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98/198 Situation of *Diabrotica virgifera* in the EPPO region: first reports in Bulgaria and Montenegro (YU)

The situation of *Diabrotica virgifera* (EPPO A2 quarantine pest) in Central Europe was reviewed during the meeting of the ad hoc Panel on *Diabrotica virgifera* held jointly with the IWGO International Workshop (Rogaška Slatina, SI, 1998-11-27/28). In summary, the spread of *D. virgifera* continues in Central Europe but at a slower pace than was observed in previous years. Nevertheless, the numbers of adults trapped in all infested countries indicate that population densities are increasing. As in previous years, except in the parts of Serbia where the pest was first found, no economic damage has yet been seen on maize. But the numbers of insects caught in some parts of Romania or Croatia (close to the area in Serbia where economic damage are seen) tend to suggest that economic damage may be expected in the near future. New features in the spread of *D. virgifera* are its first records in Bulgaria and Montenegro (YU), and indeed the capture of 7 adults in Italy (see EPPO RS 98/161), which represents a major 'jump' of the insect towards the western European countries. Extracts from the report of the meeting are presented below.

Austria
44 pheromone traps have been placed along the borders with Slovenia and Hungary and all gave negative results.

Bosnia & Herzegovina
In Bosnia & Herzegovina, maize is an important crop covering approximately 200.000-250.000 ha, mainly in the north and north-east parts of the country. *D. virgifera* was first found in 1997 in areas bordering Serbia and Croatia. In the Federation of Bosnia & Herzegovina, a survey on *D. virgifera* was initiated in July 1998 using pheromone and yellow sticky traps in the cantons of Posavina, Tuzla-Podrinje (which are situated in the north near the borders of Croatia and Serbia) and of Una (western part). *D. virgifera* was only trapped in the cantons of Posavina and Tuzla-Podrinje. The pest was found in the region around Tuzla (near Doboj, Gracanica and around Zvornik) and in the north along the river Sava (near Orasje). Populations have increased compared to last year and particularly in the region near the river Sava (border with Croatia). It is felt that *D. virgifera* is spreading along rivers and roads, from eastern and northern parts towards the centre of the country. No larval damage has been seen. Minor damage caused by adults on maize silks has been observed near Orasje (along river Sava).
In the Serbian areas of Bosnia & Herzegovina in 1998, traps were placed near the following localities: Bijeljina, Zvornik, Br≠ko, Pelagicevo, Doboj and Banjaluka. In total, 2858 adults were caught. The greatest numbers were found in the eastern part (Bijeljina, Br≠ko). Only one adult was found in a single locality near Banjaluka. It is felt that the insect is spreading more rapidly along the river Sava towards the west than southwards. Considering the numbers of insects caught in the eastern part, it is supposed that populations have probably reached the economic level, however no indication of damage was given.

Bulgaria

Maize is an important crop in Bulgaria and it is grown particularly in the north of the country. In 1987, 480.000 ha of maize was grown. After the first IWGO Workshop in Graz (AT) in 1995, a trapping programme was initiated in Bulgaria. Cucurbitacin traps were used in 1995 and 1996, and pheromone traps were used in 1997. Field inspections were also carried out. During the period 1995-1997, results were all negative. In 1998, 220 pheromone traps and 180 yellow sticky traps were placed along the northern and western borders of Bulgaria. Traps were inspected once or twice a week. The first three adults of *D. virgifera* were trapped on August 7th (the last one was caught in September 30th). In total 156 adults were caught. The insects were found in the north-west near the borders with Serbia (YU) and Romania (along the Danube). The highest numbers of insects were caught near Bregovo. It is estimated that the infested surface in 1998 is 200 km^2. This is the first report of *D. virgifera* in Bulgaria.

Croatia

D. virgifera was first found in the east of Croatia in 1995. One adult was caught in a cucurbitacin trap, but now it is considered that the pest was probably already present on an area extending about 30 km from the Yugoslav border and situated to the south of the river Bosut. In 1996, the pest spread westwards (80 km from the Yugoslav border) and adults were trapped in approximately 6000 km^2. In 1997, the area where adults were trapped reached 9000 km^2 and the front line of the outbreak was situated 100 km from the Yugoslav border. In 1998, pairs of pheromone and yellow sticky traps were placed at 138 sites. 64 sites were located in previously infested land, 37 along the line of spread (according to 1997 data) and 37 deep in the non-infested area. Monitoring started on June 25th , the first catch was made in June 26th and the last in September 21st. A total of 3368 beetles was caught (but this number is likely to increase as all data is not available yet). It is felt that the increase in population density in 1998 compared with 1997 is approximately 1.3. In 1998, *D. virgifera* spread towards the west (found in two new localities Nova Gradi□ka and Gornji Varo□) and over a distance of 37 km along the river Sava (up to the village Gornji Varo□, situated at 150 km from the Yugoslav border and 150 km from Slovenia). In the middle part of the front line (in the middle of Croatia), *D. virgifera* spread only 8 km to the west. In the northern part of Croatia, along the border with Hungary, no further spread was observed. In the north of Croatia, there is a marshland area (Kopa≠ki Rit) near Hungary were beetles have been found for the first time in 1998. This marshland may have slowed down the spread of *D. virgifera* but it has not prevented it. At present, it is estimated that *D. virgifera* can be trapped in an area of approximately 9.500 km^2 (in which 200.000 ha of maize are grown). In 1998, damage on maize roots was assessed in Otok (Slavonia, east of Croatia near Serbia). In an untreated plot the average damage rated 3 (using a scale from 1 to 9). However, no impact was seen on yield. It must be stressed that in Croatia no economic damage has been observed in 1998.

Hungary

D. virgifera was first found in Hungary in 1995 in the south of the country. In 1997, *D. virgifera* spread towards the north (up to 100-120 km from the Yugoslav border). In 1996-1997, it was estimated that the pest has moved 40 km to the north and that approximately 10 000 km² were potentially infested by *D. virgifera*. The pest was present in the following counties: Baranya (Villány, Boly), Bács-Kiskun (Kecskemét), Csongrád (Szeged, Csanádpalota, Maroslele-Makó) and Békes (Mezökovacsháza, Mezöhegyes, Battonya, Csnádapáca). The highest population numbers were found in Békes and Czongrád counties. Larvae were seen for the first time, slightly damaging maize roots near Szeged (Czongrád county), but without any impact on maize yield. In 1998, the monitoring programme was carried out in infested areas, non-infested areas (according to 1997 results) and along the front line of the spread. It showed that the spread was very slow in 1998 but that populations increased. Increase of populations was registered in the following areas: Baranya (Villány, Boly), Bács-Kiskun (Kunbaja, Bácsalmás), Csongrád (Szeged, Csanádpalota, Nagylak) and Békes (Mezöhegyes). In the area of Szeged, slight larval damage was observed but no impact on yield was recorded. *D. virgifera* did not spread towards the north in 1998 (the front line is still approximately at 120 km from the Yugoslav border), but it has slowly moved towards the west.

