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CONTENTS ***Pests & Diseases***

Invasive Plants

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2006/200 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**

Euphorbia mosaic virus (*Begomovirus* - EU Annexes) occurs in Nicaragua. This virus was detected on the weed species, *Euphorbia heterophylla* (Ala-Poikela *et al*., 2005). **Present, no detail.**

During a survey in Bolivia, symptoms of peach yellow leaf roll were observed in a peach orchard at San Isidro, in the province of Santa Cruz. Many trees were dead or dying. Leaf samples were collected from symptomatic and asymptomatic trees. Molecular studies (PCR, RFLP) revealed the presence of a phytoplasma which presented 98% similarity with '*Candidatus* Phytoplasma australiense' (Jones *et al*., 2005). **Present, no detail**.

In Venezuela, during surveys on begomoviruses of tomato crops in 3 Andean states (Táchira, Mérida, Trujillo), *Tomato mottle virus* (EU Annexes) and *Tomato yellow leaf curl virus* (EPPO A2 list) were detected (Nava *et al*., 2006). **Present, no detail**.

- **Detailed records**

In 2006, *Acizzia jamatonica* (Homoptera: Psyllidae - formerly on the EPPO Alert List) was reported for the first time in Toscana, Italy. It was discovered on *Albizia julibrissin* in a nursery in the province of Pistoia (NPPO of Italy, 2006).

In China, studies on *Citrus tristeza virus* (*Closterovirus*, CTV – EPPO A2 list) were carried out in 2003-2004 in sweet orange (*Citrus sinensis*) orchards from 8 provinces. Symptoms observed varied from small fruit size and poor fruit quality to tree decline and death. Out of 192 samples collected and tested by DTBIA, 158 tested positive from all provinces: Chongqing*, Sichuan, Fujian, Hunan, Guangxi*, Yunnan*, Guangdong, Jiangxi* (Xu *et al*., 2006). The EPPO Secretariat had previously no data on the presence of CTV in the provinces marked with an asterisk.

In the USA, *Cucurbit yellow stunting disorder virus* (*Crinivirus* – EPPO A2 list) is reported for the first time from Arizona (NAPPO, 2006). It is also suspected that the virus occurs in California, but this has not been confirmed. Until this report, the virus had only been detected in Texas.

- **New host plants**

In 2005, *Phakopsora pachyrhizi* (EPPO Alert List) was observed on several *Phaseolus* crops (*P. coccineus, P. lunatus* and *P. vulgaris*) growing in the vicinity of infected soybean fields in Florida, USA (Lynch *et al.*, 2006).

Phakopsora pachyrhizi (EPPO Alert List) was found on a weed, *Desmodium tortuosum* (Fabaceae) in Georgia, USA. This weed is widespread in southern USA and could serve as an overwintering source for *P. pachyrhizi* and a potential inoculum for soybean crops (Sconyers *et al.*, 2006).

Source:

Ala-Poikela M, Svensson E, Rojas A, Horko T, Paulin L, Valkonen JPT, Kvarnheden A (2005) Genetic diversity and mixed infections of begomoviruses infecting tomato, pepper and cucurbit crops in Nicaragua. *Plant Pathology* **54**(4), 448-459.

Jones P, Arocha Y, Antesana O, Montilliano E, Franco P (2005) First report of an isolate of '*Candidatus* Phytoplasma australiense' associated with a yellow leaf roll disease of peach (*Prunus persicae*) in Bolivia. *Plant Pathology* **54**(4), p 558.

Lynch TN, Marois JJ, Wright DL, Harmon PF, Harmon CL, Miles MR (2006) First report of soybean rust caused by *Phakopsora pachyrhizi* on *Phaseolus* spp. in the United States. *Plant Disease* **90**(7), p 970.

NAPPO Pest Alert System (2006) First report of *Cucurbit yellow stunting disorder virus* in Arizona and possibly California (pending DNA confirmation). http://www.pestalert.org/viewNewsAlert_print.cfm?naid=30

Nava AR, Patte CP, Hiebert E, Polston JE (2006) Detection and variability of begomoviruses in tomato from the Andean states of Venezuela. *Plant Disease* **90**(1), 61-66.

NPPO of Italy, 2006-09.

Sconyers LE, Kemerait RC Jr, Brock JH, Gitaitis RD, Sanders FH, Phillips DV, Jost PH (2006) First report of *Phakopsora pachyrhizi*, the causal agent of soybean rust, on beggarweed in the United States. *Plant Disease* **90**(7), p 972.

Xu XF, Zhou CY, Song Z, Yang FY (2006) Preliminary studies on CPG/*Hinf* I RFLP groups of *Citrus tristeza virus* infected sweet oranges in China. *Agricultural Sciences in China* **5**(1), 39-44.

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

Computer codes: ACIZJA, CTV000, CYDSV0, EUMV00, PHAKPA, PHYPAU, TOMOV0, BO, CN, IT, NI, US, VE

2006/201 Survey on *Bursaphelenchus* species in Switzerland

In the Valais canton in Switzerland, an increasing decline of Scots pines (*Pinus sylvestris*) has been observed since the 1970s. This decline is probably caused by various biotic and abiotic factors such as fluoride pollution, water stress, high summer temperatures, the age structure of the forests (many old trees), bark beetles and pathogens. Studies were carried out to assess the possible involvement of *Bursaphelenchus* species in the pine decline observed in Valais. 217 declining pine trees were sampled from various locations in Valais from 2001 to 2004. *Bursaphelenchus* species were found in 40 trees and their presence was associated with blue stain fungi. The following 5 species were identified: *Bursaphelenchus vallesianus, B. mucronatus, B. sexdentati, B. leoni* and *B. silvestris*. The most frequently found species were *B. vallesianus* (found in 75% of the *Bursaphelenchus*-infested trees) and *B. mucronatus* (20%). *B. xylophilus* (EPPO A1 list) was not detected in Switzerland. It is noted that in total, 40% of the dying or recently dead trees were infested by *Bursaphelenchus* species which could indicate that nematodes may play a significant role in pine decline. It is considered that more research on pathogenicity and insect vectors is needed to clarify the role of these *Bursaphelenchus* species in pine decline in Switzerland.

Source: Polomski J, Schönfeld U, Braasch H, Dobbertin M, Burgermeister W, Rigling D (2006) Occurrence of *Bursaphelenchus* species in declining *Pinus sylvestris* in a dry Alpine valley in Switzerland. *Forest Pathology* **36**(2), 110-118.

Additional key words: absence, detailed records **Computer codes:** BURSXY, CH

2006/202 *Erwinia amylovora* eradicated from Ireland

The NPPO of Ireland recently informed the EPPO Secretariat that *Erwinia amylovora* (EPPO A2 list) does not occur in Ireland, although it was previously recorded as present with a restricted distribution. On the basis of national surveys, Ireland is considered as a protected zone for fireblight by the European Union. More than 2000 laboratory tests are conducted every year, resulting in on average 0.75 % positive cases, the majority of which can be traced back to material originating from other countries. In all cases, affected material and associated material is destroyed.
The status of *Erwinia amylovora* in Ireland is officially declared as follows: **Absent, eradicated.**

Source: NPPO of Ireland, 2007-01.

