ORGANISATION EUROPÉENNE ET MÉDITERRANÉENNE POUR LA PROTECTION DES PLANTES
EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION

EPPO

Reporting

Service

Paris, 1995-05-01 **Reporting Service 1995, No. 5**

CONTENTS

1, rue Le Nôtre. 75016 PARIS Tél. : (33 1) 45 20 77 94 Fax : (33 1) 42 24 89 43 E-mail : hq @ eppo.fr Télex : 643 395 OEPP F

95/092 **BY...**Quarantine pest list for Belarus

The list of quarantine pests for the Republic of Belarus has recently been published:

A. Animal pests

Acrobasis pirivorella
Agrilus mali
Bactrocera minax
Bemisia tabaci
Callosobruchus chinensis
Callosobruchus maculatus
Carposina niponensis
Caulophilus latinasus
Ceratitis capitata
Ceroplastes japonicus
Cydia molesta
Dialeurodes citri
Graphognathus leucoloma
Hyphantria cunea
Icerya purchasi
Leptinotarsa decemlineata
Lopholeucaspis japonica
Pectinophora gossypiella
Phthorimaea operculella
Phyllocnistis citrella
Popillia japonica
Pseudaulacaspis pentagona
Pseudococcus calceolariae
Pseudococcus citriculus
Pseudococcus comstocki
Quadraspidiotus perniciosus
Rhagoletis pomonella
Spodoptera littoralis
Spodoptera litura
Trogoderma granarium
Unaspis citri
Unaspis yanonensis
Viteus vitifoliae

B. Pathogens

Fungi

Angiosorus solani
Cochliobolus heterostrophus race T
Diaporthe helianthi
Didymella ligulicola
Glomerella gossypii
Mycosphaerella linicola
Phymatotrichopsis omnivora
Puccinia horiana
Synchytrium endobioticum
Tilletia indica

Bacteria

Erwinia amylovora
Erwinia stewartii
Pseudomonas caryophylli
Xanthomonas campestris pv. *citri*
Xanthomonas campestris pv. *hyacinthi*

Nematodes

Globodera pallida
Globodera rostochiensis

C. Weeds

Acroptilon repens
Ambrosia artemisiifolia
Ambrosia psilostachya
Ambrosia trifida
Cenchrus pauciflora
Cuscuta spp.
Iva axillaris
Solanum carolinense
Solanum elaeagnifolium
Solanum rostratum
Solanum triflorum
Striga spp.

Source: Plant Protection Service of Belarus, 1995-03.

EPPO *Reporting Service*

95/093 NL...News from the Diagnostic Centre of the Dutch Plant Protection Service

The Diagnostic Centre of the Dutch Plant Protection Service has published its Annual Report for 1993, and the following items can be noted.

1) *Xanthomonas campestris* pv. *dieffenbachiae* (EPPO A1 quarantine pest) has repeatedly been found in plants of *Anthurium andreanum* showing symptoms of yellowing and necrotic leaf margins, from South Africa. According to the EPPO Secretariat, the information on the occurrence of *Xanthomonas campestris* pv. *dieffenbachiae* in South Africa is new.

2) *Pseudomonas solanacearum* (race 1, biovar 4) (EPPO A2 quarantine pest) has been found in the ornamental *Curcuma longa* in two glasshouses of one nursery only. Rhizomes are generally imported from Thailand, Sri Lanka, China and Japan where race 1 is widespread. This is the first time that race 1 has been found under glass in the Netherlands. Infected plants have been destroyed and the glasshouses disinfected.

3) A new thrips *Echinothrips americanus* has been found in August 1993 during an export inspection on *Syngonium* The plants had been grown in a nursery in Schipluiden, where also *Philodendron* (Araceae) appeared to be infested. In November 1993, this pest was also found in a nursery at Bleiswijk on *Homalomena* (Araceae). The host range of *E. americanus* is not well known, and in Araceae, only *Dieffenbachia* was previously mentioned. The pest occurs in the Eastern part of the United States, from Florida to New York state. Outside this area, it has been found only incidentally in California, Quebec (CA) and Bermuda. In the Netherlands, *E. americanus* is regarded as a species deserving quarantine status and action must be taken after detection of the thrips. In the two localities, the pest has been eliminated after chemical treatment. It is stressed that the species can be easily overlooked during import inspection as symptoms are not always visible.