Italy

Following the establishment and spread of *D. virgifera* in Yugoslavia, an alert programme was set up in Italy in order to be able to take containment and eradication measures as soon as the pest is found. A monitoring programme was set up in the north-eastern part of Italy with 12 trapping sites in 1997 and 20 sites in 1998 (1 to 10 pheromone traps per site). Maize field were selected in regions where maize is often grown continuously and also near potential points of entry (airports, firms trading with infested countries etc.). In 1997, no *D. virgifera* was found. In 1998, the first 7 specimens of *D. virgifera* were trapped between 21st July and 13th August in maize fields in Tessera, near the international airport of Venezia (Marco Polo). 3 adults were caught in one trap and the others in 4 separate traps. The shortest distance from the trapping sites to the airport was 500 m. Measures have been applied to try to eradicate or prevent the spread of the pest. In the area where *D. virgifera* has been found (1000 ha) and in its surroundings (5-10 km around the focus), a trapping grid (1 km x 1 km) will be set up and treatments will be applied if *D. virgifera* is found (however, it must be noted that no registered products are available), and the continuous cropping of maize will be prohibited. 10 km beyond this first trapping area, another trapping grid (5 km x 5 km) will also be established. In addition, it is prohibited to move fresh parts of maize and soil from the infested area. This is the first report of *D. virgifera* in Italy (see EPPO RS 98/161). It is unexpected in the sense that, if the pest is spreading westward from the outbreak in the Danube basin, it would have been expected to occur first in Slovenia, Austria or western Croatia. In fact, the origin of this introduction is not known. Air-borne transport from USA or road-borne transport from the Danube basin are both possibilities.

Romania

The first find of *D. virgifera* was made in 1996 at Nadlac (district of Arad – west of the country near Hungary) on yellow sticky traps. In 1997, *D. virgifera* was caught mostly in Arad, Timis, Caras-Severin and Mehedinti districts and it was estimated that an area of approximately 10000 km² was potentially infested. In 1998, the monitoring programme started in June 25th in 11 districts on 240 trapping sites (each site having both pheromone and yellow sticky traps). Insects were caught in small numbers in two new districts: Bihor and Hunedoara, showing that the pest still continues to spread towards the east, and north-east, particularly along the rivers Mure| , Dun″rea (Danube) and Timi| . It is estimated that an area of approximately 12000 km² is potentially infested. Increase in population densities has been recorded. Although it was noted that in some areas the numbers of adults caught were approaching the economic thresholds (according to US experience), no economic damage has yet been observed in Romania.

Slovakia

In 1998, 37 traps were placed along the border with Hungary and no *D. virgifera* were caught.

Slovenia

A monitoring programme has been in place in Slovenia since 1995 in the north-east and south-east of the country, which are two intensive maize-growing areas near Hungary and Croatia. So far, *D. virgifera* has not been found in Slovenia. Due to the findings in Italy, the monitoring programme will be intensified next year.

Yugoslavia

It must be recalled that *D. virgifera* was reported for the first time in Europe in Sur≠in, near Belgrade airport in 1992-1993. By using 900 pheromone traps, it was observed in 1998 that *D. virgifera* continues to spread towards the south. It is estimated that in Serbia the infested area was respectively: 0.5 ha in 1992, 6 ha in 1993, 60 ha in 1994, 275 ha in 1995, 10.787 ha in 1996, 15.695 ha in 1997 and 21.230 ha in 1998. However, damage was only reported near Belgrade, Pozarevac, Novi Sad, and Vr⌊ac. This area has increased since last year and is now extending towards the borders with Croatia (on the west) and Romania (on the east). It is estimated that the area on which damage is observed covers approximately 10.000 ha. Results of surveys done in southern Backa (region around Novi Sad) showed that populations levels are still increasing. High infestations occurred in the eastern part of southern Backa as in 1997, and differences previously observed between the east and west parts of this region tend to disappear. Symptoms in maize fields were visible ("gooseneck" symptoms).

It is important to note that *D. virgifera* has now been **found for the first time in Montenegro**. A few adults have been trapped at three localities (near Bijelo Polje in the north of Montenegro) along a railway track.

Source: **EPPO Secretariat, 1998-11.**

Additional key words: new records, spread **Computer codes:** DIABVI, BG, YU

98/199 Is eucalyptus rust (*Puccinia psidii*) a threat?

A review (Coutinho *et al*., 1998) has recently been published on eucalyptus rust caused by *Puccinia psidii* (host plants, distribution, biology etc.). A remarkable feature of this disease is that it does not occur on eucalyptus in their centres of origin, but essentially in Central and South America. It apparently originated on native Myrtaceae in South America and was then able to attack eucalyptus there. *Puccinia psidii* was first described on *Psidium pomiferum* in Brazil in 1884. It was formally described on *Eucalyptus citriodora* in 1944 (although observations were already made in 1912) and the first serious outbreak occurred in 1973 in the state of Espirito Santo where losses were seen more particularly in eucalyptus nurseries and young plantations. Affected eucalyptus plants show golden yellow uredinial pustules on branches and terminal shoots as well as on young leaves. This rust rarely kills eucalyptus, except when it is found on coppice growth of highly susceptible eucalyptus. If trees are continuously re-infected they become stunted. This fungus has a macrocyclic life cycle and is considered as autaecious. It is reported that the presence of free water for more than 3 h and temperatures of 18°C to 23°C are favourable to uredial cycles, and that teliospore production is favoured by temperatures near 25°C. Urediniospores are spread by rain, insects and wind. For more details on the biology of the fungus refer to Coutinho *et al*., 1998. To control the disease, fungicides can be used (mancozeb, triadimenol, triforine, oxycarboxin, diniconazole) and resistant genotypes can be planted.