Additional key words: absence, eradication **Computer codes:** ERWIAM, IE

2006/203 Incursion of *Chrysomphalus dictyospermi* and *Pinnaspis aspidistrae* in Germany

The NPPO of Germany recently informed the EPPO Secretariat of the first incursion of two scale insects on its territory: *Chrysomphalus dictyospermi* and *Pinnaspis aspidistrae* (both Homoptera: Diaspididae). In July 2006, *C. dictyospermi* was detected on *Areca* and *P. aspidistrae* was detected on fern trees (*Asplenium nidus*) in a tropical glasshouse belonging to a recreation resort. The origin of the infestation is not known. Beneficial arthropods have been released and movement of plants from the infested glasshouse was prohibited. The pest status of both *Chrysomphalus dictyospermi* and *Pinnaspis aspidistrae* is declared as follows: **Present, single incursion, under eradication.**

EPPO note: *C. dictyospermi* is a highly polyphagous insect (in particular, it can attack citrus, olive trees and palms). *C. dictyospermi* is widespread in tropical and subtropical regions, and occurs in many countries around the Mediterranean Basin and also under glass in temperate areas (CABI map no. 3, 1969).
P. aspidistrae attacks many fern species and other plants such as citrus, ornamentals (e.g. cycas, dracaena, ficus, geranium, hibiscus, orchids), mangoes, palm trees. It has a rather wide geographical distribution, and is reported to occur in several countries around the Mediterranean Basin (CABI map no. 369, 1977).

Source: NPPO of Germany, 2006-09.

Additional key words: phytosanitary incident **Computer codes:** CHRYDI, PINNAS, DE

2006/204 First report of *Cylindrocladium buxicola* in Germany

During summer 2004 and 2005, symptoms of dark brown, coalescing spots were observed on *Buxus sempervirens* leaves in northwest Germany. The causal agent was identified as being *Cylindrocladium buxicola* (EPPO Alert List). This is the first report of *C. buxicola* in Germany.

Source: Brand T (2005) [Occurrence of *Cylindrocladium buxicola* B. Henricot on boxwood in Northwest-Germany.]. *Nachrichtenblatt des Deutschen Pflanzenschutzdienstes* **12**, 237-240 (in German).

Additional key words: new record **Computer codes:** CYLDBU, DE

2006/205 Current situation of *Agrilus planipennis* in Canada

In Canada, *Agrilus planipennis* (Coleoptera: Buprestidae – EPPO A1 list) was first detected at Windsor (Essex county) in Ontario in 2002. Since then, the pest has also been recorded in other municipalities or counties of Ontario: municipality of Chatham-Kent, Lambton, Elgin and finally in autumn 2006 in the city of London (Middlesex county). The pest status of *Agrilus planipennis* in Canada is officially declared as follows: **Present in parts of 5 counties/regional municipalities in Ontario - intensive surveys are ongoing**.

Source: NAPPO Pest Alert System (2006b) Official pest report. Update on the Emerald Ash Borer (*Agrilus planipennis* Fairmaire) in Ontario - Canada. http://www.pestalert.org/oprDetail_print.cfm?oprid=240

Additional key words: detailed record **Computer codes:** AGRLPL, CA

2006/206 *Spathius agrili* is a parasitoid of *Agrilus planipennis* in China

In China, surveys were conducted in 2003/2004 in Tianjin*, Liaoning, Jilin and Heilongjiang provinces for stressed ash trees (*Fraxinus velutina, F. mandchurica*) to search for *Agrilus planipennis* (Coleoptera: Buprestidae - EPPO A1 list) larvae and their associated parasitoids. A new species of *Spathius* (Hymenoptera: Braconidae) was found parasitizing larvae of *A. planipennis*. This new species was described and called *Spathius agrili*. Field observations showed that female *S. agrili* actively searched ash tree trunks to locate *A. planipennis* larvae in their galleries by tapping their antennae. When located, the female passed her ovipositor through the bark and oviposited 1 to 35 eggs clustered on the host larva which is then paralyzed. An *A. planipennis* larva is consumed in 7 to 40 days. *S. agrili* is the first recorded parasitoid of *A. planipennis* in China.

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* New detailed record.

Source: Yang ZQ, Strazanac JS, Marsh PM, van Achterberg C, Choi WY (2005) First recorded parasitoid from China of *Agrilus planipennis*: a new species of *Spathius* (Hymenoptera: Braconidae: Doryctinae). *Annals of the Entomological Society of America* **98**(5), 636-642.

Additional key words: biological control, detailed record **Computer codes:** AGRLPL, CN

2006/207 Sulfuryl fluoride fumigation of wood packing material against *Anoplophora glabripennis*

Sulfuryl fluoride is a candidate fumigant to replace methyl bromide. From 2001 to 2003, experiments were conducted by the USDA and Chinese quarantine authorities to test the efficacy of sulfuryl fluoride fumigations of wood packing material against *Anoplophora glabripennis* (Coleoptera: Cerambycidae – EPPO A1 list). Lots (12 pieces) of *Populus* sawn wood (10 x 10 x 115 cm) of high moisture content (up to 44%), naturally infested with *A. glabripennis* were fumigated at a range of doses (20-116 g/m^3) and temperatures (4.4, 10, 15.6, 21.1°C) for 24 h. Data was subjected to probit analysis. It was found that sulfuryl fluoride fumigation at a dose of 104 g/m^3 and temperature of 15.6°C and above (achieving a CT product of 1,095 g-h/m^3) could be recommended as a quarantine treatment of wood packing material against *A. glabripennis*. The following treatment schedule was proposed:

Temp (°C)	Dose (g/m^3)	Minimum concentration (g/m^3) at hour 0.5	2	4	12	24
≥16	104	115	90	73	34	14

Source: Barak AV, Wang Y, Zhan G, Wu Y, Xu L, Huang Q (2006) Sulfuryl fluoride as a quarantine treatment for *Anoplophora glabripennis* (Coleoptera: Cerambycidae) in regulated wood packing material. *Journal of Economic Entomology* **99**(5), 1628-1635.

Additional key words: quarantine treatments **Computer codes:** ANOLGL

2006/208 Exotic bark- and wood-boring Coleoptera in the USA

A recent review by Dr Haack (2006) presents detailed lists of exotic bark- and wood-boring Coleoptera which are now considered as established in continental USA or which have been intercepted during the last decades. These lists have been compiled from online searches of scientific literature and websites and consultation with entomologists.

