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98/042 New data on quarantine pests

By browsing through the literature, the EPPO Secretariat has extracted the following new data concerning quarantine pests.

New geographical records

Liriomyza bryoniae (EU Annex I/A2) is present in China. Review of Agricultural Entomology, 86(3), p 256 (2070).

Opogona sacchari (EPPO A2 quarantine pest) was first found in China, in 1995-96. It was observed on *Dracaena fragrans* and also *Euphorbia pulcherrima* and *Rhapis excelsa*, in glasshouses in Beijing. Review of Agricultural Entomology, 86(3), p 358 (2876).

Detailed records

Bactrocera cucurbitae (EPPO A1 quarantine pest) occurs in Assam, India. Review of Agricultural Entomology, 86(3), p 325 (2626).

Bemisia tabaci (EPPO A2 quarantine pest) was found on *Phaseolus vulgaris* crops and associated weeds in the Provinces of Jujuy and Salta, Argentina. Review of Agricultural Entomology, 86(2), p 202 (1627).

Cherry leaf roll nepovirus (EPPO A2 quarantine pest on *Rubus*) occurs on birch trees in Germany. Review of Plant Pathology, 77(2), p 138 (1007).

In Belarus, it is estimated that *Clavibacter michiganensis* subsp. *michiganensis* (EPPO A2 quarantine pest), *Xanthomonas vesicatoria* (EPPO A2 quarantine pest), *Pseudomonas syringae* and *Erwinia carotovora* cause 20-30 % losses in protected tomatoes. Review of Plant Pathology, 77(3), p 305 (2239).

Colletotrichum acutatum (EU Annex II/A2) was found on strawberries in the suburbs of Shanghai in China. Review of Plant Pathology, 77(2), p 193 (1411).

Heavy infestations of *Eutetranychus orientalis* (EPPO A2 quarantine pest) have been recorded on *Euonymus japonicus* in Shandong, China, in 1995. Review of Agricultural Entomology, 86(3), p 352 (2837).

Liriomyza sativae (EPPO A1 quarantine pest) was first found in Hainan (China) in 1993, and it has then become a locally important pest of melons and vegetables. Review of Agricultural Entomology, 86(3), p 335 (2707).

Malacosoma disstria (EPPO A1 quarantine pest) occurs in British Columbia, Canada. Review of Agricultural Entomology, 86(2), p 229 (1841).

Phytophthora boehmeriae was isolated for the first time in Western Australia (Australia) from *Eucalyptus sieberithora*. Review of Plant Pathology, 77(2), p 130 (941).

In Venezuela, a survey was carried out in 1993 on *Xylella fastidiosa* (EPPO A1 quarantine pest) in vineyards of Zulia state, on 16 cultivars showing bacteria-like symptoms. *X. fastidiosa* was identified in 8 grape cultivars (French Colombard, Riesling, Early Muscat, Centennial seedless, Ruby seedless, Salt Creek, Alphonse Lavalle and Italia). Review of Plant Pathology, 77(3), p 315 (2315).

New potential vectors

A sensitive and specific assay (using PCR) for the detection of *Xylella fastidiosa* (EPPO A1 quarantine pest) was developed in USA. In a nursery where the disease occurs, 347 leafhoppers representing 16 species were captured on *Ulmus americana*. Two species regularly tested positive for *X. fastidiosa*: *Graphocephala coccinea* and *G. versuta*, and are considered as potential vectors of the disease. Review of Agricultural Entomology, 86(2), p 159 (1283).

Source: **EPPO Secretariat, 1998-02.**

Additional key words: new records, detailed records

Computer codes: BEMITA, COLLAC, CORBMI, CRLRRX, DACUCU, EUTEOR, LIRIBO, LIRISA, MALADI, OPOGSC, PHYTBM, XYLEFA, AR, AU, BY, CA, CN, DE, IN, VE

98/043 Update on the situation of *Tilletia indica* in USA

In USA on 8th March 1996, the presence of *Tilletia indica* (EPPO A1 quarantine pest) was confirmed in Arizona (EPPO RS 96/062) on durum wheat. Bunted wheat seeds were also found in samples remaining in Arizona after a portion of the lots had been planted in Arizona, Texas and New Mexico. Quarantine measures were immediately applied: destruction of fields planted with infected seeds, prohibition to grow wheat for seeds in areas (counties) where infections were found, prohibition to grow wheat for grain in infected fields (surrounded by a buffer zone within a radius of 3 miles), restrictions on the movement of wheat from infected areas. Later, the discovery of Karnal bunt-infected wheat in California extended the quarantine to parts of that State. A national survey was implemented by testing wheat samples from silos (or mills) in each county of wheat-producing states several times a year. Sampling in the field was done in 1996 in some cases, but was stopped in 1997 as it appeared that sampling in silos or mills was more effective (as grains are manipulated, teliospores are released and dispersed). Later in 1997, it was thought that *T. indica* had been found in south-

