abhary M, Stevens MR (2006) Occurrence of *Tomato spotted wilt virus* (TSWV) in Jordan. *Bulletin OEPP/EPPO Bulletin* **36**(3), 517-522.

Additional key words: new record **Computer codes:** TSWV00, JO

2007/191 First record of *Tomato infectious chlorosis virus* in Jordan

In Jordan, symptoms resembling those of *Tomato infectious chlorosis virus* (*Begomovirus*, TICV – EPPO A2 List) were observed in 2004 on tomato plants grown under greenhouses in the Jordan Valley. Molecular tests (RT-PCR, sequencing) confirmed the presence of TICV. The virus was also detected in weeds (*Chenopodium album* and *C. murale*). The incidence of TICV was studied in 4 regions of the Jordan Valley. In all surveyed areas, disease incidence was high and ranged from 74 to 100%. This is the first record of TICV in Jordan.
The situation of *Tomato infectious chlorosis virus* in Jordan can be described as follows: **Present, first found in 2004 in the Jordan Valley.**

Source: Anfoka GH, Abhary MK (2007) Occurrence of *Tomato infectious chlorosis virus* (TICV) in Jordan. *Bulletin OEPP/EPPO Bulletin* **37**(1), 186-190.

Additional key words: new record **Computer codes:** TICV00, JO

2007/192 Squash vein yellowing virus: a new virus of cucurbits in the USA

During a survey on cucurbit viruses conducted in Florida (US), a new virus was found in a sample taken from a squash plant (*Cucurbita pepo*) showing vein yellowing symptoms. This new virus was tentatively called Squash vein yellowing virus (SqVYV) and assigned to the genus *Ipomovirus* in the family *Potyviridae*. Its experimental host range was limited to species in the family Cucurbitaceae. The most severe symptoms were observed on squash (*C. pepo*) and watermelon (*Citrullus lanatus*). In transmission experiments, SqVYV was transmitted by *Bemisia tabaci* but not by aphids (*Myzus persicae*) or seeds.
In the field, SqVYV was found to be associated with a severe vine decline and fruit rot of watermelon, which has been observed in southwest and south central Florida since 2003. Around harvest time, the foliage of affected plants turns yellow and entire plants rapidly wilt and collapse. Although there are no external symptoms, fruit of declining vines frequently show rinds with greasy and discolored (brown and/or watersoaked) internal blotches. The flesh is inedible and non-marketable. Yield losses of 50%-100% are not uncommon in affected fields. During glasshouse experiments, SqVYV was found sufficient to induce typical disease symptoms on *C. lanatus*. A limited survey revealed that SqVYV had been present during the last five growing seasons in watermelons suffering from the disease in Florida. Therefore, it is suggested that SqVYV is the likely cause of this new watermelon disease. In September 2006, moderate vine decline symptoms were observed on watermelon plants in a commercial field in Indiana. SqVYV was detected in infected plants. However, the disease is not considered as a serious threat in Indiana because the vector *B. tabaci* is relatively uncommon and the cold winter temperatures will not allow whitefly populations or SqVYV-infected watermelon plants to survive from one season to another.

Source:
Adkins S, Webb SE, Achor D, Roberts PD, Baker CA (2007) Identification and characterization of a novel whitefly-transmitted member of the family *Potyviridae* isolated from cucurbits in Florida. *Phytopathology* **97**(2), 145-154.
Egel DS, Adkins S (2007) Squash vein yellowing virus identified in watermelon (*Citrullus lanatus*) in Indiana. *Plant Disease* **91**(8) p 1056.
INTERNET (last retrieved in 2007-11).
National Watermelon Association. Whitefly (*Bemisia tabaci*) transmitted Squash vein yellowing virus (SqVYV): a component of watermelon vine decline in South Florida by PD Robert. http://www.nationalwatermelonassociation.com/scientific_whitefly.php
USDA-ARS. Research Projects.

Squash vein yellowing virus and its effects on watermelon.
http://www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=209684
Squash vein yellowing virus, a novel ipomovirus, isolated from squash and watermelon in Florida.
http://www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=201517

Additional key words: new pest **Computer codes:** SQVYV0, US

2007/193 *Cucumber vein yellowing virus* is no longer found in France

In France, *Cucumber vein yellowing virus* (*Ipomovirus,* CVYV – EPPO A2 List) was detected in autumn 2003 in melon plants (*Cucumis melo*) showing mild mosaic symptoms. Affected plants were growing under glasshouses near Eyragues (Bouches-du-Rhône) and were also infested by large populations of *Bemisia tabaci*. Eradication measures were immediately taken. CVYV was not detected again during intensive surveys conducted in the south-east part of France during 2004, 2005, and 2006. This suggests that CVYV had accidentally been introduced in 2003 but has not become established in France.
The situation of *Cucumber vein yellowing virus* in France can be described as follows: **Absent, reported once in 2003 in the south-east on glasshouse melons but no longer found in later surveys, eradicated.**

Source: Lecoq H, Dufour O, Wipf-Scheibel C, Girard M, Cotillon AC, Desbiez C (2007) First report of *Cucumber vein yellowing virus* in melon in France. *Plant disease* **91**(7), p 909.

Additional key words: absence, eradication **Computer codes:** CVYV00, FR

2007/194 *Phoracantha recurva* occurs in Italy

The presence of *Phoracantha recurva* (Coleoptera: Cerambycidae – formerly EPPO Alert List) has recently been reported in Italy on eucalyptus trees. *P. recurva* was first recorded in 2003 in Sardegna and Puglia, and subsequently in the eastern part of Sicilia in 2005. But when studying a collection of insects (Universitá degli Studi Mediterranea di Reggio Calabria), it was found that two specimens of *P. recurva* had already been collected in Calabria in 1992 and 1995, thus suggesting that the pest had been introduced much earlier than originally thought. Observations made in 2006 in Calabria confirmed the presence of *P. recurva* along the Ionian coast in eucalyptus forests together with the other introduced eucalyptus borer, *Phoracantha semipunctata* (formerly EPPO A2 List). In Calabria, *C. recurva* does not seem to cause severe damage to eucalyptus plantations. In Sicilia, it was found in various localities in the provinces of Catania and Enna, also together with *P. semipunctata*. The most important populations were observed at Piazza Armerina in a eucalyptus forest that had been exposed to fire damage, repeated drought periods, and leaf galling insects (*Ophelimus eucalypti* and *Leptocybe invasa*).

Source: Mazzeo G, Siscaro G (2007) [*Phoracantha recurva* on *Eucalyptus* in Sicily.] *Informatore Fitopatologico* no. 3, 35-37 (in Italian).
Palmeri V, Campolo O (2006) [On the presence of *Phoracantha recurva* and *Phoracantha semipunctat* F. *(Coleoptera Cerambycidae)* in Calabria.] *Bolletino di Zoologia Agraria e di Bachocoltura Serie II* **38**(3), 251-254 (in Italian).