- **Recent establishments**

During the 21-year period from 1985 to 2005, at least 25 species of exotic bark- and wood-boring Coleoptera have been able to establish after their introduction into continental USA. Of the 25 exotic beetles listed in the Table below, 8 species were detected during official surveillance programmes. The others were discovered by the public who reported damaged trees or by insect collectors and scientists during field work.

Table adapted from Haack (2006) – Exotic bark- and wood-feeding Buprestidae, Cerambycidae, and Scolytidae reported to be established in continental USA (first reports from 1985 to 2005).

Pest	Probable origin	Fist collected or reported in the USA	Current situation in the USA
Buprestidae			
Agrilus planipennis (EPPO A1 list)	Asia	2002, Michigan	Severe pest, killing *Fraxinus*. Isolated populations found in Indiana, Maryland, Michigan, Ohio, Virginia. Phytosanitary measures in place.
Agrilus prionurus	Mexico	2003, Texas	Pest of *Sapindus drummondii*. Found in an urban environment (Austin, Texas).
Cerambycidae			
Anoplophora glabripennis (EPPO A1 list)	Asia	1996, New York	Pest of hardwood species, found in urban areas of Illinois and New Jersey. In 2005, no infested trees were found in Illinois, a few trees were located in New Jersey and New York. An eradication programme is ongoing.
Callidiellum rufipenne	Asia	1997, North Carolina	Pest of *Chamaecyparis, Cryptomeria, Cupressus, Juniperus, Thuja*. Populations were later found in Connecticut, Massachusetts, New Jersey, New York and Rhode Island.
Phoracantha recurva	Australia	1995, California	Eucalyptus pest, only found in California so far.
Sybra alternans	Asia	1992, Florida	Collected from dead limbs of *Ficus* plants. As of 2005, no reports of economic damage or expansion in Florida or elsewhere in the USA.
Tetrops praeusta	Europe	1996, Maine	First found in northeastern USA and then in Quebec, Canada. Many host plants but most commonly found on Rosacae, such as *Crataegus* and *Malus*. No reports of economic damage from North America.
Scolytidae (ambrosia beetles)			
Ambrosiodmus lewisi	Asia	1990, Pennsylvania	Collected from dead *Quercus* branches in Pennsylvania. In Asia, it has a broad host range (*Acer, Ailanthus, Alnus, Cinnamomum, Ficus, Populus, Prunus, Quercus, Rhus, Salix*). No further reports of damage or expansion in the USA, since 1990.
Euwallacea fornicatus	Asia	2002, Florida	Collected from the trunk of a live *Delonix regia* tree. In 2004, found in California attacking live *Acer*, *Alnus, Platanus, Robinia*. Also reported to be established from Panama.
Xyleborinus alni	Asia	1996, Washington	In North America, it was first trapped in British Columbia (Canada) in 1995, and in nearby Washington State (USA). Then also caught in several eastern US states. *Alnus* is the only host reported in the USA. No damage reports from North America.
Xyleborus atratus	Asia	1987,Tennessee	First collected from Tennessee and then from Florida, Georgia, Maryland, Virginia, West Virginia and other eastern US states. No published reports of hosts or damage in the USA.
Xyleborus glabratus	Asia	2002, Georgia	First collected from Georgia, then Florida and South Carolina. It has been associated with mortality of *Persea borbonia*, and also collected from live *Sassafras albidum*.
Xyleborus pelliculosus	Asia	1987, Pennsylvania	First collected from Pennsylvania, then Maryland (1989) and also from other eastern US states. No published reports of hosts or damage in the USA. Reported hosts in Asia are: *Acer, Castanopsis, Quercus* and *Shiia.*

Xyleborus pfeilii	Eurasia	1992, Maryland	First collected from Maryland, then California, Oregon and British Columbia (Canada). The only reported host in the USA is *Asimina triloba* in Maryland. No report of economic damage.
Xyleborus seriatus	Asia	2005, Massachusetts	Recent finding and so far, no reports of hosts, damage or expansion in USA. In Asia, many conifer and hardwood species are reported as hosts (*Acer, Aesculus, Betula Chamaecyparis, Cryptomeria, Fagus, Larix, Pinus, Prunus, Quercus, Thuja, Tilia* and *Tsuga).*
Xyleborus similis	Asia	2002, Texas	First trapped in Texas in 2002, since then no reports of hosts, damage or expansion in the USA. Outside the USA, reported hosts include *Hevea, Pinus, Shorea* and *Theobroma.*
Xylosandrus mutilatus	Asia	2002, Florida and Mississippi	First collected in 2002, in Florida and Mississippi (although it was probably present as early as 1999) and in 2005 in Texas. No host or damage reports from the USA. In Asia, many hardwood species are reported as hosts, including *Acer, Albizia, Carpinus, Castanea, Cornus, Fagus, Lindera, Osmanthus* and *Swietenia.*
Scolytidae (bark beetles)			
Hylastes opacus	Eurasia	1987, New York	Now also found in Oregon. In the USA, it has been collected from recently cut pine stumps and logs. No reports of economic damage. The main hosts are *Pinus* but it can infest *Larix* and *Picea*. Also reported from Canada (Quebec, Ontario) and, as established, in South Africa.
Hylurgops palliatus	Eurasia	2001, Pennsylvania	Trapped first in Pennsylvania in 2001 and later in New York and Ohio. No damage reports. In Eurasia, its hosts are *Abies, Cedrus, Larix, Picea* and *Pinus.*
Hylurgus ligniperda	Eurasia	2000, New York	This *Pinus* bark beetle was first trapped in New York in 1994, but established populations were only confirmed in 2000. Also reported in 2003 from California. No reports of damage. Introductions reported from Australia, Brazil, Chile, Japan, New Zealand, South Africa and Uruguay.
Orthotomicus erosus	Eurasia	2004, California	*Pinus* bark beetle mainly collected from recently cut logs and stumps. No reports of economic damage. Introductions reported from Chile, South Africa and Swaziland. Record from Fiji is apparently incorrect.
Phloeosinus armatus	Eurasia	1989, California	*Cupressus* bark beetle originating from the Mediterranean region. In the USA, still restricted to California but its range is expanding. It was collected both from live trees and cut logs.
Pityogenes bidentatus	Eurasia	1988, New York	In 2002, it was also found in Pennsylvania. The main host is *Pinus*, but *Abies, Larix, Picea* and *Pseudotsuga* can also be infested. In New York, it has been reported from both *Pinus* trees and logs.
Scolytus schevyrewi (EPPO Alert List)	Asia	2003, Colorado	First reported from Colorado in 2003 but then rapidly found throughout most of western USA. So far, only observed in *Ulmus*, from both live trees and cut wood (see EPPO RS 2005/181)
Tomicus piniperda	Eurasia	1992, Ohio	As of 2005, it is known to occur in 14 US states and 2 Canadian provinces. Phytosanitary measures have been implemented since 1993. Low level of damage reported, so far.