eastern states (Alabama and Tennessee – EPPO RS 97/007), but the situation was extensively studied and the conclusion was that *T. indica* was not present in these states. The confusion arose because of the occurrence of a ryegrass bunt whose spores cannot be reliably distinguished from those of *T. indica* (both morphologically and by PCR). So far, it appears that the ryegrass bunt cannot attack wheat in the field, although artificial inoculation to wheat can be successful in the laboratory. The results of the 1997 survey showed that only one infected wheat sample was found in September from Texas (San Saba county), all other samples either from previously infested or non-infested areas were negative (over a total of 4100 samples tested by APHIS).
Finally, Bonde *et al*. gives some details on decontamination methods which have been used successfully in the USA. The 'steam-flake milling' method is effective in destroying *T. indica* teliospores. Grain is loaded in special steam cabinet towers and heated 30 min to 109°C, and then passed through rollers that compressed the steamed grain into flakes. Another method is used to decontaminate mill feed (bran etc.) which is then used for cattle feeding (if infected this could present a risk of potential introduction of viable teliospores into a field via animal waste). Mill feed is dry heated inside a 'Holo-Flite Thermal Processor' at 84, 101 or 110 °C for 12, 5 or 2 min respectively, and teliospores are efficiently killed.

Source: Anonymous (1997) 1997 National Karnal Bunt Survey Plan, USDA-APHIS PPQ.

APHIS Web site on the INTERNET http://www.aphis.usda.gov

Bonde, M.R.; Peterson, G.L.; Schaad, N.W.; Smilanick, J. (1997) Karnal bunt of wheat. **Plant Disease, 81(12), 1370-1377.**

Additional key words: detailed record **Computer codes:** NEOVIN, US

98/044 Whitefly-transmitted geminiviruses of tomato in the Americas

A paper on whitefly-transmitted geminiviruses in tomato in the Americas has recently been published by Polston & Anderson (1997) and gives many interesting details on the economic impact, etiology, distribution and expansion, case histories, ecology and epidemiology, and management of these diseases. This paper focuses on tomato diseases, but cucurbits and beans are also severely affected by whitefly-transmitted geminiviruses. Since the late 1980s, most of the tomato-producing areas of Florida, Caribbean, Mexico, Central America, Venezuela and Brazil are suffering high incidences of geminiviruses with devastating economic consequences. With the introduction and spread of *Bemisia tabaci* biotype B (EPPO A2 quarantine pest), the number of previously unreported geminiviruses has increased significantly. Until the mid or late 1980s, only Chino del tomate (Mexico: Sinaloa), tomato yellow mosaic (Venezuela) and tomato golden mosaic geminiviruses (Brazil: São Paulo) were reported on tomato crops in the Americas. However, at present approximately 17 different

viruses are described. At this point, it can be useful to note that one difficulty is that geminiviruses are primarily identified by their genomic sequence and there is a lack of consensus on a method to distinguish strains from isolates, and strains from species. Characterization, and even documentation, is still lacking for many of these newly observed geminiviruses and this has led to a certain confusion.

Spread of *Bemisia tabaci* biotype B

B. tabaci biotype B is thought to have been introduced into the Americas on ornamentals from Europe. By the late 1980s, biotype B had established and displaced the indigenous populations in Texas and Florida (USA). By 1990, the same occurred in Arizona and California (USA). It was then found in Antigua and Barbuda, Dominican Republic, Grenada, Guadeloupe, Puerto Rico, Trinidad and Tobago, Saint Kitts and Nevis, Mexico (Quintana Roo*). By 1991, it was in Mexico (Sonora*), Belize and Nicaragua*. By 1993, it was present throughout most of Central America and Brazil (Distrito Federal*, São Paulo*, Parana*, Rio de Janeiro*, Bahia*, Pernambuco*). By 1994, it was in Venezuela, Mexico (Sinaloa*, Tamaulipas*) and has just been found in Colombia*. (New detailed records are marked with an asterisk).

Tomato geminiviruses in USA

Although the existence of weeds with golden mosaic symptoms was known since the 1950s and the presence of *B. tabaci* was observed since at least the end of the 1800s, geminiviruses were not a problem in USA. The situation changed in 1989, when tomato mottle geminivirus appear in Florida. It is thought that high populations of *B. tabaci* biotype B were first noted in 1987. Incidence of tomato mottle geminivirus was sometimes very high (up to 100 %), but since 1994 growers are using imidacloprid against the vector which has lowered considerably the incidence of the disease. Tomato mottle geminivirus was also found in Virginia (on few plants), South Carolina and Tennessee. It is present in Puerto Rico.

Texas pepper geminivirus was first seen in tomato and pepper in Texas in 1987. Outbreaks lasted only for a few years in Texas. However, the disease is still important in Tamaulipas (Mexico).

Pepper huasteco geminivirus was detected in pepper in USA in 1987. It was also found on tomato in Mexico. However, there are only few reports of this virus in USA, as well as for Serrano golden mosaic geminivirus which was found on pepper and tomato in Arizona.

Tomato geminiviruses in Mexico

Symptoms caused by Chino del tomate geminivirus were seen in Sinaloa since 1970s. Symptoms can be particularly severe compared with most geminiviruses. In Sinaloa, it was found on tomato and pepper. This virus was recently observed in Chiapas, Morelos and Tamaulipas. It can occur in mixed infections with pepper huasteco and Texas pepper geminiviruses.

Outbreaks of Texas pepper geminivirus occur routinely in tomato and pepper in Tamaulipas.