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

2007/195 First record of *Luperomorpha nigripennis* in Italy

In 2006, the presence of a new insect pest was noticed on ornamental and citrus trees in the province of Pistoia (Toscana) in Italy. The pest was identified as *Luperomorpha nigripennis* (Coleoptera: Chrysomelidae). Feeding damage was observed on young leaves of *Arbutus unedo, Elaeagnus angustifolia x ebbingei, Eucalyptus gunnii, Euonymus japonicus* and *Citrus*. Very little information is available in the literature about the biology of *L. nigripennis* and the damage it may cause. So far, it is known to occur in India and Nepal. This is the first time that this Asian species has been recorded in Italy (and apparently in Europe).

Source: Conti B, Raspi A (2007) [First record for Italy of *Luperomorpha nigripennis* Duvivier (Coleoptera, Chrysomelidae)] *Informatore Fitopatologico* no 7/8, 51-52 (in Italian).

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

2007/196 First report of *Aleuroclava guyavae* in Italy

The presence of an unusual whitefly, *Aleuroclava guyavae* (Homoptera: Aleyrodidae) is reported for the first time in Italy. In November 2006, *A. guyavae* was observed on *Ficus sycomorus* and other *Ficus* species in the glasshouses of the Botanic Garden in Padova, Veneto Region. It was then also found on *Citrus limon* grown under glasshouse, as well as on several woody plants (*Pittosporum tobira, Prunus armeniaca, Photinia*) growing outdoors in the provinces of Padova, Vicenza and Treviso. However, in all cases only low populations were observed with no visible damage to the plants. There is very little information about *A. guyavae* in the literature. It is an Asian species which was reported so far, in Taiwan on *Psidium guajava* and in Hong Kong (China) on *Cinnamomum*. According to the authors, this is the first record of *A. guyavae* in Italy and in Europe.

Source: Pellizari G, Šimala M (2007) First record of *Aleuroclava guyavae* (Takahashi, 1932) (Hemiptera, Aleyrodidae) in Europe. *Bollettino di Zoologia Agraria e di Bachicoltura Serie II* **39**(2), 91-95.

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

2007/197 *Vespa velutina*: a new invasive alien species found in France

In November 2005, an unusually large Hymenoptera (3 cm long) was collected in a private garden, on a fruit of *Diospyros kaki* at Nérac, Lot-et-Garonne, in France. The insect was identified as *Vespa velutina* (Hymenoptera: Vespidae), a hornet of Asian origin which is a predator of social insects, and in particular of honey bees (*Apis mellifera*). *V. velutina* is widespread in Asia and is recorded in the following countries: Bhutan, China (including Hong Kong), India, Indonesia (Java, Sumatra, Sulawesi), Korea Republic, Lao, Malaysia, Myanmar, Thailand, Vietnam. Concerning its potential danger to man, *V. velutina* is not considered to be more aggressive than the European hornet, *Vespa crabo*.
Since its first discovery in France, *V. velutina* has rapidly spread in the south west of France. Its presence has now been reported in Aquitaine (Dordogne, Gironde, Landes, Lot-et-Garonne, Pyrénées-Atlantiques), Limousin (Corrèze) Midi-Pyrénées (Gers, Hautes-Pyréenées, Lot, Tarn, Tarn-et-Garonne) and Poitou-Charentes (Charente, Charente-

Maritime). More studies are needed to evaluate its impact on honey bees and other pollinating insects, as well as on its possible competition with *V. crabo*. *V. velutina* is now considered as established in France and being too widespread to be eradicated.

Source: Anonymous (2007) Phyto-régions. Aquitaine et Midi-Pyrénées. Le frelon asiatique s'installe. *Phytoma – La Défense des Végétaux* no. 3, p 3.
Haxaire J, Bouguet JP, Tamisier JP (2006) *Vespa velutina* Lepeletier 1836, une redoutable nouveauté pour la faune de France (Hym., Vespidae). *Bulletin de la Société entomologique de France* **111**(2), p 194.
http://inpn.mnhn.fr/fichesEspece/Vespa_velutina_fichiers/Haxaire%20et%20al%202006.pdf
Villemant C, Haxaire J, Streito JC (2006) Premier bilan de l'invasion de *Vespa velutina* Lepeletier en France (Hymenoptera, Vespidae). *Bulletin de la Société entomologique de France* **111**(4), 235-238.
http://inpn.mnhn.fr/fichesEspece/Vespa_velutina_fichiers/Villemant%20et%20al%202006%20BSEF.pdf
INTERNET (last retrieved 2007-11).
Inventaire national du Patrimoine naturel. Fiche technique apicole. *Vespa velutina*. Frelon asiatique.
http://inpn.mnhn.fr/fichesEspece/Vespa_velutina_fichiers/Mollet_Torre_2007.pdf

Additional key words: invasive alien species **Computer codes:** VESPVE, FR

2007/198 Studies on pear decline in Taiwan

In 1994, typical symptoms of pear decline were observed in central Taiwan on Asian pears (*Pyrus pyrifolia*). Molecular studies showed that a phytoplasma was consistently associated with the disease but that it was different from '*Candidatus* Phytoplasma pyri' (EPPO A2 List) which is associated with pear decline in North America and Europe. Molecular and phylogenetic studies suggested that the Taiwanese pear decline phytoplasma might represent a new subgroup (closely related to '*Candidatus* Phytoplasma prunorum') within the apple proliferation group. In central Taiwan, two species of pear psyllids have been identified in pear orchards: *Cacopsylla chinensis* and *C. qianli* (Homoptera: Psyllidae). The Taiwanese pear decline phytoplasma could be detected in both insects, suggesting that these could be candidates for transmitting the disease in pear orchards. However, transmission studies are needed to verify this hypothesis.

Source: Liu HL, Chen CC, Lin CP (2007) Detection and identification of the phytoplasma associated with pear decline in Taiwan. *European Journal of Plant Pathology* **117**(3), 281-291.

Additional key words: detailed record **Computer codes:** PHYPPY, TW

2007/199 A new real-time PCR test to detect *Xylophilus ampelinus*

A new real-time PCR test was developed for the specific detection of *Xylophilus ampelinus* (EPPO A2 List). Real-time PCR enabled a specific and rapid detection of *X. ampelinus* from plant tissue extracts and was found more sensitive than nested-PCR (at least tenfold more sensitive). It is considered that this new PCR method can be used as a screening test, in addition to isolation on growing media or other methods. The authors concluded that real-time PCR could provide a rapid and specific identification of isolated colonies, as well as a relative quantification of *X. ampelinus* bacteria.