Anoplophora chinensis (EPPO A1 list) is not known to be established in the USA but was once found. In 2001, 5 adults emerged and took flight from bonsai *Acer* trees imported from Korea and held outdoors in a nursery in Washington State (see EPPO RS 2002/019). An eradication programme was initiated in 2002, about 1000 potential host plants within a radius of 200 m around the nursery were removed, and treatments with a systemic insecticide were applied on 1500 additional potential hosts growing within a 200-400 m radius. No other *A. chinensis* or associated damage has been reported since.

Other Coleoptera:
Since the 1800s, relatively few bostrichids, curculionids, lyctids, and platypodids have been reported as established in the USA. So far, there are no records of establishment of exotic wood-feeding Platypodidae.

Pest	Current situation in the USA
Bostrichidae	
Heterobostrychus aequalis, Sinoxylon conigerum, Xylopsocus capucinus	All considered to be established in Florida
Heterobostrychus brunneus	Considered to be established in California
Heterobostrychus hamatipennis	May be established in Florida
Sinoxylon ceratoniae	May be established in California
Curculionidae	
Cryptorhynchus lapathi	European weevil first reported in New York in 1882
Lyctidae	
Lyctus brunneus, Lyctus linearis, Trogoxylon aequale	All considered to be established in USA
Minthea rugicollis	Considered to be established in Florida in the 1990s but this was later questioned.

- **Interceptions**

Data from interceptions has also been compiled in this study. During a 16-year period from 1985 to 2000, 8341 interceptions have been made in the USA because of the presence of Coleoptera. In order of importance the following groups of pests have been found: wood-associated Scolytidae (5008 interceptions, corresponding to 60%), Cerambycidae (1642), wood-associated Curculionidae (875), Bostrichidae (414), Buprestidae (245), Lyctidae (102), Platypodidae (55). Out of the 8341 interceptions, approximately 72% were identified to the genus and 35 % to the species level. Although the type of wood article was not systematically stated on the interceptions (‘wood’ was simply mentioned), the most common types of wood articles infested were crates, followed by dunnage and pallets. Most intercepted consignments originated mainly from Europe (57%), followed in frequency by Asia, Central America, South America, Africa, Caribbean and Pacific. However, the relative ranking of the continents varied over time (e.g. decrease of European origins with an increase of Asian origins in recent years). Details about the insect species intercepted and countries of origin can be found in the original paper. The value of total US imports significantly increased over time from 336 billion USD in 1985 to 1218 billion USD in 2000, but at the same time the yearly number of wood-associated insect interceptions has fallen. This could be explained by changing practices of importers, such as the replacement of solid wood by other materials less suitable for insects (e.g. plywood, particle board or metal), as well as by the implementation of US import regulations (since 1996) that required that all un-manufactured solid wood items should be ‘totally free from bark’ or else be certified by the exporting country as treated against wood pests. In addition, the USA formally supported the implementation of ISPM no. 15. However, it is pointed out that ISPM no. 15 does not address the problem of re-infestation of wood after treatment (especially if bark is still present), and that pests can still be moved through other pathways such as bonsai trees, nursery stock, household decorations (using tree trunks, bark or fruit).

Source: Haack RA (2006) Exotic bark- and wood-boring Coleoptera in the United States: recent establishments and interceptions. *Canadian Journal of Forest Research* **36**(1), 269-288.

Additional key words: detailed records **Computer codes:** AGRLPL, ANOLCN, ANOLGL, CLLLRU, PHOARE, SCOLSH, US

2006/209 Studies on dispersal of *Ceratocystis fagacearum* by nitidulid beetles

In Minnesota (US), studies on potential vectors of *Ceratocystis fagacearum* (EPPO A1 list) suggested that the main nitidulid species transmitting the pathogen from diseased to healthy oaks are *Colopterus truncatus* and *Carpophilus sayi* (Coleoptera: Nitidulidae). These insects can carry spores from sporulating mats of *C. fagacearum* to fresh wounds on healthy trees. Studies were done on the temporal flight dynamics of both species from April to October in Minnesota. Populations of *Colopterus truncatus* peaked in April and May, but in infested sites, *C. fagacearum* was most frequently isolated from the beetles from July to September. The abundance of *Carpophilus sayi* peaked in October and the pathogen was most commonly isolated from beetles in May and June. It was noted that the infective insect potential was highest in spring for both species and was greater for *Colopterus truncatus* than for *Carpophilus sayi.*

Source: Ambourn AK, Juzwik J, Moon RD (2005) Seasonal dispersal of the oak wilt fungus by *Colopterus truncatus* and *Carpophilus sayi* in Minnesota. *Plant Disease* **89**(10), 1067-1076.

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

2006/210 First report of *Cryphonectria parasitica* in Iran

Diseased chestnut trees (*Castanea sativa*) were observed during surveys done from 2001 to 2005 in the north of Iran. These surveys were conducted in the main chestnut-growing areas (i.e. forests of Visroud, Imamzadeh Ebrahim, Fuman and Shafaroud, in Gilan province). Affected trees had declining or dead branches and shoots with wilting leaves. Cankers were observed on trunks and branches. In some cases, cankers girdled trunks and branches inducing dieback and eventually death of the plant. The following fungi were isolated from diseased tissues and identified based on their morphological characters: *Chalaropsis* sp., *Colletotrichum* sp., *Fusarium oxysporum, Fusarium solani*, and the most commonly and consistently recovered species was *Cryphonectria parasitica* (EPPO A2 list). This is the first report of chestnut blight in Iran.
The situation of *Cryphonectria parasitica* in Iran can be described as follows: **Present, first reported in 2006, found in the north (Gilan province).**

Source: Kazempour MN, Khodaparast SA, Salehi M, Amanzadeh B, Nejat-Salary A, Shiraz BK (2006) First record of chestnut blight in Iran. *Journal of Plant Pathology* **88**(1), p 121.

Additional key words: new record **Computer codes:** ENDOPA, IR

2006/211 Real-time PCR to detect *Phytophthora ramorum* and *P. pseudosyringae*

A real-time PCR test has been developed in the USA to detect *Phytophthora ramorum* (EPPO Alert List) and *Phytophthora pseudosyringae*. *P. pseudosyringae* is a newly described species reported in Europe and the USA which can cause similar symptoms (see EPPO RS 2005/162). This real-time PCR assay is based upon mitochondrial DNA sequences and uses specific primers for both *Phytophthora* species in a multiplex reaction. This assay was tested successfully on infected field samples. It was found to be highly sensitive (more sensitive than many other PCR procedures) and specific. It is planned to expend this technique to the simultaneous detection of *P. nemorosa*, which is another pathogen (so far, only reported in the USA, in California and Oregon) occurring with *P. ramorum*.

Source: Tooley PW, Martin FN, Carras MM, Frederick RD (2006) Real-time fluorescent polymerase chain reaction detection of *Phytophthora ramorum* and *Phytophthora pseudosyringae* using mitochondrial gene regions. *Phytopathology* **96**(4), 336-345.