Pepper jalapeño geminivirus which was found in Sinaloa and other Mexican States on pepper is thought to be a strain of Texas pepper geminivirus.
Several other geminiviruses have been reported in Mexico: Sinaloa leaf curl, tomato leaf crumple (may be a strain of Chino del tomate), Serrano golden mosaic (closely related to Texas pepper and pepper jalapeño), rizado amarillo and tigré disease.

Tomato geminiviruses in Central America

Venezuela

A disease later known to be caused by tomato yellow mosaic geminivirus was first seen in Venezuela in 1960s, and constituted a limiting factor in tomato production.
In 1997, a strain of potato yellow mosaic was found on diseased tomatoes (however, the sequence of the tomato virus was slightly different from the sequence of the virus on potato).

Brazil

Tomato golden mosaic geminivirus caused problems in tomato as early as in the 1960s. Recent surveys failed to detect it, but many other geminiviruses are now found.
In Minas Gerais, 2 different geminiviruses (called Tom GV1 and Tom GV2) were found and are closely related to tomato golden mosaic and bean golden mosaic geminiviruses.
In São Paulo, tomato yellow streak and several other different geminiviruses were isolated on tomatoes from Rio de Janeiro, Bahia, Pernambuco and Distrito Federal.

Tomato geminiviruses in the Caribbean

In Dominican Republic, geminiviruses started to appear on tomato in 1988. Symptoms of what would be later recognized as tomato yellow leaf curl geminivirus were first seen in 1992. It is believed that it was introduced in the north-west of the island by a tomato grower with transplants from Israel. The virus was identified as TYLCV-Is in 1994. It is also present in Cuba and Jamaica.
Potato yellow mosaic geminivirus appears widespread in the Caribbean and its distribution is probably expanding. It was first described on potato in Venezuela in 1986. In 1992, symptoms of chlorotic mottling, leaf distortion and leaf rolling were seen for the first time on tomato in Martinique, in 1993 in Guadeloupe and 1994 in Puerto Rico (Polston *et al.*, 1998). An almost identical virus was observed in Venezuela on tomato. Similarly, potato yellow mosaic geminivirus has been found in tomato in Trinidad and Tobago with high disease incidence. Relationships between potato yellow mosaic and tomato yellow mosaic geminiviruses are not known.

The following simplified table extracted from the paper of Polston & Anderson (1997) summarizes the situation of tomato geminiviruses in the Americas.

Virus	Known distribution	Symptoms on tomato
Chino del tomate (CdTV)/Tomato leaf crumple geminivirus (TLCrV)	Mexico (Chiapas, Morelos, Sinaloa, Tamaulipas)	Severe leaf curling, leaf rolling, vein thickening, yellow mosaic, stunting, reduced fruit set
Pepper huasteco geminivirus (PHV)	Mexico (Guanajuato, Quintana Roo, Sinaloa, Taumaulipas), USA (Texas)	Vein clearing, mild leaf distortion, chlorosis, stunting
Potato yellow mosaic geminivirus (PYMV)	Guadeloupe, Martinique, Puerto Rico, Trinidad and Tobago, Venezuela	Chlorotic mottle, leaf rolling, leaf distortion
Serrano golden mosaic geminivirus (SGMV)	Mexico (Sinaloa), USA (Arizona)	Leaf curling, leaf distortion, stunting
Sinaloa tomato leaf curl geminivirus (STLCV)	Mexico (Sinaloa)	Foliar chlorosis and purpling, leaf curling, shortened internodes
Taino tomato mottle geminivirus (TTMoV)	Cuba	Rugosity, leaf deformation and curling, stunting
Texas pepper (TPV)/Pepper jalapeño geminivirus (PJV)	Mexico (Coahuila, Sinaloa, Tamaulipas), Guatemala, USA (Arizona, Texas)	Mosaic, leaf curling, stunting
Tomato geminivirus BZ-Ub	Brazil (Minas Gerais)	Yellow mosaic
Tomato geminivirus BZ-Ig	Brazil (Minas Gerais)	Yellow mosaic
Tomato golden mosaic geminivirus (TGMV)	Brazil	Yellow mosaic
Tomato mottle geminivirus (ToMoV)	Puerto Rico, USA (Florida, South Carolina, Tennessee, Virginia)	Chlorotic mottle, leaf curling, plant stunting, reduced fruit size and number
Tomato yellow leaf curl geminivirus (TYLCV)	Cuba, Dominican Republic, Jamaica	Reduced leaf size, chlorotic margins, chlorotic mottling, flower abscission, severe plant stunting
Tomato yellow mosaic geminivirus (TYMV)	Venezuela	Yellow mosaic, leaf curling, stunting
Tomato yellow mottle geminivirus (ToYMoV)	Costa Rica	Chlorotic mottle, leaf distortion, leaf curling, stunting
Tomato yellow vein streak geminivirus (ToYVSV)	Brazil (São Paulo)	Yellow mosaic, wavy leaves
Tom GV1 geminivirus	Guatemala, Honduras, Nicaragua	Severe leaf curling, light leaf mottling or chlorosis
Tom GV2 geminivirus	Guatemala	Not reported

Source: Polston, J.E.; Anderson, P.K. (1997) The emergence of whitefly-transmitted geminiviruses in tomato in the Western Hemisphere.
Plant Disease, 81(12), 1358-1369.