4) *Cannabis sativa* can be attacked by *Liriomyza huidobrensis* (EPPO A2 quarantine pest). This is a new host record.

5) *Phytophthora* root rot of raspberry is an increasing problem in the Netherlands. The disease occurs mainly on red raspberry (*Rubus idaeus*) and some of its hybrids, and to a lesser extent on black raspberry (*Rubus occidentalis*). In the Netherlands, four species have been found in connection with raspberry root rot: *Phytophthora fragariae* var. *rubi* (the most virulent species - EPPO A2 quarantine pest), *P. megasperma* var. *megasperma* (found a few times only), *P. cactorum* (very common but considered as a weak parasite, occurring under poor growing conditions), *P. citricola* (sometimes found). This confirmed the

suspicions expressed in the previous Annual report concerning the presence of *Phytophthora fragariae* var. *rubi* (EPPO RS 94/193)

6) During the last few years, a decline of pear trees has been observed in several orchards. This disease is caused by pear decline phytoplasma (EPPO A2 quarantine pest). This pathogen causes a premature leaf reddening, early defoliation in autumn, and poor root growth. Growth of new shoots in spring is retarded, leaves are smaller and can wilt suddenly. The disease may cause severe symptoms after transplanting the trees from the nursery. However, in the Netherlands, most affected trees recover from the disease during summer or the following year. The severity of symptoms is highly influenced by environmental conditions, especially temperature and precipitation. It is expected that cold and wet summers will decrease the occurrence of this disease. In addition, though all pear varieties are susceptible to the disease, the most common rootstocks grown in the Netherlands are highly resistant. According to the EPPO Secretariat, this is the first report of pear decline phytoplasma in the Netherlands.

Source: **Annual Report 1993, Diagnostic Centre, Plant Protection Service, Wageningen, Netherlands, 102 p.**

Additional key words: new records

EPPO *Reporting Service*

95/094 **JP...**Apple pests and diseases in Japan

In this paper, the main pests and diseases of apple in Japan are described, with their appropriate control methods.

Carposina niponensis (EPPO A1 quarantine pest) is a significant pest on apple, peach and pear. It has one or two generations per year depending on the local populations. Organophosphates and synthetic pyrethroids are effective against the eggs. Regular sprays are required from June to August because of the extended period of egg laying and hatching. Important mite pests are *Panonychus ulmi* and *Tetranychus urticae*. The apple leaf miner (*Lithocolletis ringoniella*) is occasionally a pest, high infestations can cause leaf deformation and photosynthesis reduction. It has three to five generations per year, and the application of nicotine sulphate or synthetic pyrethroids at the peak of adult emergence is generally sufficient. Among tortricid pests, the summer fruit tortrix (*Adoxophyes fasciata*) is the most serious, because in addition to fruit damage it has developed resistance to various insecticides. The insect has three to five generations per year. The larvae feed superficially on the fruit skin and early season feeding can cause deep scars on mature fruit, and deformation. Chemical treatment is generally required against overwintering larvae, soon after budburst. In summer, pheromone traps are used to determine the timing of treatments. Some organophosphates and most pyrethroids are still effective against this pest. The apple tortrix (*Archips fuscocupreana*) is a univoltine leafroller which damage flower clusters and small fruits. Organophosphates and insect growth regulators can be applied around blooming period, depending on the type of product.

In Japan, up to 68 diseases and disorders have been recorded in apple orchards. Among these, *Monilinia laxa* f. sp. *mali*, *Alternaria mali* (EU Annex II/A1) and *Venturia inaequalis* are the most serious diseases which require specific and regular control measures. Against *Alternaria mali*, applications of protectant fungicides after the petal fall are necessary. Many fungicides, e.g. mancozeb, ziram, thiram, oxine-copper, iminoctadine acetate, polyoxine etc., are recommended.

Source: Sekita, N.; Fujita, K.; Kawashima, K. (1994) The present situation in the control of apple insect pests and diseases in Japan.
Agrochemicals Japan, no. 65, 5-8.