Host range

P. psidii is only reported on Myrtaceae, and a full list of known hosts is given by Coutinho *et al*., 1998. This rust can attack: *Callistemon speciosus*, *Eucalyptus* spp. (at least 14 species are reported), *Eugenia* spp., *Melaleuca leucodendron*, *Pimenta* spp., *Psidium guavaja* (guavas) and other *Psidium* spp., *Syzygium jambos*, *Myrcia* spp. It appears that there is some variability in host specificity, and it is suggested that some races or formae speciales might exist but this remains to be studied.

Geographical distribution

This geographical distribution is given on all hosts. Three isolated records of rust on *Eucalyptus* have been made in South Africa, Taiwan and India but no definitive species identifications could be made. These records remain unconfirmed.

Africa: South Africa (unconfirmed).
Asia: India (unconfirmed), Taiwan (unconfirmed).
North America: USA (south of Florida).
South America: Argentina, Brazil, Colombia, Ecuador, Paraguay, Uruguay, Venezuela.
Central America and Caribbean: Cuba, Dominican Republic, Jamaica, Puerto Rico, Trinidad.

The authors concluded that *P. psidii* represents a very serious threat to eucalyptus plantations in many parts of the world and that further studies on taxonomy, host range, life cycle and infection process are particularly needed.

Source: Coutinho, T.A.; Wingfield, M.J.; Alfenas, A.C.; Crous, P.W. (1998) Eucalyptus rust: a disease with the potential for serious international implications.
Plant Disease, 82(7), 819-825.

Additional key words: quarantine **Computer codes:** PUCCPS

98/200 Situation of *Anoplophora glabripennis* in North America

In 1996, the Asian longhorned beetle (*Anoplophora glabripennis*) was reported for the first time in USA (New York state: Brooklyn and Amityville) on street and park trees (see EPPO RS 96/214). This insect originates from Asia, and is present in China, Japan and Korea. The insect larvae feeds on many hardwood species (e.g. *Acer*, *Aesculus hippocastanum*, *Alnus*, *Morus*, *Populus*, *Robinia*, *Salix*, *Ulmus*). Chemical control is not practical as the insects spend most of their life cycle inside wood, and so far no specific traps are available. In 1998, the pest is still present in New York state. Eradication measures involving removal and destruction of infested trees were taken. It is estimated that the measures taken in New York state have cost more than 4 million USD. In July 1998, *A. glabripennis* was detected in Chicago (in Ravenswood), Illinois. In September 1998, it is estimated that approximately 300 trees are infested (or potentially infested). In addition to these two outbreaks, it can be noted that *A. glabripennis* has been found ('intercepted') in 26 warehouse locations scattered in 14 states around the country. It is though that these two introductions may be associated with wood packing material and dunnage from China. Interim measures are requiring that wooden shipping pallets from China should be fumigated or treated to prevent any further introduction.
Canada is also very concerned about this pest, and several information leaflets have been published by the Canadian Forest Service. A Canadian interception of *A. glabripennis* is already reported in 1992. In 1997, *A. glabripennis* has been intercepted in British Columbia and Ontario on wooden spools (for cables) and other wood packing materials (e.g. associated with metal tubes). In June 1998, a live adult *A. glabripennis* was found at a warehouse in Waterloo (Ontario). It is thought that it came with a shipment originating from China. The

Canadian Forest Service raises serious concern about the risks of introducing exotic pests with dunnage and wood packing material. Also, Russia has recently added this pest to its quarantine list.

Source: **INTERNET**
USDA-APHIS Web site
http://aphis.usda.gov/ao/pubs/fsal.html (Plant protection and quarantine, 1998-09)
http://aphis.usda.gov/ao/alb/albmap.html (map - introductions and interceptions)

NAPIS Web site
http://www.ceris.purdue.edu/napis/pests/alb/mgif/alball.gif (US map)
http://www.ceris.purdue.edu/napis/pests/alb/mgif/albne.gif (details in New York state and surrounding states)
http://www.ceris.purdue.edu/napis/states/il/news98/sr980701.txt (first finding in Chicago, 1998-07-17)
http://www.ceris.purdue.edu/napis/states/il/news98/sr980403.ny (situation in New York state)

Illinois Department of Agriculture Web site
http://www.agri.state.il.us/beetle.html (situation in Chicago)

University of Illinois Web site
http://www.aces.uiuc.edu/longhorned_beetle/ (pictures)

Canadian Forest Service Web site
http://www.pfc.cfs.nrcan.gc.ca/health/exotics.htm (Allen, E.A. (1998) Exotic insect interceptions from wooden dunnage and packing material)
http://www.pfc.cfs.nrcan.gc.ca/biodiversity/exotics/ (Humble, L.M.; Allen, E.A.; Bell, J.D. (1998) Exotic wood-boring beetles in British Columbia: interceptions and establishments)

Additional key words: detailed records **Computer codes:** ANOLSP, CA, US

98/201 Survey on Scolytidae which may be introduced with imported wood into France

A survey was carried out in France in order to detect possible new introduction of Scolytidae with wood imports. Pheromone traps (Lindgren Funnel) with 5 specific aggregation pheromones (*Dendroctonus brevicomis*, *D. frontalis*, *D. ponderosae*, *D. pseudotsugae* and *Ips pini* - all EPPO A1 quarantine pests) were installed in April 1997, along the Atlantic and Mediterranean coasts near the main ports of entry for wood imports. Traps were collected every week until the beginning of October 1997. Results showed a great diversity of Scolytidae but **no** exotic species was caught. The following Scolytidae were found:
Orthotomicus erosus (84%), *Ips sexdentatus* (EU Annex II/B - 12%), *Leperesinus fraxini* (1.1%), *Xyleborus saxeseni* (0.8%), *Hylastes angustatus* (0.4%), *Dryocoetes autographus* (0.2%). *Ips typographus* (EU Annex II/B), *Gnathotrichus materiarius*, *Xylosandrus germanus* (a recently introduced species), and *Scolytus multistriatus* (vector of Dutch elm disease) have also been found. These traps are not only attracting Scolytidae but they are also catching many other insects species (Coleoptera, Lepidoptera, Diptera) and it is pointed out that sorting is required. Among the 41 families of Coleoptera found, it can be noted that 30% of them are insect predators (and more particularly predators of Scolytidae). Important xylophagous species other than Scolytidae were found (Anobiidae, Cerambycidae,

Curculionidae, Colydiidae and Tenebrionidae). It is noted that Chrysomelidae species were found, although they do not attack wood, and it is felt that this trapping programme designed for wood insects might also be able to trap *Diabrotica virgifera* (EPPO A2 quarantine pest) if introduced. It is concluded that this trapping programme should continue, and start earlier in the year (in March) as some species like *Tomicus piniperda* emerge early in the year.