Polston, J.E.; Bois, D.; Urbino, C. (1998) Occurrence of a strain of potato yellow mosaic geminivirus infecting tomato in the Eastern Caribbean.
Plant Disease, 81(12), p 126.

Additional key words: detailed records **Computer codes:** BEMIAR, TMMOXX, TMYLCX

98/045 Further details on tomato yellow leaf curl bigeminivirus in Spain

Since 1992, in southern Spain, outbreaks of tomato yellow leaf curl bigeminivirus (EPPO A2 quarantine pest) have been observed in greenhouse and outdoor tomatoes (EPPO RS 93/026). The nucleotide sequences of two tomato yellow leaf curl bigeminivirus (TYLCV) isolates from this region were determined and it was shown that these isolates were closely related to isolates from Italy, suggesting the existence of a geographical cluster of closely related TYLCV isolates in the Western Mediterranean Basin. In June 1997, new and unusually severe symptoms of stunting, yellowing and curling of leaflet margins, with a marked reduction in size, were observed in some tomato plants grown in a greenhouse in Almería. Tomato plants showing milder symptoms similar to those previously described in this region were also present. By using molecular techniques, it was found that the unusually severe symptoms are associated with an isolate of TYLCV almost identical (99% similarity) to TYLCV-Is (isolate from Israel), which coexists in the field with the milder TYLCV isolates previously reported in this area. The authors noted that TYLCV-Is has also been reported from Portugal, and that it is its first report in Spain.

Source: Navas-Castillo, J.; Sánchez-Campos, S.; Díaz, J.A.; Moriones, E. (1997) First report of tomato yellow leaf curl virus-Is in Spain: coexistence of two different geminiviruses in the same epidemic outbreak.
Plant Disease, 81(12), p 1461.

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

98/046 Further details on *Xylella fastidiosa* on coffee in Brazil

Xylella fastidiosa (EPPO A1 quarantine pest) was first found on coffee (*Coffea arabica*) in São Paulo, Brazil in 1995 (EPPO RS 96/169). Symptoms begin with apical and marginal leaf scorch, reduction of internode length of new flush, small pale green to yellow leaves, shoot dieback and overall plant stunting. Symptoms are more apparent in winter, especially in periods of water stress. Actual death of the plants due to the disease may take several years. The economic importance of coffee leaf scorch is unknown. Extensive coffee plantations have been eliminated in São Paulo. But as *X. fastidiosa* was not reported before 1995, losses were attributed to many other causes. However, it is now suspected that *X. fastidiosa* was responsible for this problem, as many remaining coffee plants tested positive for the disease. Studies were carried out on coffee leaf scorch and the Koch's postulates could be verified, demonstrating that *X. fastidiosa* is indeed the causal agent of this disease. In addition, the relationships between the coffee strain and the citrus strain of *X. fastidiosa* (causing citrus variegated chlorosis) were studied. Antisera developed against cultured bacteria from both strains reacted positively against plant extracts affected with both diseases in dot immunobinding assays (DIBA). The polymerase chain reaction amplification products by both strains of *X. fastidiosa* were indistinguishable. The two strains appear closely related if not identical. However, it can be noted that in the field coffee leaf scorch usually occurs when coffee is adjacent to citrus affected by citrus variegated chlorosis. But citrus variegated chlorosis does not always occur when citrus are grown near diseased coffee plants.

Source: de Lima, J.E.O.; Miranda, V.S.; Hartung, J.S.; Brlansky, R.H.; Coutinho, A.; Roberto, S.R. Carlos, E.F. (1998) Coffee leaf scorch bacterium: axenic culture, pathogenicity, and comparison with *Xylella fastidiosa* of citrus. **Plant Disease, 82(1), 94-97**.

Additional key words: detailed record, etiology **Computer codes:** XYLEFA, BR

98/047 *Xylella fastidiosa* is associated with pecan leaf scorch.

Several different leaf scorch symptoms occur on the foliage of pecan (*Carya illinoinensis*). These different symptoms have been associated with various causes (environmental stresses, nutritional problems, mites and pathogens). One type of leaf scorch is characterized by necrosis beginning at the tips or margins of the leaflets and progressing toward the midrib and base of the leaflets. The most distinctive feature of this type of leaf scorch is a dark brown, black, or purplish band of tissue at the interface of the necrotic and green leaflet tissue. Affected leaflets abscise from a compound leaf, while leaflets without symptoms remain on the rachis. When the attack is severe, the whole leaf can fall. Several fungal genera have been reported to be associated with this disease over the last 25 years which was therefore called 'fungal leaf scorch'. Recently, by using an ELISA test it was found that *Xylella fastidiosa* (EPPO A1 quarantine pest) is associated with pecan leaf scorch. Further work is needed to determine the exact etiology of this disease.

Source: Sanderlin, R.S. (1998) Evidence that *Xylella fastidiosa* is associated with pecan fungal leaf scorch.
Plant Disease, 82(2), p 264.