95/095 **CSTXXX/PT...**Citrus tristeza closterovirus found in Portugal

The EPPO Secretariat has recently been informed by the Portuguese Plant Protection Service that two foci of citrus tristeza closterovirus (EPPO A2 quarantine pest) have been found in the south (Algarve) during a survey on citrus pests. Eradication measures have immediately been applied and infected plants have been destroyed (9606 nursery plants, and 1529 orchard plants). In Madeira, where a vector of this virus (*Toxoptera citricidus* - EPPO A1 quarantine pest) had been recently found (EPPO RS 95/007), some infected plants have been found in a small orchard, in the region of Caniço. These plants have been removed and burned. The Plant Protection Service noted that all other results of this survey are negative, and felt that Portugal should still be considered as free from the disease.

Source: Plant Protection Service of Portugal, 1995-04.

Additional key words: new record.

95/096 **CSTXXX/BZ...**Citrus tristeza closterovirus is present in Belize

A survey has been carried out in Belize, in March/June 1992 for citrus tristeza closterovirus (EPPO A2 quarantine pest) and *Toxoptera citricidus* (EPPO A1 quarantine pest), in all citrus-growing areas. In total, 2534 samples have been tested for the virus by ELISA. Citrus tristeza closterovirus has been detected in 692 samples, but *T. citricidus* has not been found. This information complete the report made in RS 95/021.

Source: Herron, C.M.; Sabal, H.H. (1994) Citrus tristeza virus and citrus aphid survey in Belize.
Phytopathology, 84 (8), p 868.

Abstract of a paper presented at the APS Caribbean Division Meeting, September 20-24, 1992, Merida, Venezuela.

Additional key words: new record.

EPPO *Reporting Service*

95/097 CSTXXX/US...First report of citrus tristeza closterovirus in Bermuda

In March 1992, a survey has been carried out in Bermuda for citrus tristeza closterovirus (EPPO A2 quarantine pest) using ELISA tests. Samples collected from 113 sites representing 520 trees have been tested, and CTV has been detected at 23 sites. When each tree present at these 23 infected sites (231 trees in total) was tested, 90 % were positive for CTV by DAS-ELISA (detecting all CTV strains) and 30 % tested positive (by DASI-ELISA) for decline-inducing CTV strains. Additional surveys were carried out on trees used for production of budwood. Approximately 250 trees have been tested, and 12 % were positive for CTV and 5 % for decline-inducing CTV strains (mainly lemon trees). The authors stressed that this is the first record of citrus tristeza closterovirus in Bermuda. *Toxoptera citricidus* (EPPO A1 quarantine pest), vector of CTV, has not been found. This information complete the report made in RS 95/021.

Source: Thompson, T.L.; Monkman, K.D.; Lee, R.F.; Berger, N.L. (1994) First report of citrus tristeza closterovirus in Bermuda.
Phytopathology, 84 (8), p 871.
Abstract of a paper presented at the APS Caribbean Division Meeting, September 20-24, 1992, Merida, Venezuela

Additional key words: new record.

95/098 **PHYNCI...**First report of *Phyllocnistis citrella* in Cuba

The citrus leaf miner, *Phyllocnistis citrella* (potential EPPO A2 quarantine pest), has been found for the first time in the Western part of Cuba, in October-November 1993. At present, the pest is present all over the island. The authors recalled that *P. citrella* has been recorded for the first time in Florida (US) in May 1993 (EPPO RS 94/163). Studies are being carried out in Cuba to identify natural enemies which could be used to control the pest. So far, six species of parasitoids have been identified (all belonging to Hymenoptera: Chalcidoidea: Eulophidae and Elasmidae). The efficacy of biopesticides, such as neem extracts and *Bacillus thuringiensis* is currently being evaluated.

Source: González, N.; Peña, E.; Hernández, I.; Borges, M.; Pérez, I.; Castellanos, A.; González, C.; Vázquez, L.; Jiménez, R.; Castellanos, L.; Acea, R.; Otero, O.; Morera, J.,L.; Tamayo, I.; Cáceres, I.; Martín, C.; Pajón, J.; García, M.; Márquez, M.,H.; Pérez, R.; Pérez, C.; Chong, A.; Pla, D. (1994) [Detection and control of a new pest of citrus in Cuba, the citrus leaf miner, *Phyllocnistis citrella* Stainton.]
Abstract of a paper presented at the 'II Encuentro nacional de bioplaguicidas, Ciudad de La Habana, 1994-10-25/27'.