Source: Hastings, C. (1998) Les scolytes dans les bois importés - Premiers résultats de surveillance rassurants.
Phytoma - La Défense des Végétaux, no. 509, 50-52.

Additional key words: survey, wood **Computer codes:** FR

98/202 Interceptions of exotic insects on dunnage and wood packing material in Canada

In the major Canadian ports of entry, a survey was carried out in 1997 on the imports of wooden articles (dunnage and wood packing material). Interceptions of exotic pests have been made from the following commodities: wooden wire and cable spools from China, wooden crating with granite blocks from India and China, wooden boxes with metal valves from Italy, wooden pallets with ceramic tiles from Brazil.
The following insect species were found in wooden material associated with various commodities:

Insect species found (dead or alive)	**Origin**	**Commodity**
Anoplophora glabripennis	China	Wire rope
Hylastes ater	Spain	Ceramic tiles
Hylurgops palliatus	Switzerland	Metal flanges
Ips cembrae (EU Annex II/B)	China	Iron castings
Ips stebbingi	China	Stone blocks
Ips typographus (EU Annex II/B)	Italy	Metal valves
Lagocheirus sp.	Costa Rica	Lumber
Lyctinae	India	Granite tiles
Lymantriidae	China	Stone blocks
Monochamus alternatus (EPPO A1 quarantine pest)	China	Wire rope
Orthotomicus angulatus	China	Stone sculptures
Pissodes sp.	China	Stone sculptures
Rhagium inquisitor	China	Stone blocks
Sinoxylon spp. (*anale, conigerum, pugnax*)	India	Granite tiles
Sirex rufiabdominis	China	Arts and crafts
Urocerus gigas gigas	Switzerland	Metal flanges

In a separate study, 92 wooden spools (for wire rope) from China, Korea and Malaysia were disassembled and examined. It has been found that a simple visual inspection of the external parts is not sufficient to detect insects. The results showed that 82% of the spools had insect galleries, 20% had live or dead beetles, 90% of the spools still had bark present on the wood,

41% of the Chinese spools had insects in them. The Coleoptera species recovered from these wire rope spools in 1997 were the following (most of them were alive, and sometimes found in rather larger numbers): *Batocera lineolata* (China), *Trichoferus campestris* (China), *Ceresium flavipes* (China), *Psacothea hilaris* (China), *Megopis* sp. (probably *M. sinica* - China), *Ptilineurus* sp. (China). It is also recalled that *Anoplophora glabripennis* had been found in 1992 in a warehouse storing wire rope spools and that *Monochamus alternatus* (EPPO A1 quarantine pest) was observed in 1993 in spools (probably from China or Korea).
The conclusion is that dunnage and wooden packing material represent a significant risk of introducing exotic insects.

Source: Allen, E.A. (1998) Exotic insect interceptions form wooden dunnage and packing material.
Canadian Forest Service Web site
http://www.pfc.cfs.nrcan.gc.ca/health/exotics.htm

Additional key words: interceptions **Computer codes:** CA

98/203 Situation of several quarantine pests in Germany in 1997 and 1998

The Plant Protection Service of Germany has informed the EPPO Secretariat of the following:

- *Colletotrichum acutatum* (EU Annex II/A2) was found in Sachsen in 1997 in one field of 2 year-old strawberries. Infected plants were removed as well as suspected plants located in neighbouring plots of one ear-old strawberries. Treatments were applied and surveys of this disease will continue.

- *Liriomyza huidobrensis* (EPPO A2 quarantine pest) has been found in July 1997 at the Zoo of Berlin. The pest occurred on tomatoes grown for animal feed in a glasshouse of 100 m^2. After harvest, tomato plants were destroyed. The origin of this outbreak is unknown.

- In 1997, four isolated cases of *Puccinia horiana* (EPPO A2 quarantine pest) were reported, in all cases infected plants were destroyed and premises treated with fungicides:
  1) in July 1997, the disease was found in one glasshouse of 300 m^2 in Berlin on chrysanthemum plants ready to be sold.
  2) in August 1997, it was found in 350 chrysanthemum plants in a small garden centre in Mecklenburg-Vorpommern. All these plants originated from a single company in Berlin which had in the meantime ceased to exist.
  3) in August 1997, it was found in a garden centre in Thüringen in one plot of 50 m^2 on chrysanthemum for cut flowers.
  4) in October 1997, it was found in a 100 m^2 plot of chrysanthemum for cut flower production in Thüringen.

- In 1998, *Puccinia horiana* was found in Berlin, in a field plot of 300 m^2 of chrysanthemum plants ready to be sold. Chemical treatments were applied, and the disease has not been found again.

- *Mycosphaerella pini* (*Scirrhia pini* - EU Annex II/A2) was found in 1997 on pines in one nursery in Bayern. All infected pines were lifted and burned. This nursery and the surroundings are strictly controlled by the Plant Protection Service.

- In 1997, *Tilletia controversa* (EPPO A2 quarantine pest) has been found for the first time since 1984 in Bayern and Baden-Württemberg. These very few occurrences are thought to be caused by a combination of favourable weather conditions and incomplete or absent seed treatments. *T. controversa* can be considered as present in Germany but with a restricted distribution.

Source: Plant Protection Service of Germany, 1998-09.

Additional key words: detailed records

Computer codes: COLLAC, PUCCHN, SCIRPI, TILLCO, DE

98/204 8th International Workshop on Fire Blight, Kusadasi (TR)

The 8th International Workshop on Fire Blight took place in Kusadasi (TR), on 1998-10-12/15, and many papers and posters have been presented on the following topics: 1) spread, detection and quarantine, 2) resistance: breeding and biotechnology, 3) cellular and molecular biology, 4) etiology and epidemiology, 5) new control options. The EPPO Secretariat extracted the following information:

- In the Republic of Korea, a new *Erwinia* species isolated from necrotic Asian pear trees (*Pyrus pyrifolia*) has been characterized by using microbiological and molecular tools. Although closely related to *E. amylovora*, it appears as a distinct species and has been named *Erwinia pyrifoliae*. (Kim *et al*., 1998; p 37).