Additional key words: new host plant **Computer codes:** XYLEFA

98/048 Studies on transmission of *Xylella fastidiosa* by insect vectors

The transmission of *Xylella fastidiosa* (EPPO A1 quarantine pest) by insect vectors was studied in California (US), in order to determine how the number of viable *X. fastidiosa* in plants is related to vector transmission efficiency. A strain of *X. fastidiosa* causing grapevine Pierce's disease and two efficient vectors *Graphocephala minerva* and *Carneocephala fulgida* were used. Bacterial populations and efficiency of transmission were measured in five host plants (*Vitis vinifera* cv. Pinot noir, *Rubus discolor*, *Artemisia douglasiana*, *Echinochloa crus-galli*, *Cynodon dactylon*) at various time intervals after insect inoculation of plants. On *Cynodon dactylon*, no transmission by vectors or recoveries of *X. fastidiosa* were obtained, and the authors query why this plant species was considered as a host in previous studies. On other hosts, results show that *X. fastidiosa* has to multiply to reach a threshold in the plant, before transmission by vectors can occur. Populations have to reach a level between 10^4 and 10^5 CFU/g. It was also observed that the rate of transmission increase with the level of *X. fastidiosa* in the plants. Insects fed on grapevine and *R. discolor*, which supported larger populations of the bacterium, also had higher rates of transmission than insects fed on *Artemisia douglasiana* and *Echinochloa crus-galli*.

Source: Hill, B.L.; Purcell, A.H. (1997) Populations of *Xylella fastidiosa* in plants required for transmission by an efficient vector.
Phytopathology, 87(12), 1197-1201.

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

98/049 Studies on grapevine yellows in Israel and Greece

Studies were carried out on grapevine yellows in Israel and Greece to identify the phytoplasmas associated with these diseases. Diseased grapevine plants sampled in Israel and Greece showed symptoms similar to those previously described in France, Italy and North America. Symptoms included veinal yellowing, veinal necrosis, dried flower clusters and reduced lignification of canes. Samples of naturally diseased grapevines were collected in the field and were studied by using nested-PCR and RFLP analysis of amplified 16S rDNA. 10 plants (cv. Chardonnay) from Israel and 6 plants (cvs. Italia, Muscat of Hambourg and cv. Roditis) from Greece were examined. Results showed that the phytoplasmas associated with grapevine yellows in Israel and Greece belong to the stolbur phytoplasma subgroup (e.g. like bois noir). The stolbur phytoplasma subgroup does not include grapevine flavescence dorée phytoplasma (EPPO A2 quarantine pest). The authors also noted that the grapevine yellows phytoplasmas found in North America do not belong to the stolbur phytoplasma subgroup and that the Australian grapevine yellows constitute a new phylogenetic lineage (see EPPO RS 98/039).

Source: Davis, R.E.; Dally, E.L.; Tanne, E.; Rumbos, I.C. (1997) Phytoplasmas associated with grapevine yellows in Israel and Greece belong to the stolbur phytoplasma subgroup, 16SrXII-A.
Journal of Plant Pathology, 79(3), 181-187.

Additional key words: detailed records **Computer codes:** GVBNXX, GVFDXX, IL, GR

98/050 Studies on *Bursaphelenchus xylophilus* under European climatic conditions

Studies were carried out in Germany on the pathogenicity of *Bursaphelenchus xylophilus* (EPPO A1 quarantine pest) to various hosts under European weather conditions. Tests were carried out in 1993-95 with seedlings of various conifer species (*Pinus sylvestris*, *Picea abies*, *P. sitchensis*, *Larix decidua*, *Pseudotsuga menziesii*, *Tsuga heterophylla*, *Abies grandis*), which were artificially inoculated with the North American r form and the m form of *B. xylophilus*. The inoculated plants were placed outdoor in quarantine boxes. Results showed that *B. xylophilus* could cause wilting symptoms and seedling mortality under European weather conditions, and that the nematode populations could develop with variations according to the host plant and the nematode form inoculated.

Source: Braasch, H. (1997) Host and pathogenicity tests with pine wood nematode (*Bursaphelenchus xylophilus*) from North America under Central European weather conditions.
Nachrichtenblatt des Deutschen Pflanzenschutzdienstes, 49(9), 209-214.

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

98/051 Situation of *Phyllocnistis citrella* in the European, Mediterranean and Near East regions

Phyllocnistis citrella was first described in South East Asia (in 1856) and then dispersed slowly to Japan (1927), Korea, Philippines (1915), Australia (1918), East Africa (1967), West Africa (1970). Since 1993, it spread extremely rapidly to many different regions of the world (Caribbean, Central America, Mexico, Mediterranean region, Near East, USA (Florida), and lately to South America). In the European, Mediterranean and Near East regions, the situation can be summarized as follows:

Cyprus: first reported in October 1994, it soon became widespread in citrus-growing areas.

Egypt: first recorded in July 1994 on the eastern site of Nile delta. It is now widespread, all citrus cultivars are attacked in nurseries and orchards.

France: first observed in Corsica in autumn 1994 on the south-east coast. In summer 1995, damage was observed on all citrus-growing areas of the island. At the same time, the pest spread in mainland France (Côte d'Azur, Provence, Pyrénées Orientales).

Greece: first found in Greece in June 1995 on the island of Rhodos. Further records were made in the following months on the islands of the East Aegean Sea and on the east of Kriti. In mainland Greece, it was recorded in Marathon (Attica) and Scala (Laconia) in August 1995. In September 1995, it was present in all citrus-growing areas of the country.