Additional key words: new record

95/099 **POTXXX...**ELISA detection of potato T capillovirus

An ELISA test, using two monoclonal antibodies has been developed in UK and is highly specific for potato T capillovirus (EPPO A1 quarantine pest). The authors concluded that this is a simple, inexpensive, rapid detection method for PVT in plant material. They also noted that large scale field testing of this system is currently being done at the International Potato Centre in Peru.

Source: Vernon-Shirley, M.L.; Burns, R.; George, E.L.; Hoadley, M.E. (1993) A simple assay system incorporating monoclonal antibodies for the detection of potato virus T.
Potato Research, 36 (2), 83-88.

Additional key words: new diagnostic method.

95/100 **FUSAAL...**Potential of RAPD for rapid detection of Bayoud disease

Studies have been carried out to evaluate the potential of RAPD analysis to differentiate *Fusarium oxysporum* f. sp. *albedinis* from other *F. oxysporum* associated with wilted date palms. 17 isolates of *F. oxysporum* (of known pathogenicity) from wilted palms or from the rhizosphere, and collected in three palm groves in Morocco, have been analysed. Results obtained indicated that the RAPD technique allows differentiation of *F. oxysporum* f. sp. *albedinis* from other non-pathogenic *F. oxysporum* associated with date palms. The authors concluded that RAPD is a promising tool for rapid detection of the pathogen from any sample (infected palm tree or soil extract). However further studies will have to be carried out on a wider collection of isolates which has already been set up, and also with other characterization methods (like vegetative compatibility groups and mtDNA RFLP).

Source: Fernandez, D.; Tantaoui, A. (1994) Random Amplified Polymorphic DNA (RAPD) analysis: a tool for rapid characterization of *Fusarium oxysporum* f. sp. *albedinis* isolates?
Phytopathologia mediterranea, 33 (3), 223-229.

Additional key words: new diagnostic method.

EPPO *Reporting Service*

95/101 **BEMITA...**Situation of *Bemisia tabaci* in Islas Canarias (ES)

In Islas Canarias (ES), *Bemisia tabaci* (EPPO A2 quarantine pest) has been found for the first time on Lanzarote on sweet potato (*Ipomeas batata*) in 1983. Since then, the insect spread rapidly to many agricultural areas of the islands, mainly Tenerife and Gran Canaria.
In Tenerife, *B. tabaci* is widespread. In the north, it occurs mainly in greenhouses and damages poinsettia (*Euphorbia pulcherrima*), tomato, green pepper, *Carica papaya* and melon. Many weed species are also attacked by *B. tabaci*, such as *Nicotiana glauca*, *Sonchus* sp. and *Ricinus communis*.
In Gran Canaria, *B. tabaci* is present in the south of the island on green pepper and poinsettia.
In La Gomera, *B. tabaci* is found on tomato.
In Islas Canarias, the most affected crops are: *Carica papaya*, tomato, green pepper, eggplant, poinsettia and squash. In addition to direct damage, the main concern is the transmission of tomato yellow leaf curl geminivirus (EPPO A2 quarantine pest) and the appearance of plant disorders like irregular ripening and squash silverleaf. In the South of Tenerife, appeared the first symptoms of TYLCV in areas where populations of *B. tabaci* are high (see also EPPO RS 95/040). Irregular ripening has also been observed in some tomato-growing areas in the North of Tenerife. Squash silverleaf also raises some concerns. Chemical control is applied by the growers and research is carried out on biological control.

Source: Cebrián, R.; Carnero, A.; Pérez-Padrón, F. (1994) Pest status of *Bemisia tabaci* Gennadius (Homoptera: Aleyrodidae) on Canary Islands. **IOBC WPRS Bulletin, 17 (5), 47-51.**

Additional key words: detailed record.

EPPO *Reporting Service*

95/102 **BEMITA...**International Workshop on *Bemisia* spp.

An International Workshop on *Bemisia* spp. was held in Israel, in 1994-10-03/07. Many papers and posters have been presented on the following topics: basic biology of whiteflies, population dynamics, damage expression of *Bemisia tabaci* and other whiteflies, viruses, plant resistance to whitefly-transmitted viruses or to whiteflies; international cooperation in research and control, biological control of *Bemisia* and *Trialeurodes*, chemical and physical control of whiteflies and their resistance to insecticides, control of *Bemisia* in IPM systems. From the abstracts the EPPO Secretariat has noted the following items.