Additional key words: diagnostics **Computer codes:** PHYTRA, PHYTSP

2006/212 *Papilio demoleus*, a potential citrus pest newly found in the Caribbean

Papilio demoleus (Lepidoptera: Papilionidae) has been reported for the first time in the Dominican Republic in 2004, and in early 2006 it was reported in Puerto Rico. As *P. demoleus* is a strong flyer, it is expected that it will reach Florida (US) in the short term and might continue to spread in the Americas. The adult is a beautiful butterfly with a wingspan of 9-10 cm (many pictures can be viewed on the Internet). *P. demoleus* larvae feed on the foliage of citrus trees. *P. demoleus* can be a serious pest of young citrus trees and cause damage in nurseries, but it is usually considered as a minor pest of mature trees. *P. demoleus* occurs in Asia and Australia where six subspecies are recognized across its whole range (*demoleus, libanius, malayanus, novoguineensis, sthenelus,* and *stenelinus*). In Africa and Madagascar, a morphologically similar species occurs (*Papilio demodocus*). According to the literature the current distribution of *P. demoleus* is the following:
EPPO region: Absent.
Asia: Bangladesh, Bhutan, Cambodia, China, India, Indonesia (Java, Sumatra), Iraq, Iran, Laos, Malaysia, Myanmar, Nepal, Oman, Pakistan, Philippines, Saudi Arabia, Singapore, Sri Lanka, Taiwan, Thailand, Vietnam.
Oceania: Australia, Papua New Guinea.
It is suspected that *P. demoleus* has been introduced accidentally into the Dominican Republic (natural spread appears very unlikely). Early stages may have been introduced from Asia on citrus consignments or material associated with citrus imports. It is also envisaged that butterflies might have been deliberately introduced for hobby interests or even for release at celebrations such as weddings.

Source:

CABI (1979) Distribution Maps of Pests. *Papilio demoleus* no. 396. Wallingford, UK.

Eastwood R, Boyce SL, Farrell BD (2006) The provenance of Old World swallowtail butterflies, *Papilio demoleus* (Lepidoptera: Papilionidae), recently discovered in the New World. *Annals of the Entomological Society of America* **99**(1), 164-168.

Heppner JB (2006) Pest Alert. Lime swallowtail in the Caribbean and possible impacts for Florida citrus. Florida Department of Agriculture and Consumer Services. Retrieved 2006-12-12 from: http://www.doacs.state.fl.us/pi/enpp/ento/limeswallowtail.html

Hill SD (1983) Agricultural insect pests of the tropics and their control. Second edition. Cambridge University Press, UK, 746 pp.

Additional key words: new records **Computer codes:** PAPIDE, DO, PR

2006/213 Molecular identification key for *Scirtothrips* pest species

The genus *Scirtothrips* (Thysanoptera: Thripidae) includes 100 species of which approximately 10 are recognized as plant pests attacking, for example, avocado (*Persea americana*), citrus, mango (*Mangifera indica*), tea (*Camellia sinensis*). Species identification is difficult because it requires expert knowledge and is almost impossible without the presence of adult specimens. In order to provide an easy, accurate and highly reliable identification technique, a simple molecular key based on the internal transcribed spacer regions (ITS1 and ITS2) of nuclear ribosomal DNA was developed in California (US). Multiplex PCR followed by restriction of PCR products provided a set of simple diagnostic characters for several *Scirtothrips* species including for example, *S. aurantii* (EPPO A1 list), *S. citri* (EPPO A1 list), *S. dorsalis* (EPPO A2 list), and *S. perseae* (EPPO Alert List). However, the authors recognize that the genus still needs to be identified with morphological methods. During this study, molecular data suggested that the species complex from avocados proposed by other authors was actually a single species (*S. perseae*), but that Indian and South American specimens of *S. dorsalis* should be considered as separate species. Finally, some other *Scirtothrips* species (*S. bispinosus, S. longipennis, S. mangiferae* and *S. manihoti*) still need to be further studied to be incorporated into the key.

Source: Rugman-Jones PF, Hoddle MS, Mound LA, Southamer R (2006) Molecular identification key for pest species of *Scirtothrips* (Thysanoptera: Thripidae). *Journal of Economic Entomology* **99**(5), 1813-1819.

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

2006/214 Studies on *Citrus tristeza virus* in Iran

In Iran, citrus production covers 250,000 ha and the major citrus-growing regions are located in the north along the Caspian Sea (e.g. Mazandaran province) and in several provinces in the south (e.g. Fars province). Sweet oranges (*Citrus sinensis*), mandarins (*C. reticulata*) and Mexican lime (*C. aurantifolia*) are the main citrus species grown. *Citrus tristeza virus* (*Closterovirus* – CTV, EPPO A2 list) was first recorded in the north of Iran in 1977. It is hypothetized that CTV was massively introduced into Iran via imports of Satsuma mandarins (*C. unshiu*) on trifoliate orange rootstocks (*Poncirus trifoliata*) from Japan in the late 1960s. For several years, CTV remained confined to northern Iran until its recent spread by *Aphis gossypii* to southern Iran where it was detected in 1996. 22 isolates of CTV were collected from the Mazandaran (north) and Fars (south) provinces and were characterized (ELISA, RT-PCR, RFLP, comparison of CP gene sequences). All isolates were collected from citrus trees showing various CTV symptoms (e.g. decline for trees grafted on sour orange, inverse pitting below bud union on some sour orange rootstocks, mild to moderate stem pitting on the trunks of some sweet orange trees). No major differences could be observed between isolates collected from the north and the south of Iran. It was found that Iranian isolates showed high similarity with severe strains from California and Japan. It was concluded that these severe strains could represent a threat to the citrus industry, as natural spread of CTV is occurring and sour orange is still widely used as a rootstock. It was also considered that more extensive surveys should be done to better analyse CTV populations occurring in Iran.

Source: Barzegar A, Sohi HH, Rahimian H (2005) Comparative sequence analysis of coat protein gene of Iranian *Citrus tristeza virus* isolates. *Journal of Phytopathology* **153**(7-8), 457-463.

Additional key words: detailed record **Computer codes:** CTV000, IR

2006/215 Studies on *Citrus tristeza virus* Egyptian isolates

Isolates of *Citrus tristeza virus* (*Closterovirus*, CTV – EPPO A2 list) differ in their biological characteristics and particularly in the severity of symptoms they produce on citrus species and cultivars. In Egypt, CTV does not cause a major disease on citrus, although the majority of orchards are planted with sweet oranges (*Citrus sinensis*) grafted on sour orange rootstocks (*C. aurantium*). The aphid vector, *Aphis gossypii*, occurs in Egypt but to date, its most efficient vector, *Toxoptera citricidus*, has never been found. Three Egyptian isolates of CTV were collected at 2 locations from rough lemon trees (*C. jambhiri*) grafted on sour orange, showing symptoms of decline. The capsid protein gene was amplified by RT-PCR, and analysed by SSCP (single stranded conformation polymorphism) and sequencing. Comparison with reference sequences (of isolates coming from other parts of the world) showed that the Egyptian isolates were very similar to a severe strain from Florida which causes quick decline and stem pitting. These results suggested that isolates causing severe quick decline are present in Egypt, although tristeza epidemics have not yet been observed in the country.