- The effect of cool storage on the survival of *E. amylovora* on apple fruit (mature, export quality apples cv. Gala) has been studied in New Zealand. Results showed that cool storage (at 0°C±0.5°C) for a period of 25 days either in the laboratory or in a commercial packhouse reduced the survival of *E. amylovora* in calyxes of both inoculated and naturally infested fruit. Populations of *E. amylovora* did not increase to levels detectable by PCR in fruit which were cool-stored and then incubated at room temperature (approximately 20°C) for 14 days to simulate retail conditions. The conclusion was that cool-stored, mature, export quality apple fruits are not likely to be a pathway for introducing *E. amylovora*. (Hale & Taylor, 1998; p 26).

- In New Zealand, studies have shown that the apple leaf curling midge, *Dasineura mali*, plays a role in the spread of *E. amylovora* in apple orchards. The importance of control of insect vectors in apple nurseries and orchards in order to control fireblight is stressed. (Chin Gouk & Boyd, 1998; p 95)

- In eastern Oregon and southwest Idaho, natural incidence of fireblight was observed in commercial orchards of Japanese plum (*Prunus salicina* cvs. Fortune, Friar, Black Amber and Freedom). (Mohan & Bijman, 1998; p 27).

Source: Chin Gouk, S.; Boyd, R.J. (1998) Role of apple leaf curling midge (*Dasineura mali*) in the spread of fireblight.

Hale, C.N.; Taylor, R.K. (1998) Effect of cool storage on survival of *Erwinia amylovora* in apple calyxes.

Kim, W.S; Rhim, S.L.; Völksch, B.; Gardan, L.; Paulin, J.P.; Jock, S.; Geider, K. (1998) Characterization of a new *Erwinia* species affecting Asian pear trees.

Mohan, S.K.; Bijman, V.P. (1998) Susceptibility of *Prunus* species to *Erwinia amylovora*.

Abstracts of papers presented at the 8th International Workshop on Fire Blight, Kusadasi (TR), 1998-10-12/15.

Additional key words: new pests, hosts plants, pathway **Computer codes:** ERWIAM

98/205 Update on the situation of fireblight in Emilia-Romagna (Italy)

Fireblight (*Erwinia amylovora* - EPPO A2 quarantine pest) was first reported in Emilia-Romagna, which is an important region of fruit production in Italy, in 1994 (see EPPO RS 95/114). The disease was initially reported at a limited number of foci (5 in 1994, 6 in 1995 and 30 in 1996). But 1997 was characterized by an unforeseen and severe explosion of the disease as 721 foci were officially reported. A great majority of these cases (90 %) concerned pears (*Pyrus communis* cvs. Abate Fétel, William, Conference, Doyenné du Comice, Kaiser Alexander, Max Red Bartlett, Passe Crassane, Santa Maria, and Guyot), however a few cases have also been found on ornamentals (*Crataegus*, *Cotoneaster*, *Pyracantha*, *Mespilus*, *Cydonia*, *Sorbus* and *Stranvaesia*). It was noted that *Crataegus* is particularly at risk in this region, as a wild plant but also as a newly introduced species in some fruit-growing areas of the Po Valley as part of programmes for environmental restoration. Several hypotheses have been suggested to explain such a severe outbreak: 1) the bacterium has spread from the few cases identified between 1994 and 1996; 2) despite numerous inspections, the bacterium remained unnoticed; 3) the bacterium had been present for some time on latently infected plants or as an epiphyte and when the inoculum reached a certain level the disease exploded as a result of favourable climatic conditions or cultivation techniques. In particular, it was stressed that this outbreak followed periods of late frosts, hail, violent thunderstorms and that abundant and repeated secondary blooms were observed practically during the whole vegetative season.

Source: Calzolari, A.; Finelli, F.; Mazzoli, G.L. (1998) A severe unforeseen outbreak of fireblight in the Emilia-Romagna region.

Fontani, A.; Montermini, A.; Calzolari, A. (1998) Fireblight on ornamental plants in Emilia-Romagna.

Abstracts of papers presented at the 8th International Workshop on Fire Blight, Kusadasi (TR), 1998-10-12/15, pp 13 & 32

Additional key words: detailed record **Computer codes:** ERWIAM, IT

98/206 Situation of *Erwinia amylovora* in Spain

Fireblight (*Erwinia amylovora* - EPPO A2 quarantine pest) was first reported in Spain during summer 1995. The disease was found in a new plantation of cider apple trees located in Lezo (Provincia de Guipuzcoa - País Vasco), near the French border (see EPPO RS 96/107). Other foci were then detected in this Province and also in the north of Navarra. Despite eradication measures which had been applied, it is now felt that the disease is established in these areas.
During 1996, a focus was detected in the Province of Segovia (Castilla y León) on imported *Crataegus* plants in a nursery. In 1998, two other foci were found, one in the Province of Lleida (Cataluña) and the other in the Province of Guadalajara (Castilla La Mancha). In these three cases, eradication measures have been applied and intensive monitoring is being carried out in these areas.

Source: **Plant Protection Service of Spain, 1998-10.**

López, M.M.; Gorris, M.T.; Llop, P.; Berra, D.; Borruel, M.; Plaza, B.; García, P.; Palomo, J.L.; Cambra, M. (1998) Fireblight in Spain: situation and monitoring.
Abstract of a paper presented at the 8th International Workshop on Fire Blight, Kusadasi (TR), 1998-10-12/15, p 34

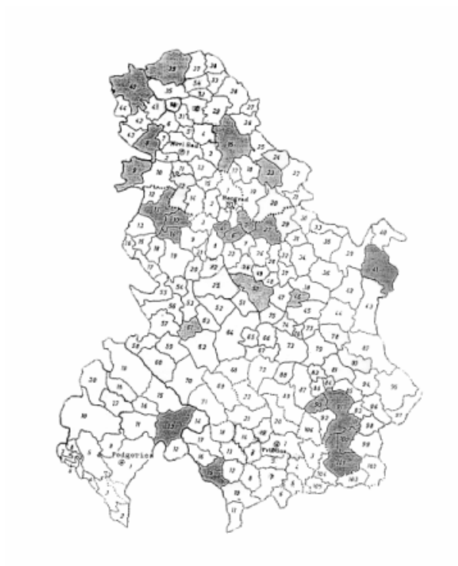
Additional key words: detailed record **Computer codes:** ERWIAM, ES