1) Insect surface lipids have been be used to differentiate closely related species and geographically separated populations of Diptera, Hymenoptera and Orthoptera. Nelson and Buckner compared the composition of surface lipids of *Trialeurodes vaporariorum, Bemisia tabaci*, *Bemisia argentifolii*, *Aleurothrixus floccosus*, *Aleuroplatus coronata* and *Parabemisia myricae*. Whitefly species appear to be very similar in the composition of their wax particles and their major cuticular surface lipids, though some differences could be noted. *B. tabaci* and *B. argentifolii* could not be differentiated based on the components of their exterior lipids.

2) Frohlich and Brown have used the mitochondrial 16S ribosomal subunit of *Bemisia tabaci* as a molecular marker to assess variability among individuals (collected from different places on four continents). These studies indicated that *B. tabaci* is composed of at least three distinct groups: one composed of New World *B. tabaci*, a second composed of Old World *B. tabaci* (excluding the Indian subcontinent) and the B biotype (*B. argentifolii*), and a third group composed of *B. tabaci* from India and Sudan. They concluded that, based on mitochondrial 16S rDNA analyses, the present taxon *B. tabaci* is more complex than previously demonstrated.

3) Guershon and Gerling have analysed the effect of cotton leaf pubescence on the phenotype of *Bemisia tabaci* pupae. The percentage of setaceous pupae per leaf increased with leaf pubescence. These setaceous whiteflies developed to maturity more rapidly than the smooth individuals present on the same leaves. They have also observed, by transferring *B. tabaci* crawlers from pubescent to glabrous leaves and vice versa, that the setaceous phenotype is induced before the whitefly nymphs settle and feed from the leaf fluids.

4) Dr Xu Rumei presented the situation of *Bemisia tabaci* on cotton in China. Previously, it was not considered as a serious cotton pest in China and was only reported in the extreme south (Taiwan, Yunnan, Hainan). However, recently it was found to be distributed on a much larger scale, up north to the Yantze river drainage area (Shanghi, Wuhan etc.).

5) Cohen *et al.* reported that in 1992 unusual symptoms appeared on lisianthus (*Eustoma grandiflorum*) plants in Israel. The symptoms included distortion of growing tips, cup-shaped leaves and swelling of the veins on the lower leaf surface. This disease has become a limiting factor to the production of lisianthus in Israel. The authors have found that this disease was induced by tomato yellow leaf curl geminivirus.

Source: Abstracts of papers presented at the International Workshop on *Bemisia* spp. (1994)
Phytoparasitica, 22 (4), 309-361.

95/103 **PHYTFR...**Effect of temperature and host genotype on the production of inoculum by *Phytophthora fragariae* var *fragariae*

A bioassay has been developed in UK to monitor the release of inoculum in drainage water from strawberry plants inoculated with zoospores of *Phytophthora fragariae* var. *fragariae* (EPPO A2 quarantine pest). The fungus was detected in drainage water from plants that had been held at temperatures between 2 and 10 °C, but not from plants held at 26 °C. This shows that the production and release of inoculum of *P. fragariae* var. *fragariae* from infected strawberry plants is greatly favoured by low temperatures. As the results are consistent with observations previously made on the effect of temperature on zoospore production and on zoospore motility in the laboratory, the authors felt that the inoculum detected in this study mainly consists of motile zoospores. In addition, these results fit with the views that winter conditions of low temperatures and wet soils are the main determinant of damage observed in the following season. Concerning the influence of the host genotype, they observed that more secondary inoculum was produced by host genotype/fungal isolate combinations in which marked root rot symptoms were seen, than in combinations in which the host was resistant.

Source: Duncan, J.M.; Kennedy, D.M. (1995) Effect of temperature and host genotype on the production of inoculum by *Phytophthora fragariae* var. *fragariae* from the roots of infected strawberry plants.
Plant Pathology, 44 (1), 10-21.

Additional key words: epidemiology.

95/104 **PHYTRU...**Control of *Phytophthora fragariae* var. *rubi*

Field experiments have been carried out in Norway to study the effects of an integrated control system, including combinations of raised beds, moderate cultivar resistance, fungicide treatment, mulching and organic amendment, against *Phytophthora fragariae* var. *rubi* (EPPO A2 quarantine pest). Two raspberry cultivars (*Rubus idaeus*) have been used: 'Veten' (highly susceptible) and 'Chilliwack' (a less susceptible cultivar). The results showed that raised beds reduced the severity of root rot compared with flat beds. The best results for both cultivars were obtained with a combination of raised beds and metalaxyl treatment. Mulching increased the severity of the disease, even in well drained soil (raised beds). The organic amendment (sheep manure mixed in soil) had only a minor influence on raspberry root rot, and no final conclusion could be drawn from these studies as its influence appears to be rather complex.