Israel: first found in June 1994 on the north-eastern coast of the Galilee Sea. By October 1994, it was present in all citrus-growing areas in Israel.

Iran: first reports date back to 1961 in southern Iran. But it was first found in northern Iran in 1994 and since then a dramatic spread was observed.

Iraq: first seen in a nursery at Al-Iskenderiya in May 1992. By 1993, it was widespread in all citrus-growing areas of the country.

Lebanon: first found in July 1994 causing damage in northern Lebanon (although it had been observed 25 years ago and disappeared), since then it is present in all citrus-producing areas.

Libya: first found in 1995 and within the same year it spread to all citrus orchards situated in the coastal areas.

Malta: first observed in June/July 1995 and within a few weeks it was present in all citrus-growing areas of Malta and Gozo, on all citrus cultivars.

Morocco: first found in 1994 in the region of l'Oriental and north of Larache. It then spread towards the south and coastal areas (Gharb, Tadla, Marrakech and finally Souss). By the end of 1995, it was present in all citrus-growing areas.

Oman*: it was known in Oman since 1972 but became an economic pest in 1994. It is present in all citrus orchards and back yard gardens.

Pakistan: the earliest report was made in 1916. It is considered as a serious pest of citrus in hilly areas and is widely distributed in the country.

Saudi Arabia: first found on citrus in the eastern province of 1960. In 1982, it was declared as an economic pest causing damage to nurseries and orchards throughout the country.

Spain: first found in 1994 near Cadiz and Malaga, it then rapidly spread to Andalucía, Baleares, Cataluña, Murcia and Communidad Valenciana.

Sudan: it is considered as an economic pest since the early 1960s, and is widely distributed in citrus-growing areas.

Syria: first noticed in July 1994, it is now found in all citrus-growing areas.

Tunisia: it appeared suddenly in November 1994 at Tabarka and rapidly spread to the citrus-growing areas in the north-east. In June 1995, it was also found in Djerba.

Turkey: it was first noticed in 1994 in the East Mediterranean region of Turkey (Içel, Adana, Hatay) and then in the same year, it spread along the West Mediterranean region. In 1995, it was also observed in the Aegean region. It is now present in all citrus orchards excepted those situated on the Black Sea coast.

It can be recalled that, in the Euro-Mediterranean region, *P. citrella* is also present in Algeria, Italy (first found in Sardegna in autumn 1994, it then spread to the mainland and Sicilia), and Portugal. In the Near East, it is also present in Yemen.

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* New record.

Source: Séminaire du C.L.A.M. sur 'la mineuse des feuilles des agrumes (Citrus leafminer - *Phyllocnistis citrella*). Moncada (ES), 1996-03-11/13.73 pp.

Draft Report of the FAO Workshop on Citrus Leaf Miner and its Control in the Near East, Safita (Tartous) (SY), 1996-09-30/10-03, 35 pp.

Additional key words: detailed records, new records. **Computer codes:** PHYNCI

98/052 Identification of *Ralstonia solanacearum* in potato tubers using protein electrophoretograms

The diagnostic protocol for *Ralstonia solanacearum* (EPPO A2 quarantine pest) proposed by the European Union (interim test scheme for the diagnosis, detection and identification of *Pseudomonas solanacearum* (Smith) Smith in potatoes) envisages a screening test for samples of potato tubers followed by, for potentially infected samples, a direct isolation and identification of pure cultures based on pathogenicity test and a phenotypic or genomic fingerprint. Among the phenotypic fingerprints, the analysis of electrophoretic profiles of whole cell proteins has been proposed. Studies were carried out in Italy to assess the reliability of this method. 53 strains of *R. solanacearum* belonging to different races and biovars, isolated from different hosts and origins were examined. In addition, 18 unidentified bacteria presenting similar morphological characters in culture, but non-pathogenic to tomato or aubergine were included. All tested strains were submitted to a pathogenicity test on tomato or aubergine. Results showed that visual comparison of the electrophoretic profiles (SDS-PAGE) of whole cell proteins could generally distinguish between *R. solanacearum* strains, and the non-pathogenic or *R. solanacearum*-like bacteria. Densitometric analysis of the electrophoretograms revealed a main group of strains including 4 sub-groups. One of these subgroup was constituted of potato and tomato strains belonging to race 3 biovar 2 (including all strains of Mediterranean origin). In addition, principal component analysis clearly discriminated two groups: one group containing the isolates belonging to race 2 and 3, biovars 1 and 2; and a second group containing tropical isolates of race 1. *R. solanacearum*-like bacteria did not form a discrete group but appeared distinct from *R. solanacearum*. The authors concluded that the electrophoretic profiles of whole cell proteins, combined with pathogenicity tests, is a reliable method for the identification of *R. solanacearum* on potato tubers.

Source: Stefani, E.; Mazzucchi, U. (1997) Protein electrophoretograms for the identification of *Ralstonia solanacearum* in potato tubers.
Journal of Plant Pathology, 79(3), 189-195.

EC Commission, 1997. Commission decision 97/647/EC.
Official Journal of the European Communities. L. 273, 1-25.