Source: Dreo T, Gruden K, Manceau C, Janse, JD, Ravnikar M (2007) Development of a real-time PCR-based method for detection of *Xylophilus ampelinus*. *Plant Pathology* **56**(1), 9-16.

Additional key words: diagnostics **Computer codes:** XANTAM

2007/200 A molecular diagnostic key to identify seven species of *Meloidogyne*

A molecular diagnostic key was developed in the United Kingdom to distinguish between 7 of the most common and economically important *Meloidogyne* species: *Meloidogyne incognita, M. javanica, M. arenaria, M. mayaguensis, M. hapla, M. chitwoodi* (EPPO A2 List) and *M. fallax* (EPPO A2 List). This key is composed of three steps of PCR tests using different combinations of primers that were previously validated and shown to work reliably and specifically. It can be used with bulk extraction of DNA as well as DNA obtained from single juvenile or adult individuals. The authors considered that this molecular diagnostic key could be further expanded to include other *Meloidogyne* species.

Source: Adam MAM, Phillips MS, Blok VC (2007) Molecular diagnostic key for identification of single juveniles of seven common and economically important species of root-knot nematode (*Meloidogyne* spp.). *Plant Pathology* **56**(1), 190-197.

Additional key words: diagnostics **Computer codes:** MELGCH, MELGFA

2007/201 EPPO report on notifications of non-compliance

The EPPO Secretariat has gathered the notifications of non-compliance for 2007 received via Europhyt since the previous report (EPPO RS 2007/160), from the following EU countries: Austria, Belgium, Cyprus, the Czech Republic, Denmark, France, Finland, Germany, Ireland, the Netherlands, Poland, Spain, Sweden, the United Kingdom, and from Algeria, Bulgaria, Hungary and Switzerland. 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 (*).

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.

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Agromyzidae	*Ocimum basilicum*	Vegetables (leaves)	Thailand	France	4
Aleuroclava	*Colocasia esculenta*	Vegetables	India	United Kingdom	1
Aleurodicus dispersus	*Psidium guajava*	Fruits	Philippines	United Kingdom	1
Aleyrodidae	*Eryngium foetidum*	Vegetables	Thailand	France	5
Bemisia tabaci	*Hypericum*	Cut flowers	Israel	France	1
	Hypericum	Cut flowers	South Africa	Sweden	1
	Rosa	Cut flowers	Israel	Netherlands	2
	Solidago	Cut flowers	Israel	France	9
	Solidago	Cut flowers	Israel	Netherlands	5
	Solidago	Cut flowers	Zimbabwe	Netherlands	1
	Solidaster	Cut flowers	Israel	France	1
	Arabis	Cuttings	Israel	United Kingdom	1
	Euphorbia pulcherrima	Cuttings	Netherlands	United Kingdom	1
	Lavandula	Cuttings	Israel	United Kingdom	1
	Lavatera	Cuttings	Netherlands	United Kingdom	1
	Euphorbia pulcherrima	Plants for planting	Germany	United Kingdom	1
	Euphorbia pulcherrima	Plants for planting	Netherlands	United Kingdom	4
	Hibiscus	Plants for planting	Italy	United Kingdom	1
	Hibiscus	Plants for planting	Netherlands	United Kingdom	1
	Eryngium foetidum, Petroselinum crispum, Piper sarmentosum	Vegetables	Thailand	Ireland	1
	Eryngium foetidum	Vegetables (leaves)	Thailand	France	1
	Eryngium foetidum	Vegetables (leaves)	Thailand	Ireland	1
	Eryngium foetidum, Ocimum basilicum, Ipomoea aquatica	Vegetables (leaves)	Thailand	Ireland	1
	Ocimum basilicum	Vegetables (leaves)	Colombia	United Kingdom	1
	Ocimum basilicum	Vegetables (leaves)	Israel	France	1
	Ocimum basilicum	Vegetables (leaves)	Israel	Netherlands	7
	Ocimum basilicum	Vegetables (leaves)	Israel	United Kingdom	3
	Ocimum sanctum	Vegetables (leaves)	Thailand	United Kingdom	2
Bemisia tabaci, Xanthomonas axonopodis pv. *poinsettiicola*	*Euphorbia pulcherrima*	Plants for planting	Denmark	United Kingdom	1
Bruchophagus mexicanus	Unspecified	Various objects	USA	United Kingdom	1
Clavibacter michiganensis subsp. *michiganensis*	*Lycopersicon esculentum*	Seeds	China	France	1
Cryptophlebia leucotreta	*Citrus sinensis*	Fruits	South Africa	Spain	2
Diaphania indica	*Momordica*	Vegetables	Kenya	Germany	1
	Momordica charantia	Vegetables	Kenya	United Kingdom	1
Erwinia amylovora	*Cotoneaster*	Plants for planting	Netherlands	United Kingdom	1
Guignardia	*Citrus maxima*	Fruits	China	Netherlands	2

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Guignardia citricarpa	*Citrus*	Fruits	Bangladesh	United Kingdom	1
	Citrus limon	Fruits	South Africa	United Kingdom	1
	Citrus paradisi	Fruits	South Africa	Netherlands	2
	Citrus sinensis	Fruits	Brazil	Netherlands	3
	Citrus sinensis	Fruits	South Africa	Belgium	4
	Citrus sinensis	Fruits	South Africa	Netherlands	12
	Citrus sinensis	Fruits	South Africa	United Kingdom	3
Helicotylenchus	Musaceae	Plants for planting	Spain (Canary Isl.)	Germany	1
		Soil & growing medium	Georgia	United Kingdom	1
Helicoverpa armigera	*Dianthus caryophyllus*	Cut flowers	Turkey	Netherlands	1
	Eryngium	Cut flowers	Zimbabwe	Netherlands	1
	Eustoma	Cut flowers	Israel	Netherlands	2
	Rosa	Cut flowers	Ethiopia	Netherlands	4
	Rosa	Cut flowers	Israel	Netherlands	1
	Rosa	Cut flowers	Kenya	Netherlands	1
	Rosa	Cut flowers	Uganda	Netherlands	1
	Rosa	Cut flowers	Zimbabwe	Netherlands	2
	Mentha	Cuttings	Israel	United Kingdom	1
	Capsicum	Vegetables	Ukraine	Poland	1
	Pisum	Vegetables	Thailand	Netherlands	1
	Pisum	Vegetables	Zambia	Netherlands	1
	Pisum sativum	Vegetables	Zimbabwe	Netherlands	4
	Ocimum basilicum	Vegetables (leaves)	Israel	Netherlands	1
Hirschmanniella	*Cryptocoryne*	Aquarium plants	Singapore	Poland	1
Leptinotarsa decemlineata	*Solanum tuberosum*	Ware potatoes	Turkey	Algeria	1
Leucinodes orbonalis	*Momordica, Solanum aethiopicum*	Vegetables	Ghana	Germany	1
	Solanum	Vegetables	Thailand	Germany	1
	Solanum aethiopicum	Vegetables	Ghana	Germany	2
Liriomyza	Unspecified	Unspecified	South Africa	Denmark	1
	Apium graveolens	Vegetables	Thailand	Sweden	1
	Apium graveolens, Psidium guajava	Vegetables	Thailand	Denmark	1
	Ocimum basilicum	Vegetables (leaves)	Thailand	United Kingdom	1
Liriomyza huidobrensis	*Chrysanthemum*	Cut flowers	Ecuador	Netherlands	1
	Eryngium	Cut flowers	Kenya	Netherlands	3
	Gypsophila	Cut flowers	Ecuador	Netherlands	3
Liriomyza sativae	*Ocimum*	Vegetables (leaves)	Thailand	United Kingdom	1
Liriomyza trifolii	*Gypsophila*	Cut flowers	Israel	Netherlands	2
Milviscutulus mangiferae	*Dracaena sanderiana*	Cuttings	Singapore	United Kingdom	1
Myzus hemerocallis, Frankliniella hemerocallis	*Hemerocallis*	Plants for planting	USA	United Kingdom	1