Source: Heiberg, N. (1995) Control of root rot of red raspberries caused by *Phytophthora fragariae* var. *rubi*.
Plant Pathology, 44 (1), 153-159.

95/105 **ERWIAM...**Possible use of thermotherapy of plant propagation material against *Erwinia amylovora*

Studies have been carried out to investigate the heat sensitivity of *Erwinia amylovora* (EPPO A2 quarantine pest), both *in vitro* and *in planta*, at 45 °C and 50 °C, and to examine the effect of these temperatures on the viability of pear and apple budwood. During *in vitro* assays with eight different strains, it has been shown that thermal death times did not exceed 70 min at 45 °C and 50 min at 50 °C (95 % confidence interval). Thermotherapy of naturally infected apple and pear shoots have been performed using a moist and a dry heat procedure. For the moist procedure, during which plants are wrapped in wet cotton cloths and maintained in an incubator, no bacterial growth could be detected after an incubation of 5 h at 45 °C. When shoots were sealed in polyethylene bags and immersed in water (dry heat), no bacteria could be isolated after an immersion of 3 h at 45 °C. However, incubation at 50 °C for 1-2 h, in either humid or dry condition, did not eradicate *E. amylovora* completely. The rate of failure of grafts using budwood treatment at the effective time-temperature combinations did not exceed 25 %. The authors concluded that these results confirmed the feasibility of controlling *Erwinia amylovora* in apple and pear by thermotherapy. A treatment of 5 h at 45 °C in incubator or of 3 h at 45 °C in a water bath, as described above, is simple and flexible enough to be recommended, for example before shipping of plant material or prior to the release of fire-blight-resistant varieties which could transmit the bacteria without showing any symptoms.

Source: Keck, M.; Chartier, R.; Zislavsky, W.; Lecomte, P.; Paulin, J.P. (1995) Heat treatment of plant propagation material for the control of fire blight. **Plant Pathology, 44 (1), 124-129.**

95/106 MLO...Ash yellows phytoplasmas

Sinclair and Griffiths have recently published a review on ash yellows describing the distribution, host range, symptoms and epidemiology of the disease and discussed its relation with ash decline. The disease has only been reported in North America (in 16 States of US, especially in north-eastern States and 2 Canadian Provinces: Quebec and Ontario). Ash yellows is caused by unnamed phytoplasmas and induces slow growth, and decline of ash species (*Fraxinus* sp.). Ash yellows phytoplasmas have also been found on lilac (*Syringa* sp.) where they cause witches' broom symptoms. Molecular studies have shown that ash yellows and lilac witches broom are closely related; and that ash yellows could be considered as a disease caused by one pathogen (i.e. a group of closely related phytoplasma strains). Phytoplasmas have been detected in 12 ash species and numerous infraspecific taxa, but symptoms are mainly observed on white ash (*F. americana*), and to a lesser extent on green ash (*F. pennsylvatica*) and velvet ash (*F. velutina*). Affected trees show reduced growth, short internodes, chlorotic foliage, witches' broom and root necrosis. Seedlings and saplings can present a rapid decline. However, a minority of infected trees may not show any symptoms. The vectors of ash yellows are unknown, however single instances of phytoplasma transmission into ash seedlings have been reported by *Philaenus spumarius* (meadow spittle-bug) and *Paraphlepsisus irroratus* (leafhopper) and have not been confirmed. Control measures against this disease are not available, but forest management in order to promote species diversity or avoidance of ash species on stands where drought stress is common could reduce growth losses.

Finally, the authors discussed the relation between ash yellows phytoplasmas and the decline of white ash. This decline became prominent in parts of the north-eastern USA in the 1950s, and surveys revealed that in some States, 12 % to 37 % of ash trees were dead or showing dieback. Drought was suspected as the major cause of ash decline. Further studies have shown that phytoplasma infections and decline of white ash were correlated in many locations from Indiana to Vermont. Several observations raised the possibility that many infected ash trees may tolerate infection with little growth reduction until they come under stress from factors like drought, competition with other trees, or insect damage. For white ash, the authors felt that, although phytoplasma infection may cause decline and tree mortality, it mainly leads to a reduced vigour, which exacerbates stress caused by other factors. In green and velvet ash, ash yellows phytoplasmas may have only a contributory causal role in decline.