98/207 Situation of fireblight in Yugoslavia

A monograph from Panic & Arsenijevic (1996) presents the situation of *Erwinia amylovora* (EPPO A2 quarantine pest) in Yugoslavia, and further details were presented at the 8th international Workshop on fireblight. Several maps showed the spread of the disease in Yugoslavia until 1996. The maps below present the situation in former Yugoslavia in 1990 and the situation for Yugoslavia in 1996 (Serbia and Montenegro). Although the two maps are not at the same scale, it can be seen that the disease is still spreading in Serbia and Montenegro. From 1992 to 1998, *E. amylovora* was mainly found on pear, quince and medlars (*Mespilus germanica*). In 1995, fireblight started to be seen on apple and was severe in the northern and central part of Yugoslavia (Belgrade, Sombor, Smederevo, and Zrenjanin). In 1997, it was found for the first time on *Pyracantha coccinea* in the city of Novi Sad. But so far, the disease has not been observed on *Cotoneaster* or *Sorbus*.

Situation in former Yugoslavia in 1990

Situation in Serbia and Montenegro (YU) in 1996



In this region of Central Europe, it can be recalled that Slovenia is still free from the disease. *E. amylovora* was first found in Croatia in 1995 (EPPO RS 96/004) and has a restricted distribution in eastern Slavonia, near the border with Serbia (under eradication). It is present in the north of Bosnia and Herzegovina (EPPO RS 96/145). In Macedonia, it was first observed in 1986 and has spread to more than 400 ha of pears and 60 ha of quince (EPPO RS 97/170).

Source: Gavrilovi≡, V.; Arsenijevi≡, M.; Pani≡, M.; Jovanivi≡, G. (1998) New occurrences of fireblight pathogen in Yugoslavia from 1992-1997.
Abstract of a paper presented at the 8th International Workshop on Fire Blight, Kusadasi (TR), 1998-10-12/15, p 19.

Pani≡, M.; Arsenijevi≡, M. (1996) Bacteriozna plamenjaca vocaka i ukrasnih biljaka – *Erwinia amylovora* – Monograph.

Additional key words: detailed record **Computer codes:** ERWIAM, YU

98/208 Tomato geminiviruses in Brazil

Tomato golden mosaic geminivirus was reported in Brazil more than 20 years ago, but until recently tomato-infecting geminiviruses had no economic significance. Since 1994, a sharp increase of geminivirus-like symptoms has been observed in several areas in Brazil. This occurred simultaneously with the appearance of the B biotype of *Bemisia tabaci* (EPPO A2 quarantine pest). Geminiviruses have been isolated from symptomatic tomato plants in the Federal District, two different areas of Minas Gerais and in Pernambuco. These plants showed a variety of symptoms (e.g. yellow mosaic, severe leaf distortion, downward leaf curling and epinasty). Whitefly populations were high in all sampled fields. In some fields, and particularly in Pernambuco, incidence of symptoms was close to 100% and no tomato of commercial value could be harvested. By using molecular techniques (PCR and comparison of amplified fragment sequences), it was felt that at least six different geminiviruses were present. These viruses are most closely related to tomato golden mosaic, bean golden mosaic and tomato yellow vein streak geminiviruses. However, homologies were less than 80 % for the fragments compared. Further studies are needed on the biological and molecular characterization of these geminiviruses

Source: Ribeiro, S.G.; de Avila, A.C.; Bezerra, I.C.; Fernandes, J.J.; Faria, J.C.; Lima, M.F.; Gilbertson, R.L.; Maciel-Zambolim, E.; Zerbini, F.M. (1998) Widespread occurrence of tomato geminiviruses in Brazil, associated with the new biotype of the whitefly vector.
Plant Disease, 82(7), p 830.

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

98/209 Partial characterization of Sinaloa tomato leaf curl geminivirus

A disease of tomato and pepper which was first observed in Sinaloa, Mexico, in 1989, was tentatively attributed to Sinaloa tomato leaf curl geminivirus (see also EPPO RS 98/044). Infected tomato plants show foliar curling and chlorosis, unique purpling on the abaxial side of leaves and shortened internodes. Infected pepper plants exhibit a green-yellow foliar mosaic, shortened internodes and stunting. Biological and molecular studies have showed that Sinaloa tomato leaf curl geminivirus is a new bipartite geminivirus transmitted by *Bemisia tabaci* (EPPO A2 quarantine pest). Analysis of molecular sequences of key regions of the geminivirus genome demonstrated that Sinaloa tomato leaf curl is a unique and previously uncharacterized geminivirus. Experimental host range studies identified the following hosts: *Datura metel*, *D. stramonium*, *Malva parviflora*, *Capsicum annuum* and *Solanum lycopersicon*. None of the studied species within Cucurbitaceae or Leguminosae was found to be an experimental host. The authors also report that Sinaloa tomato leaf curl geminivirus (STLCV) can cause a symptomless infection in aubergine (*Solanum melongena*). STLCV is transmitted in a persistent manner by *B. tabaci* (these studies were carried out with biotype A). It is still unknown how widespread STLCV is in vegetable crops in the West Coast of Mexico or elsewhere in the Americas. The authors noted that another geminivirus isolate, called PVW-C, causes similar symptoms in Texas pepper fields, and shares more than 95% sequence homology with STLCV. This could indicate that STLCV occurs in Texas (US), but more studies would be needed to verify it.