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Pepino mosaic virus	*Lycopersicon esculentum*	Vegetables	Netherlands	United Kingdom	1
	Lycopersicon esculentum	Vegetables	Poland	United Kingdom	1
Phytophthora ramorum	*Rhododendron*	Plants for planting	Belgium	United Kingdom	1
Pratylenchus	*Bucida buceras*	Plants for planting	USA	Netherlands	1
Pseudococcidae, Phenacoccus	*Aeonium arboreum, Echeveria shaviana, Crassula lycopodioides, Graptopetalum filiferum*	Plants for planting	Italy	United Kingdom	1
Scirtothrips oligochaetus	*Momordica charantia*	Vegetables	India	United Kingdom	1
Spodoptera littoralis	*Eustoma*	Cut flowers	Israel	Netherlands	1
	Rosa	Cut flowers	Kenya	Netherlands	1
Thripidae	*Momordica charantia*	Vegetables	Dominican Rep.	United Kingdom	5
	Momordica charantia	Vegetables	India	United Kingdom	1
	Momordica charantia	Vegetables	Kenya	Germany	1
	Solanum melongena	Vegetables	Dominican Rep.	United Kingdom	1
Thrips palmi	*Dendrobium*	Cut flowers	Thailand	Netherlands	3
	Dendrobium	Cut flowers	Thailand	Sweden	1
	Momordica	Vegetables	Dominican Rep.	Netherlands	3
	Momordica	Vegetables	Dominican Rep.	United Kingdom	1
	Momordica, Solamun, Mangifera	Vegetables	Dominican Rep.	Netherlands	1
	Momordica, Solanum	Vegetables	Dominican Rep.	Netherlands	1
	Solanum melongena	Vegetables	Dominican Rep.	Netherlands	1
	Solanum melongena	Vegetables	Surinam	Netherlands	2
Thysanoptera	*Momordica*	Vegetables	Dominican Rep.	United Kingdom	1
	Momordica charantia	Vegetables	Dominican Rep.	France	2
	Momordica charantia	Vegetables	Thailand	France	3
	Solanum melongena	Vegetables	Dominican Rep.	France	3
	Citrus	Fruits	Bangladesh	United Kingdom	3
	Citrus	Fruits	India	United Kingdom	1
	Citrus aurantiifolia	Fruits	Pakistan	United Kingdom	1
	Euphorbia pulcherrima	Plants for planting	Denmark	United Kingdom	1
	Euphorbia pulcherrima	Plants for planting	Netherlands	United Kingdom	1
Xanthomonas axonopodis pv. *citri*	*Citrus*	Fruits	Bangladesh	United Kingdom	1
	Citrus	Fruits	Pakistan	United Kingdom	1
Xanthomonas axonopodis pv. *poinsettiicola*	*Euphorbia pulcherrima*	Plants for planting	Netherlands	United Kingdom	1
	Euphorbia pulcherrima	Plants for planting	Portugal	United Kingdom	1

- **Fruit flies**

Pest	Consignment	Country of origin	Destination	nb
Anastrepha obliqua	*Mangifera indica*	Dominican Rep.	United Kingdom	1
Bactrocera	*Psidium guajava*	Pakistan	Netherlands	1
	Psidium guajava	Thailand	Netherlands	1
Bactrocera dorsalis	*Annona*	India	United Kingdom	1
	Annona squamosa	Thailand	Czechia	3
	Annona squamosa	Vietnam	France	1
Bactrocera zonata	*Mangifera indica*	Pakistan	United Kingdom	1
Non-European Tephritidae	*Annona muricata*	Vietnam	France	3
	Annona squamosa	Vietnam	France	4
	Capsicum	Thailand	France	1
	Capsicum annum	Thailand	France	1
	Capsicum frutescens	Thailand	France	5
	Citrus, Mangifera indica, Manilkara zapota, Momordica charantia, Ocimum basilicum	Vietnam	Netherlands	1
	Diospyros kaki	Brazil	France	1
	Eryngium foetidum	Thailand	France	1
	Mangifera indica	Burkina Faso	France	1
	Mangifera indica	Central African Republic	France	1
	Mangifera indica	Dominican Rep.	France	2
	Mangifera indica	Egypt	France	1
	Mangifera indica	India	France	2
	Mangifera indica	Mali	France	2
	Mangifera indica	Mali	Netherlands	1
	Mangifera indica	Pakistan	France	3
	Mangifera indica	Sri Lanka	France	1
	Mangifera indica	Vietnam	France	3
	Psidium guajava	India	France	2
	Syzygium samarangensis	Thailand	France	2

- **Wood**

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Anobiidae	Unspecified	Packing wood	Bolivia	Belgium	1
Anoplophora (suspect *A. glabripennis*)	Unspecified	Packing wood	China	Germany	1
Aphelenchus	Unspecified	Packing wood	Tanzania	Germany	1
Bostrychidae	Unspecified	Packing wood	Indonesia	Germany	2
Bursaphelenchus	Unspecified	Packing wood	India	Germany	1
Cerambycidae		Various wooden objects	Cameroon	Germany	1
	Unspecified	Packing wood	Australia	Austria	1
	Unspecified	Packing wood	China	Germany	1
	Unspecified	Packing wood	India	Austria	1
Grub holes > 3 mm	*Larix*	Wood and bark	Russia	Finland	4
Nematoda	Unspecified	Packing wood	USA	Finland	1
Scolytidae	*Picea*	Wood and bark	Ukraine	Cyprus	1
	Populus	Wood and bark	Russia	Cyprus	1
Sinoxylon	Unspecified	Packing wood	China	Germany	2
	Unspecified	Packing wood	India	Austria	2
	Unspecified	Packing wood	India	Germany	14
	Unspecified	Packing wood	Vietnam	Netherlands	1
Sinoxylon anale	Unspecified	Packing wood	India	Austria	1

Source: EPPO Secretariat, 2007-10.