Source: Sinclair, W.A.; Griffiths, H.M. (1994) Ash yellows and its relationship to dieback and decline of ash.
Annual Review of Phytopathology, 32, 49-60.

95/107 **MLO...**Detection of phytoplasmas in alder trees in Southern Italy

During the last few years, declining alder trees (*Alnus glutinosa* and *A. cordata*) have been observed in the Agri valley in Basilicata (Southern Italy). Infected trees showed symptoms of yellowing, sparse foliage, premature autumn coloration, sprouting, deliquescent branching, phloem necrosis, dieback and witches' brooms. Phytoplasmas have consistently been found in the phloem of diseased trees, and the authors felt that phytoplasmas are probably the causal agents of this disease. The authors noted that the symptoms observed are similar to those reported on ash affected by phytoplasmas in USA. Previous hybridization studies have indicated that phytoplasmas associated with diseases of alder, elm and ash were genetically related (EPPO RS 95/109).

Source: Marcone, C.; Firrao, G.; Ragozzino; A.; Locci, R. (1994) Detection of MLOs in declining alder trees in Southern Italy and their characterization by RFLP analysis.
European Journal of Forest Pathology, 24, 217-228.

95/108 **EMPNXX...**Elm witches' broom phytoplasma detected in southern Italy

In Basilicata (Southern Italy), diseased elms (*U. carpinifolia*) have been observed. They showed symptoms of yellowing, leaf epinasty, little leaf, stunting, premature casting of leaves and pronounced witches' brooms. Phytoplasmas have consistently been found in such trees. Though, phytoplasmas have previously been reported in Northern and Central Italy, this is the first report on detection of phytoplasmas in elms in Southern Italy. So far, some studies have indicated that elm witches' broom phytoplasmas found in Italy were genetically related with elm phloem necrosis phytoplasma (EPPO A1 quarantine pest) found in United States (EPPO RS 94/065 and 95/109). In addition, the authors pointed out that in the same area (Agri valley) where diseased elms were found, many declining alder trees (*Alnus* sp.) affected by phytoplasmas have also been observed (EPPO RS 95/107).

Source: Marcone, C.; Ragozzino, A. Firrao, G.; Locci, R. (1994) Detection of elm witches' broom agent in Basilicata, Southern Italy.
Phytopathologia mediterranea, 33 (3), 194-199.

EPPO *Reporting Service*

95/109 **EMPNXX...**Genetic relatedness of phytoplasmas of elm, alder and ash in Europe and North America

Diseases of many forest and amenity trees are induced by phytoplasmas. In eastern and central North America, several species of elm (*Ulmus americana*, *U. rubra*, *U. alata*, *U. serotina* and *U. crassifolia*) are affected by elm phloem necrosis (EPPO A1 quarantine pest), also called elm yellows. In Europe, a disease associated with elm witches' broom phytoplasmas has been observed in *U. minor* (*U. carpinifolia*) in former Czechoslovakia, Italy and France. Alder yellows have been observed in *Alnus glutinosa* and *A. incana* in Europe and on *A. rubra* in Washington State (USA). In United States and in south-eastern Canada, several ash species (*Fraxinus* sp.) are affected by ash yellows. The aim of this study was to compare DNA samples (by Southern blot analysis) from phytoplasma-infected elm, alder and ash trees located in Europe and North America and also to compare them with strains of several phytoplasmas maintained in periwinkle (*Catharanthus roseus*).

Three cloned DNA fragments of a strain of the European elm witches' broom phytoplasma maintained on periwinkle were used as probes to hybridize with DNA prepared from phytoplasma infected elm, alder and ash trees and also from periwinkle plants infected by various phytoplasmas. The results showed that European elm witches' broom and North American elm yellows (elm phloem necrosis phytoplasma), as well as European alder yellows, are genetically related and may be caused by closely related phytoplasmas. In addition, they are distinct from all other phytoplasmas tested in this study. Ash yellows appeared to be slightly more distantly related to elm and alder yellows, it is nevertheless more closely related to elm and alder phytoplasmas than to all other phytoplasmas included in this comparison. The authors concluded that not only elm yellows (elm phloem necrosis) and elm witches' broom are caused by closely related phytoplasmas (see also EPPO RS 94/065), but very similar organisms also affect alder in Europe. They felt that the most appropriate name for the pathogen affecting elms would be elm yellows. But, although similarities have been found, differences among the tested material, such as host specificity, have not been detected with the characterization methods used. Further studies are therefore necessary for a better understanding of the identity, host specificity, variability and epidemiology of such phytoplasmas, as this may have implications on plant quarantine.