Source: Amin HA, Fonseca, F, Santos C, Nolasco G (2006) Typing of Egyptian *Citrus tristeza virus* (CTV) isolates based on the capsid protein gene. *Phytopathologia Mediterranea* **45**(1), 10-14.

Additional key words: detailed record **Computer codes:** CTV000, EG

2006/216 Invasive alien plants in Romania

When analysing the flora of Romania, 435 alien plants were identified. This alien flora contains 51 archeophytes (11.73%) and 384 neophytes (88.27%). Among the archeophytes, 33 (64.7%) are casual, 15 (29.4%) are naturalized and 3 (5.9%) are considered invasive (*Bassia scoparia*, *Cardaria draba* subsp. *draba, Portulaca oleracea* subsp. *oleracea*). Among the neophytes, 271 (70.57%) are casual, 78 (20.31%) are naturalized and 35 (9.11%) are invasive. The list of invasive alien plants, including weeds for Romania (RO) is the following:

Species	Family	Origin	Occurrence in RO	Habitats
Acer negundo	Acearaceae	N-Am	Widespread	Artificial habitats: industrial and urban landscapes
Ailanthus altissima	Simaroubaceae	E-Asia	Almost all regions	All types of habitats
Amaranthus albus	Amaranthaceae	N-Am	Locally abundant	Agricultural fields
Amaranthus crispus	Amaranthaceae	S-Am	Locally abundant	Agricultural fields
Amaranthus hybridus	Amaranthaceae	N-Am	Common	Agricultural fields
Amaranthus retroflexus	Amaranthaceae	N-Am	Common	Agricultural fields, industrial and urban landscapes
Ambrosia artemisiifolia	Asteraceae	N-Am	Widespread	Urban, industrial landscapes, rural zones
Amorpha fruticosa	Fabaceae	N-Am	Common	Semi-natural habitats
Artemisia annua	Asteraceae	Eur	Common	Artificial habitats, agricultural fields, industrial and urban landscapes
Azolla filiculoides	Azollaceae	Neotrop	Common, southern RO	Natural habitats: still waters
Bassia scoparia	Chenopodiaceae	Central Asia	Widespread	Artificial habitats: industrial surroundings, railway tracks
Bidens vulgata	Asteraceae	N-Am	Appears and disappears	Natural and semi-natural habitats: wet spots and flooded ground along rivers
Cannabis sativa subsp. *spontanea*	Cannabaceae	Central Asia	Widespread, mainly SE RO	Artificial habitats (industrial, urban, rural landscape), semi-natural habitats
Cardaria draba	Brassicaceae	Medit	Widespread	Artificial habitats
Chamomilla suaveolens	Asteraceae	NE-Asia, W N-Am	Locally abundant	Semi-natural habitats
Conyza canadensis	Asteraceae	N-Am	Very widespread	All types of habitats
Cuscuta campestris	Convolvulaceae	N-Am	Sporadic	Cultivated land
Echinocystis lobata	Cucurbitaceae	N-Am	Locally abundant	Natural habitats: along rivers
Elodea nuttallii	Hydrocharitaceae	N-Am	Abundant, along the Danube	Natural and semi-natural habitats
Erigeron annuus subsp. *annuus*	Asteraceae	N-Am.	Common	All types of habitats
Erigeron annuus subsp. *strigosus*	Asteraceae	N-Am	Less common than the other subsp.	All types of habitats

Species	Family	Origin	Occurrence in RO	Habitats
Euphorbia maculata	Euphorbiaceae	N-Am	Widespread in warmer zones of RO	Artificial habitats: industrial surroundings, railway tracks
Galinsoga ciliata	Asteraceae	S-Am	Moderately widespread	Ruderal habitats
Galinsoga parviflora	Asteraceae	S-Am	Very widespread	Crops, semi-natural habitats
Impatiens glandulifera	Balsaminaceae	S-Asia	Locally abundant	Artificial, semi-natural and natural habitats
Iva xanthifolia	Asteraceae	N-Am	Locally abundant	Artificial and semi-natural habitats
Juncus tenuis	Juncaceae	N-Am	Locally abundant	Semi-natural and natural habitats
Lepidium densiflorum	Brassicaceae	N-Am	Locally abundant	Artificial habitats, especially sandy ones
Lindernia dubia	Scrophullariaceae	N-Am	Locally abundant	Natural habitats, riversides
Lycium barbarum	Solanaceae	E-Asia	Locally abundant	Artificial and semi-natural habitats
Paspalum paspalodes	Poaceae	Tropics	Locally abundant	Natural habitats, riversides
Portulaca oleracea subsp. *oleracea*	Portulacaceae	Euras	Locally abundant	All types of habitats
Reynoutria japonica	Polygonaceae	E-Asia	Locally abundant	Rivers
Sisyrinchium montanum	Iridaceae	N-Am	Sporadic	Natural habitats: meadows
Solidago canadensis	Asteraceae	N-Am	Widespread	Semi-natural habitats: riversides
Veronica persica	Scrophullariaceae	W-As	Common	Artifical habitats
Xanthium spinosum	Asteraceae	S-Am	Common	All types of habitats

Note: species in bold type are included in the EPPO List of invasive alien plants.

When analysing the origin of these invasive alien plants, 21 out of 38 species come from North-America (55%) and 7 come from Asia (18%). Analysis of bioforms reveals the dominance of therophytes (22 taxa - 61%), followed by hemichryptophytes (5 taxa - 20%) and phanerophytes (4 taxa - 11%).