Additional key words: detection method **Computer codes:** PSDMSO

98/053 *Clavibacter michiganensis* subsp. *sepedonicus* found on imported potato lots

In 1997, the French Plant Protection Service intercepted four imported seed potato consignments from Germany which were infected by *Clavibacter michiganensis* subsp. *sepedonicus* (EPPO A2 quarantine pest – see EPPO RS 98/054). Two lots were sent back to Germany but due to the delay between sampling and results of the analysis, two other lots were planted in the field. Eradication measures have been taken and concerned 39 ha (corresponding to 14 growers). The contaminated plants were lifted or destroyed, farm equipment was disinfected and surveys will be carried out in the infected fields.

Source: **French Plant Protection Service, 1997-12.**

Additional key words: eradication **Computer codes:** CORBSE, DE, FR

98/054 EPPO report on selected intercepted consignments (remainder for 1997)

The EPPO Secretariat has gathered the intercepted consignment reports for 1997 received since the previous report (EPPO RS 97/182) from the following countries: Austria, Czechia, Cyprus, Finland, France, Germany, Italy, Ireland, Israel, Netherlands, Norway, Portugal, Romania, Slovenia, Switzerland, United Kingdom.
When a consignment has been re-exported and the country of origin is unknown, the re-exporting country is indicated in brackets. When the occurrence of a pest in a given country is not known to the EPPO Secretariat, this is indicated by an asterisk (*).

The EPPO Secretariat has selected interceptions made because of the presence of pests. Other interceptions due to prohibited commodities, missing or invalid certificates are not indicated. It must be pointed out that the report is only partial, as many EPPO countries have not yet sent their interception reports.

Pest	Consignment	Type of commodity	Country of origin	Country of destination	nb
Aphids	*Rosa*	Plants for planting	Germany	Israel	1
Bemisia tabaci	*Aster*	Cut flowers	Israel	France	6
	Aster	Cut flowers	Israel	United Kingdom	1
	Begonia	Pot plants	Netherlands	United Kingdom	1
	Clematis	Cuttings	Israel	Netherlands	1
	Dendranthema	Cut flowers	Netherlands	United Kingdom	1
	Dendranthema	Cut flowers	Spain	Ireland	1
	Euphorbia pulcherrima	Pot plants	Italy	Slovenia	1
	Euphorbia pulcherrima	Pot plants	Netherlands	United Kingdom	3
	Euphorbia pulcherrima	Plants for planting	Spain	Portugal	1
	Gypsophila	Cut flowers	Israel	France	1

Pest	Consignment	Type of commodity	Country of origin	Country of destination	nb
	Gypsophila	Cut flowers	(Netherlands)	United Kingdom	1
	Gypsophila	Cut flowers	Netherlands	United Kingdom	1
	Hypericum	Cut flowers	Israel	France	1
	Hypericum	Cut flowers	Israel	United Kingdom	1
	Liatris	Cut flowers	Israel	France	1
	Manihot esculenta	Vegetables	Cameroon	France	2
	Manihot esculenta	Vegetables	Gabon*	France	2
	Manihot esculenta	Vegetables	Ghana	United Kingdom	4
	Manihot esculenta	Vegetables	Senegal	France	1
	Philodendron	Cut flowers	Israel	France	1
	Rosa	Cut flowers	Israel	France	2
	Salix	Plants for planting	Israel	France	1
	Solidago	Cut flowers	Israel	France	6
	Solidago	Cut flowers	Israel	Ireland	5
	Solidago	Cut flowers	Israel	United Kingdom	9
	Solidago	Cut flowers	Kenya	United Kingdom	1
	Solidago	Cut flowers	Netherlands	Ireland	1
	Solidago	Cut flowers	Netherlands	United Kingdom	1
	Solidaster	Cut flowers	Israel	France	1
	Solidaster	Cut flowers	Netherlands	United Kingdom	1
	Trachelium	Cut flowers	Israel	France	3
	Trachelium	Cut flowers	Israel	United Kingdom	1
	Trachelium	Cut flowers	Netherlands	United Kingdom	1
	Unspecified leaves	Vegetables	Ghana	United Kingdom	1
	Various aquatic plants	Plants for planting	Spain (Canary isl)	France	1
***Bemisia tabaci* (B biotype)**	*Dendranthema*	Cut flowers	Israel	Netherlands	1
	Solanum	Plants for planting	Egypt	Netherlands	1
Ceratitis capitata	*Citrus*	Fruits	Turkey	Romania	1
	Citrus nobilis	Fruits	Italy	Slovenia	1
	Citrus reticulata	Fruits	Italy	Slovenia	2
	Citrus reticulata	Fruits	Spain	Slovenia	2
Clavibacter michiganensis* subsp. *michiganensis	*Lycopersicon esculentum*	Seeds	China*	France	1
Clavibacter michiganensis* subsp. *sepedonicus	*Solanum tuberosum*	Seed potatoes	Germany[1]	France	4
	Solanum tuberosum	Ware potatoes	Germany	Netherlands	2
Fungi	*Yucca*	Plants for planting	Netherlands	Israel	1
Gloeotinia temulenta	*Lolium perenne*	Seeds	USA	Israel	1
Globodera pallida	*Solanum tuberosum*	Ware potatoes	United Kingdom	Norway	1
Helicoverpa armigera	*Dianthus*	Cut flowers	Kenya	Netherlands	5
	Dianthus	Cut flowers	Morocco	France	1
	Dianthus	Cut flowers	Turkey	Netherlands	1
	Dianthus caryophyllus	Cut flowers	Zimbabwe	Germany	1
Helicoverpa zea	*Dianthus*	Cut flowers	Colombia	Netherlands	1
Insect larvae	*Anthurium*	Plants for planting	Netherlands	Israel	1
	Primula	Plants for planting	Netherlands	Israel	1
Insects (aphids, scales etc.)	*Prunus* sp.	Packing material	Madagascar	France	1