2007/202 Economical estimates of weeds: the examples of *Sicyos angulatus* and *Abutilon theophrasti* in Catalunya, Spain

Sicyos angulatus (Cucurbitaceae, EPPO List of IAP) originates from North-America and it is suspected that it has been introduced as an ornamental plant in some European countries during the 19th century. The plant was found in a maize field in Catalunya (ES) and eradicated in 2004 (see EPPO RS 2006/170). In 2005, the species was then officially declared a quarantine pest in the Order ARP/10/2005, and obligatory control measures were established. In 2005 and 2006, monitoring and eradication actions continued and will be maintained at least until 2010.

The total costs of the eradication campaign of *Sicyos angulatus* are estimated at 78 320 EUR for 6 years and are detailed as follows:

- 2004 costs: 3 200 EUR (destruction of the infested fields, costs of machinery, transportation, compensation to farmers at 0.20 EUR/m^2 for an area of 16 000 m^2).
- 2005 costs: 14 220 EUR (6 months monitoring by a technical officer: 12 000 EUR; 35 days of a technical officer for manual eradication: 2 100 EUR; and use of herbicides: 120 EUR).
- 2006 costs: 12 180 EUR (6 months monitoring by a technical officer: 12 000 EUR; 3 days of manual eradication for a technical officer: 180 EUR).
- From 2007 to 2010, estimates are identical to 2006, resulting in a total of 48 720 EUR.

In order to estimate the benefits from this eradication, the costs of destroying and monitoring *Sicyos angulatus* in the Comarca del Pla d'Urgell (Lleida) from 2004 untill 2010 have been compared with the containment of *Abutilon theophrasti* (Malvaceae) in the same area, from 1980 to present. Indeed, *Abutilon theophrasti* is a dramatic example of a maize weed detected in 1980, which spread untill colonizing about 10 000 ha of maize in the province of LLeida (about 44% of the maize fields). The weed began to be treated chemically in 1986. The appearance of a selective active ingredient (fluroxypyr) in 1991, as well as isoxaflutole in 1997 and mesotrione in 2003 allowed its management by chemical means.

For *Abutilon theophrasti*, both yield losses and management costs in maize fields were taken into account between 1986 and 2005 (years for which data is available) to calculate economic estimates. Yield losses between 1980 and 1990 were estimated at 1 720 000 EUR, and 2 320 000 EUR between 1980 and 2005, resulting in a total of 4 040 000 EUR. Management costs by chemical treatments were estimated at 2 918 800 EUR. In total, the economical impact of the presence of *Abutilon theophrasti* in the Lleida Province is therefore estimated at about 7 million EUR between 1986 and 2005 (over a period of 26 years).

These results highlight the need for prevention and eradication programmes of weeds.

Source: Recasens J, Conesa JA, Millàn J, Taberner A (2006) [Prevision of the agronomic impact of *Sicyos angulatus* as a weed in maize fields in Cataluña] (in Spanish). Proceedings of the Congresso 2006 Sociedad Espanola de Malherbologia.

Recasens J, Conesa JA, Millàn J, Taberner A (2007) [Estimation of the economic impact of an exotic weed in cultivated fields. The example of *Sicyos angulatus* and *Abutilon theophrasti* in Cataluña] (in Spanish). *Phytoma España*, **193** 18-25.

Additional key words: invasive alien plants, impacts **Computer codes:** ABUTH, SIYAN, ES

2007/203 Invasive alien plants - EPPO Lists and documentation

The EPPO lists and technical documents related to invasive plant species have been updated and are now available on the EPPO website. The following lists of invasive alien plants, as well as datasheets, maps, pictures, and PRA documents (when available) can be consulted:

- EPPO A2 List of pests recommended for regulation as quarantine pests (5 plant species are now included in the A2 List): the purpose of the EPPO A2 List is to recommend that organisms of serious phytosanitary concern should be regulated as quarantine pests by EPPO member countries (A2 pests are locally present in the EPPO region). The listing of pests is based on technical justifications (i.e. PRAs since the end of the 1990s) and follows a meticulous approval procedure.

- EPPO List of invasive alien plants (38 species): these plant species have been identified by the Panel on Invasive Species as posing an important threat to plant health, the environment and biodiversity in the EPPO region. EPPO therefore strongly recommends countries endangered by these species to take measures to prevent their introduction and spread, or to manage unwanted populations (for example with publicity, restrictions on sale and planting, and controls). This List is constantly being reviewed by the Panel (new species can be added and others removed) and it is not meant to be exhaustive but to focus on the main risks.

- EPPO Alert List (7 plant species): species included in the Alert List have been selected by the EPPO Secretariat or proposed by EPPO member countries, because they may present a risk to the EPPO region. Each addition to the EPPO Alert List is also marked by a short article in the EPPO Reporting Service. The objective of the EPPO Alert List is to provide an **early warning** and eventually to propose candidates which may be subjected to a PRA.

  Readers and experts are warmly invited to provide the Secretariat with information about any new outbreak of invasive alien plants in the EPPO countries.

Source: EPPO Website: http://www.eppo.org/QUARANTINE/ias_plants.htm

Additional key words: invasive alien plants, EPPO lists

2007/204 *Polygonum perfoliatum* in the EPPO region: addition to the EPPO Alert List

Considering the potential of invasiveness and the very limited distribution of *Polygonum perfoliatum* in the EPPO region, the Secretariat considered that this species could usefully be added to the EPPO Alert List.

Why: *Polygonum perfoliatum* (Polygonaceae) is an herbaceous terrestrial vine originating from Asia. It has been involuntarily introduced as a contaminant of ornamental plants in North America, where it is spreading and considered invasive. Its common name is “mile-a-minute weed” in English. Within the EPPO region, the species occurs in Siberia where it is native, and is also recorded as naturalized in Turkey. Because its distribution is still very limited, this plant can be considered a new emerging invader in Europe.

Geographical distribution
EPPO Region: Russia (Siberia, native), Turkey (alien, status unknown).