Moreover, the following emerging invasive alien plants have been identified:

Species	Family	Origin	Note on occurrence in RO	Habitats
Abutilon theophrasti	Malvaceae	W-Asia	Sporadic	Artificial habitats
Ceratopteris thalictroides	Parkeriaceae	Tropics	Sporadic	Lakes, aquarium plant
Eleusine indica	Poaceae	Pantrop	Sporadic, S RO	Artificial habitats
Fraxinus pennsylvanica	Oleaceae	N-Am	Planted for cultivation	
Helianthus tuberosus	Asteraceae	N-Am	Frequency is increasing	Semi-natural habitats
Impatiens parviflora	Balsaminaceae	EC-Asia	Sporadic	Artificial, semi-natural and natural habitats

Monochoria korsakowii	Pontederiaceae	Asia	S and SE of RO	Weed of rice-fields
Morus alba	Moraceae	E-Asia	Limited	All types of habitats
Panicum capillare	Poaceae	N-Am	Has the potential to spread	Artificial habitats
Panicum dichotmiflorum	Poaceae	N-Am	Has the potential to spread	Artificial habitats
Robinia pseudoacacia	Fabaceae	N-Am	Frequently cultivated	Artificial, semi-natural and natural habitats
Ulmus pumila	Ulmaceae	Asia	Frequently cultivated	Artificial habitats

Source:

Anastasiu P, Negrean G, Basnou C, Sîrbu C, Oprea A (2006) Alien invasive plants and their impact in wetlands from Romania. In: *Neobiota. From Ecology to Conservation.* 4th European Conference on Biological Invasions. Vienna (Austria), 2006-09-27/29, BfN-Skripten 184: page 71

Anastasiu P, Negrean G (2005) Invasive and potentially invasive alien plants in Romania (Black list). In: *Bioplatform – Romanian National Platform for Biodiversity*. Vol 2. Interinstitutional Protocol for Biodiversity Research Development (ed. Mihăilescu S.) Bucureşti: Edit. Academiei Române, 107-114.

Additional key words: invasive alien plants, national records

Computer codes: ACRNE, AILAL, AMAAL, AMACP, AMACH, AMARE, AMBEL, AMHFR, ARTAN, AZOFI, KCHSC, BIDVU, CADDR, MATMT, ERICA, CVCCA, ECNLO, ELDNU, ERIAN, ERIST, GASCI, GASPA, IPAGL, IVAXA, IUNTE, LEPDE, LIDDU, LYUHA, PASDS, POROL, POLCU, SISMO, SOOCA, VERPE, ABUTH, CESTH, ELEIN, FRXPE, HELTU, IPAPA, MOOKO, MORAL, PANCA, PANDI, ROBPS, ULMPU, RO

2006/217 Invasive species in the flora of the Upper Volga Basin

The territory of the Upper Volga basin is 203500 km², it is situated in the Central part of European Russia and comprises the following administrative regions: Ivanovo, Kostroma, Yaroslavl, Vladimir and Tver'. The flora comprises 760 alien species from 73 families, of which 135 (17.8%) are naturalized in natural and semi-natural communities. 55 of them (7.2%) are considered invasive.
In forests, the following plants are often found as invaders and form the underbrush: *Acer negundo*, *Amelanchier spicata* (EPPO list of invasive alien plants), *Physocarpus opulifolius*, *Sambucus racemosa*, *Aronia mitschurinii*, *Prunus cerasus*, *Cotoneaster lucidus, Crataegus monogyna* and *Fraxinus pennsylvanica*. Herbaceous species such as *Dianthus barbatus, Festuca trachyphylla, Impatiens parviflora* and *Juncus tenuis* are also present.
In meadows, *Aster salignus, Aster lanceolatus, Epilobium adenocaulon, Lupinus polyphyllus, Oenothera biennis* and *Saponaria officinalis* are found.
In open sand habitats and dry slopes, *Chaenorchinum minus, Erigeron canadensis, Lepidium densiflorum, Senecio viscosus,* etc. are recorded. The species considered the most invasive are *Acer negundo, Bidens frondosa, Echinocystis lobata*, *Heracleum sosnowskyi, Impatiens glandulifera* and *Solidago canadensis.*
There are also some examples of local invasives: *Galega orientalis, Symphytum x uplandicum* in Ivanovo region, *Zizania latifolia* in Korstroma region, *Valisneria spiralis* in Yaroslavl region, *Anisantha tectorum, Linaria canadensis* in Vladimir region. Alien plants such as *Festuca arundinacea, Oenothera rubricaulis, Populus alba, Populus balsamifera, Reynoutria japonica, Sorbaria sorbifolia, Viburnum lantana, Ambrosia artemisiifolia, Cyclachaena xanthiifolia, Xanthium strumarium* and *Xanthium albinum* also successfully compete with native species.

Source: Borissova EA (2006) Invasive species in the flora of the Upper Volga Basin. In: *Neobiota. From Ecology to Conservation.* 4th European Conference on Biological Invasions. Vienna (Austria), 2006-09-27/29, BfN-Skripten 184: page 85.

Additional key words: invasive alien plants, regional records

Computer codes: ACRNE, AMESP, PHPOP, SAMRA, PRNCE, CTTLU, CSCMO, FRXPE, DINBA, FESTR, IPAPA, IUNTE, ASTLN, EPIAC, LUPPO, OEOBI, SAWOF, ERICA, LEPDE, SENVI, BIDFR, ECNLO, HERSO, IPAGL, SOOCA, GAGOR, ZIZLA, BROTE, LINCA, FESAR, OEORU, POPAL, POPBA, POLCU, SOISO, VIBLA, AMBEL, XANPU, XANRI, RU

2006/218 Neophytes of Fuerteventura, Islas Canarias (ES)

Fuerteventura is the second largest island of the Canarian Archipelago (ES). The surface of the island is 1725 km², the climate is arid. The current flora contains some 780 species, of which 120 species originate from distant continents. Common alien weeds of irrigated gardens are *Bidens pilosa, Conyza sumatrensis, Cyperus* spp., *Dichondra micrantha, Oxalis pes-caprae, Parietaria judaica, Salpichroa origanifolia* and *Sesuvium portulacastrum*. Trees running wild are for instance *Caesalpinia spinosa, Casuarina equisetifolia, Schinus molle* and *Schinus terebinthifolius*. The Australian aliens *Acacia cyclops, Atriplex semilunaris*, and *Maireana brevifolia* are also considered invasive.

Source: Brandes D (2006) Neophytes of Fuerteventura, Canary Islands. In: *Neobiota. From Ecology to Conservation.* 4th European Conference on Biological Invasions. Vienna (Austria), 2006-09-27/29, BfN-Skripten 184: page 86.

Additional key words: invasive alien plants, regional records

Computer codes: BIDPI, ERIFL, 1CYPG, DIOMI, OXAPC, PAIDI, SAPOR, SSVPO, CAESP, CSUEQ, SCIMO, SCITE, ACACC, 1MRNG

2006/219 Urban hedges: a cradle for plant invaders?

Hedges are a habitat type peculiar to urban areas. Some ornamental plants find their ways out of gardens using hedges to adapt to the ecological conditions of natural habitats. In Slovenia, the following garden escapees seem to gradually become invaders thanks to hedges: *Lonicera japonica, Spiraea japonica, Acer negundo*, and to a lesser extent *Duschenia indica, Mahonia aquifolium* and *Berberis thunbergii*.

Source: Jogan N (2006) Urban hedges: a cradle for plant invaders? In: *Neobiota. From Ecology to Conservation.* 4th European Conference on Biological Invasions. Vienna (Austria), 2006-09-27/29, BfN-Skripten 184: page 159.