Source: Mäurer, R.; Seemüller, E.; Sinclair, W.A. (1993) Genetic relatedness of Mycoplasmalike Organisms affecting elm, alder and ash in Europe and North America.
Phytopathology, 83 (9), 971-976.

95/110 **SYLRXX...**Strawberry latent ringspot nepovirus found in lilies

In Israel, during winter 1994, unusual symptoms of asymmetrical opening of flowers were observed on lilies (oriental hybrid 'Stargazer') grown from bulbs imported from Europe. By using electron microscopy, host range and serology, the presence of strawberry latent ringspot nepovirus (EU Annex II/A2) was detected. In Israel, the virus has only been found once in roses. The authors assumed that the virus has been introduced with the bulbs and noted that this is the first report of strawberry latent ringspot nepovirus in lilies.

Source: Cohen, J.; Gera, A.; Loebenstein, G. (1995) Strawberry latent ringspot virus in lilies.
European Journal of Plant Pathology, 101 (2), 217-219.

Additional key words: new host plant.

95/111 **TMSWX...**Watermelon silver mottle virus: a new member of the genus tospovirus

A tomato spotted wilt-like virus causing significant losses in watermelon (*Citrullus lanatus*) in Taiwan has recently been identified as a tospovirus based upon particle morphology, host reactions, thrips transmission and serological relationships (EPPO RS 529/06, 1992). The virus was then designated as Tospo-W and it was found that its nucleocapside protein was serologically unrelated with tomato spotted wilt and impatiens necrotic spot tospoviruses (both potential EPPO A2 quarantine pests). In this study, the authors have demonstrated that the N gene of this virus presented a low homology with other tospoviruses and that its specific cDNA probe did not cross-hybridize with other tospoviruses. Therefore, they suggested to consider this virus as a distinct member of the genus Tospovirus, and to name it watermelon silver mottle tospovirus.

Source: Yeh, S.D.; Chang, T.F. (1995) Nucleotide sequence of the N gene of watermelon silver mottle virus, a proposed new member of the genus Tospovirus.
Phytopathology, 85 (1), 58-64.

Additional key words: new pest.

95/112 **HELIAR...**IPM programme against *Helicoverpa armigera* in China

In China, very serious outbreaks of *Helicoverpa armigera* (EPPO A2 quarantine pest) in cotton have recently been reported (EPPO RS 94/056). During 1992 and 1993, this outbreak has been kept under good control in the Xinxiang (Henan province) demonstration area, located in the central part of the Yellow River valley. An IPM programme has been set up, based on the monitoring of first generation populations, timely applications of products according to various action thresholds against the different generations, management of insecticide resistance, management of natural enemies and use of resistant cotton cultivars.

Source: Anonymous (1995) [A study on the key technique system of integrated management against the rampant damage of cotton bollworm.] **Scientia Agricultura Sinica, 28 (1), 1-7.**

95/113 **OIRSA...**New Executive Director

OIRSA, EPPO's sister organization in Central America, has recently appointed Dr C.H. Barreto as Executive Director for the period 1995/1999.

Source: OIRSA, 1995-04.

95/114 **ERWIAM/IT...*Erwinia amylovora* present in Emilia-Romagna (IT)**

In October 1994, two foci of *Erwinia amylovora* (EPPO A2 quarantine pest) were found by the Regional Phytosanitary Service in the region of Emilia-Romagna (IT). Fireblight has been discovered in one pear orchard in the area of San Pietro in Casale and in four nurseries in the area of Minerbio, which are both situated in the district of Bologna.

Source: Plant Protection Service of Italy, 1994-04.
Regional Phytosanitary Service in the region of Emilia-Romagna (1995) [two foci of fireblight]
L'Informatore Agrario, 51 (11), 93

Additional key words: new record