Source: Idris, A.M.; Brown, J.K. (1998) Sinaloa tomato leaf curl geminivirus: biological and molecular evidence for a new subgroup III virus. **Phytopathology, 88(7), 648-657.**

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

98/210 Tomato chlorosis virus: a new whitefly-transmitted closterovirus

Tomato plants showing symptoms similar to those of the previously described tomato infectious chlorosis closterovirus (EPPO RS 97/35, 98/086) were observed in glasshouse tomatoes in Florida (US) since 1989. The disease was called 'yellow leaf disorder' and was characterized by irregular chlorotic mottling which starts on lower leaves and advances then towards the growing point, interveinal yellow areas on leaves which develop red or brown necrotic flecks. Studies have revealed the presence of a new phloem-limited, bipartite closterovirus called tomato chlorosis (see also EPPO RS 98/085). Although tomato infectious chlorosis closterovirus (TICV) and tomato chlorosis closterovirus (ToCV) cause similar symptoms on tomato, they have been shown to be distinct viruses (different symptoms on indicator plants, different serological and molecular characteristics). In addition differences occur in vector transmission and geographical distribution. ToCV is transmitted by *Bemisia tabaci* (biotypes A and B - EPPO A2 quarantine pest), *Trialeurodes vaporariorum* and *T. abutilonea*, whereas TICV is only transmitted by *T. vaporariorum*. ToCV has been found in greenhouse tomatoes (and is reported to occur on ornamentals but no details are given) in Colorado, Florida (Baker, Columbia, Marion and Suwanee counties) and Louisiana. TICV occurs on greenhouse and field tomatoes (and many vegetable and ornamental crops, weeds) in California, North Carolina and Italy.

Source: Wisler, G.C.; Li, R.H.; Liu, H.Y.; Lowry, D.S.; Duffus, J.E. (1998) Tomato chlorosis virus: a new whitefly-transmitted, phloem-limited, bipartite closterovirus of tomato.
Phytopathology, 88(5), 402-409.

Additional key words: new pest **Computer codes:** ToCV

98/211 Studies on peach mosaic virus

Peach mosaic virus (EPPO A1 quarantine pest as peach American mosaic closterovirus) has been studied by two different teams of researchers in US and Canada. It can be recalled that peach mosaic was first found in 1931 in Texas and Colorado (US), then in other states and in Mexico. However, its spread and incidence were limited by quarantine programmes in the USA (see EPPO RS 97/194). This disease affects several *Prunus* species and is spread by the peach bud mite *Eriophyes insidiosus*. The virus associated with this disease has been found to be serologically related to cherry mottle leaf closterovirus.
Gispert *et al*. (1998) have purified the virus (from symptomatic leaves of *Chenopodium amaranticolor* mechanically inoculated with the virus) which is consistently found with peach mosaic disease. The particles observed by electron microscopy are long, flexuous filamentous rods with an average length of 888 nm. They have also studied physio-chemical properties of the virus (capsid protein size of 27 kD, genomic RNA 8.1 kb, etc.) and found that it has similarities with closteroviruses, capilloviruses and trichoviruses, but felt that it appears to be most closely related to trichoviruses (James & Howell had previously suggested a closterovirus). Polyclonal antibody produced against the purified virus, reacted with samples from peach mosaic and cherry mottle leaf infected plants.
James & Howell (1998) have also purified a filamentous virus (752 nm long, 9.25 nm wide, with striations of 3.47 nm in pitch, coat protein subunit 20.5 kD) from *C. quinoa* (mechanically inoculated from diseased peach). The herbaceous host range of peach mosaic virus includes *C. amaranticolor*, *C. quinoa* and *Nicotiana occidentalis*. The virus could successfully be bud-transmitted from infected peach to peach indicator plants (*P. persica* cv. Elberta) which showed typical symptoms. Transmission to *P. avium* cv. Bing and *P. mahaleb* was unsuccessful. In serological assays, peach mosaic virus polyclonal antibody gave a cross-reaction with cherry mottle leaf closterovirus; and monoclonal and polyclonal antibodies for

cherry mottle leaf closterovirus cross-reacted with all tested isolates of peach mosaic virus. The authors felt that the virus isolated is probably the causal agent of peach mosaic disease. In addition, it is stated again that peach mosaic virus is clearly different from peach latent mosaic viroid (quarantine status under review).

Source: Gispert, C.; Perring, T.M.; Creamer, R. (1998) Purification and characterization of peach mosaic virus.
Plant Disease, 82(8), 905-908.

James, D.; Howell, W.E. (1998) Isolation and partial characterization of a filamentous virus associated with peach mosaic disease.
Plant Disease, 82(8), 909-913.

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

98/212 Survey on leafminers in Greece

A survey was conducted on the harmful leafminers attacking vegetables in continental Greece and Greek islands. From September 1996 to October 1997, 89 leaf samples were collected, larvae were allowed to complete their life cycle in the laboratory and adult flies were then identified. Results showed that in Greece, vegetables are infested by the following leafminer species: *Liriomyza huidobrensis* (EPPO A2 quarantine pest - found in 52 samples), *L. bryoniae* (EU Annex I/A2 - found in 16 samples), *L. strigata* (in 11 samples), *L. trifolii* (EPPO A2 quarantine pest - found in 4 samples) and *Chromatomyia horticola* (in 2 samples). *L. huidobrensis* was found on tomato, bean, potato, cucumber, courgette and celery. It is the most widely spread leafminer, and it occurs in high populations in mainland Greece and Greek islands. *L. trifolii* occurred on tomato and bean and its distribution appears to be limited to a few regions (south of the 39° parallel). *L. bryoniae* was found on tomato, bean, cucumber and okra (*Abelmoschus esculentus*) in many regions of Greece, except in Thessaly and Ionian islands. This publication confirms the occurrence of *L. trifolii* in Greece and gives new details for *L. huidobrensis* and *L. bryoniae* (which were previously mentioned only in Kriti).

Source: Souliotis, C.; Grosomanidi, P.; Süss, L. (1998) Contribution to the knowledge of Agromyzidae (Diptera) in the cultivated vegetables of Greece.
Bollettino di Zoologia Agraria e di Bachicoltura, Series II, 30(1), 117-123.

Additional key words: detailed records **Computer codes:** LIRIBO, LIRIHU, LIRITR, GR

98/213 Survival of *Liriomyza huidobrensis* outdoors

In 1995, *Liriomyza huidobrensis* (EPPO A2 quarantine pest) was found on outdoor vegetable crops in northern Germany (Mecklenburg-Vorpommern). The pest was found in 3 ha of field lettuce (probably introduced with the plants) and then spread to broccoli and celery. Lettuce and celery showed severe leaf damage due to high populations of leafminers. Studies were carried out to evaluate the ability of *L. huidobrensis* to survive outdoors. It was observed that none of the leafminer stages was able to survive winter 1995/96, in this region. Although, this winter was colder than usual, *L. huidobrensis* would not generally be expected to survive the winter conditions in this part of Germany. In spring 1996, *L. huidobrensis* was not found again on in the previously infested field.