Additional key words: Invasive alien plants, national records

Computer codes: LONJA, SPVJA, ACRNE, DUCIN, MAHAQ, BEBTA, SL

2006/220 A theory of plant invasiveness based on biological traits in the area of origin

Theories proposing that the invasiveness of a plant can be predicted on the basis of its biological characteristics suppose the existence of certain key traits that may predispose non-indigenous species to rapid population expansion. The majority of studies which aimed to uncover these traits have ignored the biogeographic nature of plant invasions by focussing almost exclusively on characteristics observed in the area of introduction.
This study was designed to see whether the major predictions of plant invasiveness deriving from traits observed in the introduced range could also be verified from traits observed in the native range of invasive species. To this end, some plant species from Central-Europe which have been introduced into the USA were categorized into two groups: non-invasive and invasive in the USA. Results showed that a large native range and pre-adaptation of the invasive species to disturbances were the most important traits distinguishing invasive from non-invasive species. Although some reproductive traits were also important in delimiting these two groups (long flowering period, mixed breeding type, light seeds), other traits concerning reproduction, pollination, dispersal and competitive ability played no role.

Source: Fenesi A, Botta-Dukát Z (2006) Testing the major predictions of the theory of plant invasiveness based on biological traits in the source area. In: *Neobiota. From Ecology to Conservation.* 4th European Conference on Biological Invasions. Vienna (Austria), 2006-09-27/29, BfN-Skripten 184: page 116.

Additional key words: invasive alien plants, traits of invasiveness **Computer codes:** HU

2006/221 Management of *Sicyos angulatus* in the Republic of Korea

Sicyos angulatus (Cucurbitaceae, EPPO A2 list) has spread across the Republic of Korea within the 15 years since its first appearance in 1989, covering now more than 110 ha (data obtained in summer 2005). Most populations were found on riversides, with a few cases in mountainous or agricultural fields. The plant has colonized the four major rivers of Korea; it is thought that new populations on riversides originate from seeds which are being carried by the river water. Successful colonization of *S. angulatus* was prominent on riversides with slow water flows and without an emergent plant belt. Heavy rains leading to soil erosion and floods amplify seed export greatly. Because fruits are spiny, humans and animals are efficient transporters of the seeds.
Plant growth was studied and a management scheme to suppress the plant has been proposed in the Republic of Korea. Massive germination can lead to a 100% cover of the soil layer during the growing season. Average and highest seed density at full maturation was 748 and 1128 seeds/m², respectively. A few seedlings/10 m² were enough to cover the whole grass mat

by July. Results also showed that riversides with a well developed emergent macrophyte belt in water were free from *S. angulatus*. An emergent macrophyte belt composed of *Typha angustifolia, Phragmites japonica* and *Phragmites communis* could successfully prevent seeds of *S. angulatus* from accessing riversides. It was felt that aquatic plant belts could therefore be used as a management tool to prevent invasions. Routine management of riversides for landscaping will prevent colonization by *S. angulatus* while no special control is needed in fields because of the intensive agricultural practices. Moreover, *S. angulatus,* when submerged, goes into rapid lysis and extended submersion of invaded riversides or fields proved to be highly effective to control the plant. Ensuring that seed-free water drains from sites highly invaded and that large populations are destroyed before fruiting in watersheds upstream of rivers or lakes was recommended.

Source: Kil JH, Kong HY, Koh KS, Kim JM (2006) Management of *Sicyos angulata* spread in Korea. In: *Neobiota. From Ecology to Conservation. 4th European Conference on Biological Invasions.* Vienna (Austria), 2006-09-27/29, BfN-Skripten 184: page 170.

Additional key words: Invasive alien plant, management

Computer codes: SIYAN, KR

<u>**2006/222**</u> <u>Impact of *Reynoutria* spp. on invertebrate communities</u>

The ecological impact of *Reynoutria* spp. on invertebrate communities in natural and semi-natural habitats (along riversides) in selected areas in France, Germany and Switzerland was assessed. Results indicate that invasion by *Reynoutria* spp. does not only have strong effects on native vegetation, but also negatively affects invertebrate communities. In fact, the overall abundance, biomass and diversity of invertebrates in plots invaded by *Reynoutria* spp. were strongly reduced compared to control plots. In addition, a negative effect of *Reynoutria* spp. could also be detected in other trophic groups (predators, detritivors). However, not all invertebrate groups responded in the same way, and species numbers of ground beetles were higher in invaded stands. Ground beetles may nevertheless be negatively affected by these exotic plants as indicated by the reduced size of *Abax parallelepipedus* (Coleoptera: Carabidae) individuals captured on *Reynoutria* spp.

Source: Gerber E, Schaffner U, Krebs C, Murrell C (2006) Impact of invasive exotic knotweeds (*Fallopia* spp.) on invertebrate communities. In: *Neobiota. From Ecology to Conservation.* 4th European Conference on Biological Invasions. Vienna (Austria), 2006-09-27/29, BfN-Skripten 184: page 132.

Additional key words: invasive alien plants, research, impact

Computer codes: 1REYG, FR, CH, DE

2006/223 Impact of nine invasive alien plant species on soil properties in Belgium

Alterations of soil properties by invasive alien plants have sometimes been reported, but generalization of this impact has always proven difficult. The impact of nine invasive alien plants on mineral nutrients in soil and standing biomass has been studied with a common methodology: *Solidago gigantea* (EPPO list of invasive alien plants), *Reynoutria japonica* (EPPO list of invasive alien plants), *Heracleum mantegazzianum* (EPPO list of invasive alien plants), *Prunus serotina* (EPPO list of invasive alien plants), *Impatiens glandulifera* (EPPO list of invasive alien plants), *Impatiens parviflora, Rosa rugosa, Senecio inaequidens* (EPPO list of invasive alien plants) and *Polemonium caeruleum*.
Studies on soil properties (pH, CEC, C, N, Ca, Mg, K, P, Mn), on primary productivity and on mineral element concentrations in plants between invaded plots and surrounding uninvaded vegetation were conducted. When all sites or species were pooled, there was a general pattern of increased concentration of nutrients (K, Mg and Mn) in the topsoil under invasive alien species. Schematically, the nine species followed one of the three following patterns:

- increased concentration of nutrients in topsoil (e.g. *Reynoutria japonica*),
- weak impact on topsoil chemistry (e.g. *Heracleum mantegazzianum, Polemonium caeruleum),*
- elevation of a few specific nutrients (e.g. phosphorus in *Solidago gigantea*)

Source: Dassonville N, Vanderhoeven S, Meerts P (2006) Impact of nine alien invasive plant species on soil properties in Belgium. In: *Neobiota. From Ecology to Conservation.* 4th European Conference on Biological Invasions. Vienna (Austria), 2006-09-27/29, BfN-Skripten 184: page 102.

Additional key words: invasive alien plant, research, impact

Computer codes: SOOGS, POLCU, HERMZ, PRNSO, IPAGL, IPAPA, ROSRG, SENIQ, PMNCO, BE