Asia (native):
Temperate: China (Anhui, Fujian, possibly eastern Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Neimenggu (Inner Mongolia, eastern part), southern Shaanxi, Shandong, Sichuan, Xizhang (Tibet, unconfirmed), Yunnan, Zhejiang), Japan, Republic of Korea, Russian Federation (Far East), Taiwan.
Tropical: Bangladesh, Bhutan, India, Indonesia, Nepal, Thailand, Vietnam, Malaysia, Myanmar (Burma), Philippines.

Oceania: Papua New Guinea.

North America (alien): USA (Connecticut, Delaware, District of Columbia, Maryland, New Jersey, New York, North-Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Virginia, West Virginia, Wisconsin).

Note: the plant has been eradicated from New Zealand. There is also a single record for Canada (British Columbia), but no additional records since 1954.
In Turkey, the plant is present on the northern face of the Kaçkar range of mountains in North Eastern Turkey, in Rize, district Ardeşen, near Firtina Deresi (Black Sea region).
In the USA, the plant has been recorded in Mississipi, but herbaria curatorial staff in Mississippi stated that publications indicating its occurrence in this State are erroneous.

Morphology
Polygonum perfoliatum is an herbaceous terrestrial vine. It is an annual in temperate climates, but can behave as a perennial in tropical climates such as in Florida (US). *P. perfoliatum* has a stem that can grow up to 6 m in length and as much as 15 cm per day. Roots are few in number, fibrous, weak and do not penetrate the soil deeply. A characteristic cup-shaped ocrea (or bract) surrounds the stem at the base of the petiole. The leaves are pale green, thin and glabrous. They are 2-8 cm wide and shaped like an equal-sided triangle and alternate along the delicate stems (this leaf shape gives it one of its common names, “devil's tail”).
Two to four flowers emerge from the ocrea. These inconspicuous white or light red flowers becoming blue at fruiting measuring 3-5 mm. Green, berry-like fruits, 5 mm in diameter, are produced in June (in New England, USA) and become a pale, metallic blue color as they ripen. Each fruit contains a shiny black achene, 2 mm in diameter. *P. perfoliatum* produces fruit continuously until the first frost, when the plant begins to die back. Dead plants in winter are reddish-brown to tan in colour, often forming brittle mats.

Biology and Ecology
P. perfoliatum is a very tender annual, withering with a slight frost, and reproducing successfully until the first frost. The plant only reproduces sexually, vegetative propagation has never been reported. A plant can bear about 50-100 seeds. Seed dormancy and germination of the plant is essential for predicting its potential range of distribution. It is tolerant to shade and dryness. *P. perfoliatum* generally grows in areas with an abundance of leaf litter on the soil surface, but has also been found in extremely wet environments with poor soil structure.

Habitats

In its native range, *P. perfoliatum* occurs in moist areas at elevations of 80-2300 m. It can be found along rivers and roadsides, along valley streams and in thickets; mountain thickets, forest margins and stream banks, ditches, stream and river banks, wasteland as well as roadsides.

In its alien range, *P. perfoliatum* invades a wide range of habitats, mainly open and disturbed ones: edges of pastures, edges of woods, early successional forests, abandoned fields, roadsides, railroad, nurseries, wood-piles, clearings and ditches. It thrives on stands of clearcut forests. It is also found in freshwater habitats such as stream banks and moist thickets.

Impact

Because it can smother tree seedlings, this weed has a negative effect on forest regeneration and commercial forest areas (Christmas tree farms). It is thought to have the potential to be a problem to nurseries, orchards and to the ornamental shrub industry, which are not regularly tilled as a cultivation practice. *P. perfoliatum* is also a threat to ecosystems as it has the ability to outgrow other species.

Control

This species can form a long-term seed bank which must be suppressed. Cultural methods can be utilized to create conditions which are not favourable to the establishment of *P. perfoliatum*. Maintaining broad vegetative buffers along streams and forest edges will help to shade out and prevent establishment of this weed. Repeated mowing or trimming of plants will prevent the plants from flowering and thus reduce or eliminate fruit and seed production. Studies have shown that pre-emergence applications of herbicide are most effective in controlling *P. perfoliatum*. A biological control program is currently undertaken by the University of Delaware with the weevil *Rhinoncomimus latipes* (Coleoptera: Curculionidae) and a number of potential biological control agents for *P. perfoliatum* have been identified in China.

Source: EPPO full datasheet (www.eppo.org)

Global Invasive Species database
http://www.issg.org/database/species/ecology.asp?si=582&fr=1&sts=sss
Invasive Alien plants of Virginia Website
http://www.dcr.state.va.us/dnh/fspope.pdf
Invasive Plant Atlas of New England (IPANE) (2001)
http://www.lib.uconn.edu/webapps/ipane/browsing.cfm?descriptionid=13
University of Delaware – Biological control of Mile-a-minute
http://ag.udel.edu/enwc/research/biocontrol/mileaminute.htm
United States Department of Agriculture – Natural Resources Conservation Service – Plants Database. http://plants.usda.gov/java/profile?symbol=POPE10

Additional key words: invasive alien plant, alert list **Computer codes:** POLPF, RS, TU, US

2007/205 *Hakea sericea* **in the EPPO region: addition to the EPPO Alert List**

Considering the potential of invasiveness and the very limited distribution of *Hakea sericea* in the south of the EPPO region, the Secretariat considered that this species could usefully be added to the EPPO Alert List.

Why: *Hakea sericea* (Proteaceae) is a shrub originating from Australia. It has been voluntarily introduced for ornamental purposes, particularly to form protective hedges. The common name for *Hakea sericea* is "silky hakea" in English, referring to silky hair on the tip growth. Within the EPPO region, the species is recorded in the South of France and in Spain, and is considered invasive in Portugal. Because its distribution is still very limited, this plant can be considered a new emerging invader in Europe. In South Africa, *H. sericea* is highly invasive, *H. gibbosa* and *H. suaveolens* are moderately invasive and *H. salicifolia* is not invasive. Nevetheless, *H. salicifolia* is also considered invasive in Portugal.

Geographical distribution
EPPO Region: France (naturalized), Portugal (invasive), Spain

Africa: South Africa (invasive)

Oceania: Australia (native - New South Wales, Tasmania, Victoria), New Zealand (invasive)

Note: in France, it is located in the Esterel (Côte d'Azur), preciselly in Théoule-sur Mer, le Trayas, St Raphaël. The plant is known as naturalized in the Esterel since 50 years. In Portugal, the species is present along the coast (Minho, Douro Litoral, Beira Litoral, Estremadura, Ribatejo, Baixo Alentejo, Algarve).

Morphology
Hakea sericea is a highly-branched and very prickly shrub that can reach 5 m in height and forms dense stands. Leaves are rigid, 6 cm long and 1 mm large, and very thorny. Flowers are hermaphrodite, white or pink and are insect pollinated, the perianth is 4-5 cm long, and they bloom from June till September. The fruits are hard and woody capsules, 3 to 4 cm, round, and contain 2 winged seeds.