Source: Kuhnke, K.H.; Wulfert, I.; Opitz, B. (1998) [The ability of *Liriomyza huidobrensis* to survive outdoors]
Gesunde Pflanzen, 50(5), 129-132.

Additional key words: biology **Computer codes:** LIRIHU, DE

98/214 *Xanthomonas vesicatoria* in Antigua, Grenada, St Kitts and St Lucia

Several characteristics (races, abundance, distribution, aggressiveness, prospects for control) of *Xanthomonas vesicatoria* (EPPO A1 quarantine pest) were studied in four East Caribbean islands: Antigua, St Kitts, St Lucia and Grenada. It is reported that *X. vesicatoria* is an important pathogen of pepper (*Capsicum annuum*) and tomato (*Lycopersicon esculentum*) in these four islands. Efforts to increase the production of these crops have been limited mainly by difficulties in controlling the disease. A list of all races found is given in the paper. The EPPO Secretariat had previously no information on the presence of *X. vesicatoria* in Antigua, Grenada and St Lucia.

Source: O'Garro, L.W.; (1998) Bacterial spot of tomato and pepper on four East Caribbean islands: races, their abundance, distribution, aggressiveness, and prospects for control.
Plant Disease, 82(8), 864-870.

Additional key words: new records **Computer codes:** XANTVE, AG, GD, KN, LC

98/215 Studies on the host range of High Plains virus

As reported in EPPO RS 97/070, a new disease of maize and wheat had first been observed in the US High Plains (Colorado, Idaho, Kansas, Nebraska, Texas, Utah) in 1993. The causal agent is still unknown but a virus is suspected. It has been shown that the wheat curl mite (*Aceria tosichella*) can transmit the disease. This mite is also a vector of wheat streak mosaic virus and wheat spot mosaic virus. So far, only maize, barley and wheat had been confirmed as hosts and further studies were carried out to determine the host range of the High Plains virus. Barley (*Hordeum vulgare*), cheat (*Bromus secalinus*), maize (*Zea mays*), oat (*Avena sativa*), rye (*Secale cereale*), wheat (*Triticum aestivum*) were inoculated using the mite vector and tested (ELISA). All these species could be infected by the High Plains virus. In addition, several grass species were tested. Only *Setaria glauca* could be infected during the experiments, although in field surveys it has been observed that both *S. glauca* and *S. viridis* can be naturally infected by the High Plains virus. The authors concluded that a partial host range of the High Plains virus is the following: *Avena sativa*, *Bromus secalinus*, *Hordeum vulgare*, *Secale cereale*, *Setaria glauca*, *Setaria viridis*, *Triticum aestivum*, *Zea mays*.

Data sheets and pictures of symptoms of the High Plains virus on wheat and maize can be viewed on INTERNET:

http://ianrwww.unl.edu/ianr/plntpath/nematode/PPATHPER/Hpv.htm (Note: on this site written by Dr Jensen, it is stated that there is evidence that High Plains virus may be seed transmitted in maize at very low level, and that samples of maize from three countries others than USA (from two continents) gave positive results when serologically tested).

http://www.uidaho.edu/ag/plantdisease/hpdcorn.htm

http://cygnus.tamu.edu/Texlab/Grains/Sweetcorn/chpd.html

http://www.ksu.edu/plantpath/extension/facts/wheat9.html

Source: Seifers, D.L.; Harvey, T.L.; Martin, T.J.; Jensen, S.G. (1998) A partial host range of the High Plains virus of corn and wheat.
Plant Disease, 82(8), 875-879.

Additional key words: host plants **Computer codes:** US

98/216 51st International Symposium on Crop protection

The 51st International Symposium on Crop protection will take place at the Faculty of Agricultural and Applied Biological Sciences, University of Gent on 1999-05-04. It will focus on all aspects of plant protection. Papers should be submitted before the 1999-01-15.

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Source: **EPPO Secretariat, 1998-11.**

Additional key words: conference

98/217 EPPO Electronic Documentation Service: new files are available

The three EPPO standards on **Pest Risk Analysis** are now available as files (in English and French) from eppo_docs@eppo.

- Check list of information required for pest risk analysis (PRA) (File name: Pra01-e.doc (English), Pra01-f.doc (French))
- Pest risk analysis to decide immediate action to be taken on interception of a pest in an EPPO country (File name: Pra02-e.doc (English), Pra02-f.doc (French))
- Pest risk assessment scheme (File name: Pra03-e.doc (English), Pra03-f.doc (French))

The new EPPO standards on **Good Plant protection Practice** (in English and French)

- Wheat (File name: Gpp10-e.doc (English), Gpp10-f.doc (French))
- Barley (File name: Gpp11-e.doc (English), Gpp11-f.doc (French))
- Beet (File name: Gpp12-e.doc (English), Gpp12-f.doc (French))

The **phytosanitary regulations of Syria** (original text in English - Pre-sy.exe), the **EPPO summaries of phytosanitary regulations for Jordan and Syria** (in English - Sue-jo.exe and Sue-sy.exe) can also be obtained.

EPPO *Reporting Service*

As decided by the EPPO Panel on Quarantine Information, the **EPPO Reporting Service** is now sent each month, automatically, to registered users. For back issues, it is still necessary to send e-mail messages to **eppo_docs@eppo.fr.**

The EPPO Electronic Documentation is an e-mail system (not a Web site) from which you can obtain EPPO files, by sending very simple e-mail messages to the following address: **eppo_docs@eppo.fr**. For instructions see EPPO Reporting Service 98/118, or contact the EPPO Secretariat (hq@eppo.fr).

Source: **EPPO Secretariat, 1998-11**

98/218 Visit the EPPO Web Site: www.eppo.org

The EPPO Web Site (www.eppo.org) includes some new features:

- The latest version of PQR (version 3.7 - September 1998) can be directly downloaded from the Web site
- EPPO News can be read on line (and in colours!)
- A new section on the latest EPPO meetings provides an outlook of the activities of the Panels and of the topics discussed during Conferences and Workshops.

In addition, the EPPO Secretariat is currently preparing a Web page on the situation of *Diabrotica virgifera* in Europe.

Source: **EPPO Secretariat, 1998-11**