Biology and Ecology:
The plant is drought, wind and cold resistant. It grows in sandstone and shale soils, and is found at elevations of 0 to 1400 m. Fruits accumulate for years on the tree and open only when the plant dies or is burnt. Seeds are prolifically released after fires, leading to dense seedling populations. The seeds are dispersed over long distances by the wind. *H. sericea* is considered highly invasive in South Africa due to its ability to produce a large seed bank in its newly adopted environment in the absence of seed predators.

Habitats
Disturbed areas such as forest margins, coastal grasslands and forests.

Impacts
In the Western and Eastern Cape Provinces of South Africa, the dense and impenatrable thickets are known to severely threaten the unique endemic vegetation of the Cape, to increase fire hazards and to reduce water yields in catchements. Studies on South African fynbos type of vegetation show that invasion by *H. sericea* resulted in a 60 % increase in fuel load and lowered the moisture content of live foliage from 155 to 110 %. Simulated rates of fire spread and intensity were nonetheless lower than in fynbos due to a densely-packed fuel bed.

Control
H. sericea is successfully controlled in South African rangelands by combining mechanical, chemical and biological control methods.

Mechanical control: in fire adapted communities, mechanical control includes felling the invasive trees and leaving them for 12-18 months until seeds have been released. Burning them subsequently kills seeds and seedlings. This method is efficient but is very time consuming and can have deleterious effects on the native vegetation.

Chemical control: seedlings can be controlled with triclopyr, shrubs with tebuthiuron.

Biological control: In South Africa, different biological control agents have been released and showed good results: *Aphanasium australe* (Coleoptera: Cerambycidae), destroying vegetative parts of the plant; *Erytenna consputa* (Coleoptera: Curculionidae), feeding on seeds; and *Carposina autologa* (Lepidoptera: Carposinidae), also destroying seeds. A gummosis disease caused by the fungus *Colletotrichum gloeosporioides*, which occurs naturally in South Africa, was formulated as a mycoherbicide. The disease kills seedlings as well as mature plants and is a highly effective biological control agent.

Source: Invasive Alien Species in Portugal
http://www1.ci.uc.pt/invasoras/index.php?menu=114&tabela=especies&language=eng
http://www1.ci.uc.pt/invasoras/files/31haquea-picante.pdf

Australian Government
http://www.anbg.gov.au/gnp/gnp3/hakea-sericea.html

Weber E (2003) Invasive plant species of the world – a reference guided to environmental weeds. CABI Publishing. Wallingford, UK, 548 p. p. 189.

Additional key words: invasive alien plant, alert list **Computer codes:** HKAZE, PT, FR, ES

2007/206 *Alternanthera philoxeroides* in the EPPO Region: addition to the EPPO Alert List

Considering the potential of invasiveness and the very limited distribution of *Alternanthera philoxeroides* in the EPPO region, the Secretariat considered that this species could usefully be added to the EPPO Alert List.

Why: *Alternanthera philoxeroides* (Amaranthaceae) is a perennial herb found both in aquatic and terrestrial habitats, and originating from South America. Pathways for introduction are unvoluntary introduction through ship ballast waters (the most probable way of introduction in Australia), and through plant mulch. In France it is thought that the possible origin or pathway of entry of the plant may be a voluntary introduction as an ornamental plant for ponds and aquaria. The common name of this species is "alligatorweed" in English, and the plant is considered as one of the worst weeds in the world. Within the EPPO region, the species only occurs in France and in Italy. Because its distribution is still very limited, this plant can be considered a new emerging invader in Europe.

Geographical distribution
EPPO region: France, Italy.

North America: Mexico, USA (invasive) (Arkansas, California, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia).

Central America: Honduras.

South America: Argentina (native), Bolivia (native), Brazil (native), Colombia, Paraguay (native), Peru (native), Uruguay (native), Venezuela (native).

Asia: China (invasive - Fujian, Hunan, Jiangsu, Sichuan, Yunnan), India (invasive - Delhi, Maharashtra, Rajasthan), Myanmar (Burma), Singapore (invasive), Sri Lanka (invasive), Taiwan, Thailand (invasive), Vietnam.

Caribbean: Puero Rico (invasive).

Oceania: Australia (Invasive - New South Whales, Northern Territory, Queensland, South Australia, Tasmania, Victoria, Western Australia), Indonesia (invasive - Java), New Zealand (invasive - Auckland, Canterbury, Waikato), Papua New Guinea (invasive).

Note: In France, the plant seems only present in the Gironde estuary and on the river Garonne and does not seem to show there the same invasiveness as in other places of the world. In Italy, the species is only known in Pisa (Toscana).

Morphology
This perennial aquatic or semi-terrestrial stoloniferous herb with branched, thick and hollow stems can grow till 10 m long. Leaves are shiny, opposite, entire and about 2-7 cm long and 1-2 cm wide. White flowers are born in heads of 8-10 cm in diameter. The plant can both colonize aquatic and terrestrial habitats. Over water, roots are adventicious and stems grow up to 60 cm high and have large, hollow internodes. On land, adventicious roots and thickened taproots occur, stems are shorter, and internodes smaller and much less hollow.

Biology and ecology
Frost and ice kill exposed stems and leaves, however, protected stems survive. It grows on a wide range of substrate, from sand to heavy clay. The plant grows best on eutrophic conditions. The plant is salt tolerant and can adapt to low light conditions (up to 12% of full light). The plant does not produce viable seeds, reproduction is entirely vegetative and relies on the production of nodes. The fragments are dispersed by water. The plant is a serious problem in waterways in tropical and warm-temperate regions of the world.

Habitats
The plant grows best in aquatic sites but may establish as a terrestrial species in wet and poor pastures and on irrigated lands, estuaries, lakes, riparian zones, water courses, wetlands, ponds, and irrigation canals.

Impacts
The aquatic form can become a serious threat to waterways, agriculture and the environment. While invading agricultural systems, such as pastures, horticulture areas and irrigation areas, it can significantly reduce production. Livestock sometimes suffer from a skin condition, with increased sensitivity to sunlight after contact with *A. philoxeroides*. In Australia, it is known to blanket the surface of the water, impeding penetration of light

and gaseous exchanges, resulting in adverse impacts on native flora and fauna. Moreover, mats impede flow and lead to flooding, they prevent access to and the use of water, and promote health problems by providing habitats for mosquitoes. The plant also negatively affects recreational water use.

Control

Control of this species has proven expensive and complicated wherever it has established. *A. philoxeroides* has rarely, if ever, been successfully eradicated once it has invaded a water body, despite numerous costly attempts.

Mechanical control: mechanical harvesting can be useful, but all fragments have to be collected.

Chemical control: the species is resistant to many common herbicides, although dicamba, triclopyr, and bentazone are used to control this plant.

Biological control: *Clinodiplosis alternantherae* (Diptera: Cecidomyiidae) forms galls on branch tips and is a likely candidate to control *A. philoxeroides*. The two fungi *Nimbya alternantherae* and *Cercospora alternantherae* (Mycosphaerellaceae: Mycosphaerella) have also proven to have pathogenic effects on the pest. Three South American species were released in North-America: *Agasicles hygophila* (Coleoptera: Chrysomelidae), *Amynothrips andersoni* (Thysanoptera: Phlaeothripidae), *Vogtia malloi* (Lepidoptera: Pyralidae), which seemed to heavily damage the plant. Moreover, a disease caused by *Fusarium* sp. that occurs on natural populations may be a good biocontrol agent.

Source: Global Invasive Species Database
http://www.invasivespecies.net/database/species/ecology.asp?si=763&fr=1&sts=sss

Invasive species website
http://www.invasive.org/browse/subject.cfm?sub=2779

Hawaiian Ecosystems at Risk Project – *Althernanthera philoxeroides*
http://www.hear.org/pier/species/alternanthera_philoxeroides.htm

Weber E (2003) Invasive plant species of the world – a reference guided to environmental weeds. CABI Publishing. Wallingford, UK, 548 p. p. 40.

Additional key words: invasive alien plant, alert list **Computer codes:** ALRPH, FR, IT

2007/207 Worst invasive alien species threatening biodiversity in Europe

A list of the worst invasive alien species threatening biodiversity in Europe was established by a group of experts in the framework of a European initiative (Streamlining European 2010 Biodiversity Indicators). This list is not an inventory of IAS in Europe, but focuses on the most harmful species that threaten European biodiversity. It is a very powerful tool for raising awareness about the problem that alien species pose for biodiversity and society. Criteria for selection of species for this list are:

- Severe impacts on ecosystem structure and function (e.g. alteration of habitats, competing with native species, entering the food chain, altering energy and nutrient flow, etc.)
- Replacement of native species throughout a significant proportion of its range
- Hybridization with native species
- Threat to unique biodiversity (e.g. habitats in need of conservation measures, isolated ecosystems, endemic species).

In addition to its impact on biodiversity, the species may have negative consequences for human activities, health and/or economic interests (e.g. is a pest, pathogen or a vector of disease).

Confronting the list of "Worst invasive alien species threatening biodiversity in Europe" with the EPPO A2 List of Invasive Alien plants and the EPPO List of Invasive Alien Species, it appears that many species are common to these lists: *Ailanthus altissima* (Simaroubaceae), *Ambrosia artemisiifolia* (Asteraceae), *Amorpha fruticosa* (Fabaceae), *Azolla filiculoides* (Azollaceae), *Bidens frondosa* (Asteraceae), *Carpobrotus edulis* and *C.* spp. (Aizoaceae), *Crassula helmsii* (Crassulaceae), *Fallopia japonica, F. sachalinensis, F* x *bohemica* (Polygonaceae) *Helianthus tuberosus* (Asteraceae), *Heracleum mantegazzianum*, *H. sosnowskyi* (Apiaceae), *Impatiens glandulifera* (Balsaminaceae), *Ludwigia peploides* (Onagraceae), *Lysichiton americanus* (Araceae), *Oxalis pes-caprae* (Oxalidaceae), *Prunus serotina* (Rosaceae), *Rhododendron ponticum* (Ericaceae), *Senecio inaequidens* (Asteraceae), *Solidago canadensis*, *S. gigantea* (Asteraceae).

Nevertheless, two species were not listed by EPPO since they are considered too widespread: *Elodea canadensis* (Hydrocharitaceae) and *Robinia pseudoacacia* (Fabaceae).

Moreover, the following species are part of the "Worst invasive alien species threatening biodiversity in Europe" list, and will be considered by EPPO. For each of these 120 exotic species, their family, origin, and known invasive behaviour in the EPPO region are given (NOBANIS database and various other sources). The status of each species in the Global Compendium of Weeds (GCW) is given, to indicate their invasive behaviour elsewhere in the world.

Species	Family	Origin	GCW*	Known invasiveness in EPPO countries
Acacia saligna	Fabaceae	Australia	AW, EW, W, NW	CY, ES, IS, IT, PO,
Acer negundo	Aceraceae	N-Am.	AW, EW, W, SW	AT, BE, CZ, DE, DK, EE, FI, HU, ES, FR, IT, LV, LT, NL, PL, RU, SE, YG,
Aster novi-belgii agg.	Asteraceae	N-Am.	EW, W, SW	AT, CZ, DE, DK, FR, HU, LT, NO, PL, RU, SE, UK, YG
Bunias orientalis	Brassicaceae	temp ASIA, E-*Eur (Pontic)*	AW, EW, W	CH, CZ, DE, DK, EE, FI, LV, LT, NO, PL, RU, SE
Hedychium gardnerianum	Zingiberaceae	India	EW, W, NW	PT (AZ)
Echinocystis lobata	Cucurbitaceae	N-Am.	AW, EW, N, NW	CZ, DE, DK, EE, HU, LV, LT, PL, RU, YG
Epilobium ciliatum	Onagraceae	N-Am.	AW, EW, W	AT, CZ, FI, HU, RU
Rosa rugosa	Rosaceae	Temp. Asia	AW, EW, W, NW	DE, DK, EE, FI, LV, LT, NO, PL, RU, SE
Spartina x townsendii/anglica	Poaceae	Eur.	EW, W, NW	DE, DK, FR, UK

* Abbreviations for the Global Compendium of Weeds column:
AW: Agricultural Weed; EW: Environmental Weed; W: Weed; NW: noxious weed.

Source: European Community Clearing House Mechanism
http://biodiversity-chm.eea.europa.eu/stories/story863586

North European and Baltic Network on Invasive Alien Species (NOBANIS)
http://www.nobanis.org/

A Global Compendium of Weeds
http://www.hear.org/gcw/alpha_select_gcw.htm

Additional key words: invasive alien plants

Computer codes: ACASA, ACRNE, AILAL, AMBEL, AMHFR, ASTNB, AZOFI, BIDFR, BUNOR, CBSED, CSBHE, ECNLO, ELDCA, EPIAC, HELTU, HERMZ, HERSO, HEYGA, IPAGL, LUDPE, LSYAM, OXAPC, POLCU, PRNSO, REYBO, REYSA, RHOPO, ROBPS, ROSRG, SENIQ, SOOCA, SOOGS, SPTAN, SPTTO