[1] See EPPO RS 98/053

Pest	Consignment	Type of commodity	Country of origin	Country of destination	nb
Leptinotarsa decemlineata	*Petroselinum crispum*	Vegetables	Italy	United Kingdom	1
	Petroselinum crispum	Vegetables	Spain	United Kingdom	1
Liriomyza huidobrensis	*Beta cycla*	Vegetables	Cyprus	United Kingdom	1
	Dendranthema	Cut flowers	Netherlands	Ireland	2
	Eustoma	Cut flowers	Netherlands	United Kingdom	1
	Gypsophila	Cut flowers	Netherlands	United Kingdom	1
	Gypsophila	Cut flowers	Peru	Netherlands	1
	Trigonella foenum-graecum	Vegetables	Cyprus	United Kingdom	1
Liriomyza sativae	*Ocimum basilicum*	Vegetables	Thailand	France	4
	Ocimum basilicum	Vegetables	Vietnam*	France	1
***Liriomyza* sp.**	*Aster*	Cut flowers	Israel	France	1
	Cichorium	Vegetables	Lebanon	France	1
	Gerbera jamesonii	Plants for planting	Netherlands	Italy	1
	Gypsophila	Plants for planting	Israel	France	1
	Gypsophila	Cut flowers	Israel	Germany	5
	Gypsophila	Cut flowers	Netherlands	Portugal	1
	Gypsophila	Cut flowers	Netherlands	Czech Republic	3
	Gypsophila perforata	Cut flowers	Netherlands	United Kingdom	1
	Ocimum basilicum	Vegetables	Côte d'Ivoire	France	2
	Portulaca oleracea	Vegetables	Lebanon	France	1
	Trachelium	Cut flowers	Israel	France	1
Liriomyza trifolii	*Levisticum*	Vegetables	Israel	United Kingdom	1
	Ocimum basilicum	Vegetables	Spain	United Kingdom	1
Nematodes	*Phoenix roebelenii*	Plants for planting	Cuba	Germany	1
Phytophthora infestans	*Solanum tuberosum*	Seed potatoes	United Kingdom (Northern Ireland)	Cyprus	1
Plum pox potyvirus	*Prunus armeniaca*	Plants for planting	Croatia	Slovenia	1
	Prunus persica	Plants for planting	Yugoslavia	Slovenia	1
Puccinia lantanae	*Lantana*	Cuttings	Costa Rica	United Kingdom	2
Radopholus similis	*Calathea*	Plants for planting	Jamaica	Netherlands	2
Ralstonia solanacearum	*Solanum tuberosum*	Ware potatoes	Egypt	Slovenia	1
	Solanum tuberosum	Ware potatoes	Morocco[2]	France	2
***Sitophilus* sp.**	*Triticum aestivum*	Stored products	Hungary	Slovenia	2
Snails	*Aster*	Plants for planting	Netherlands	Israel	1
Spodoptera exigua	*Dianthus*	Cut flowers	Kenya	Netherlands	1
Spodoptera littoralis	*Codiaeum*	Cuttings	Togo	United Kingdom	1
	Dendranthema	Cut flowers	Turkey	Netherlands	1
	Dianthus	Cut flowers	Israel	Netherlands	1
	Dianthus	Cut flowers	Turkey	Netherlands	1
	Lamium	Cuttings	Israel	Netherlands	1

[2] See EPPO RS 98/025.

Pest	Consignment	Type of commodity	Country of origin	Country of destination	nb
Thrips palmi	*Amaranthus viridis*	Vegetables	Mauritius	France	1
	Dendrobium	Cut flowers	Thailand	Finland	1
	Dendrobium	Cut flowers	Thailand	Italy	3
	Dendrobium	Cut flowers	Thailand	Italy	2
	Momordica charantia	Vegetables	Dominican Rep.	France	1
	Orchidaceae	Cut flowers	Singapore	France	1
	Orchidaceae	Cut flowers	Singapore	France	1
	Orchidaceae	Cut flowers	Thailand	France	6
	Orchidaceae	Cut flowers	Thailand	France	2
	Solanum macrocarpum	Vegetables	Mauritius	France	1
	Solanum melongena	Vegetables	Mauritius	France	3
***Thrips* sp.**	*Dendrobium*	Cut flowers	Thailand	Italy	2
	Dendrobium	Cut flowers	Thailand	Italy	5
Thrips tabaci	*Cyclamen*	Plants for planting	Germany	Israel	1
Tribolium castaneum	*Avena sativa*	Stored products	Hungary	Slovenia	3
	Hordeum vulgare	Stored products	Hungary	Slovenia	5
	Triticale	Stored products	Hungary	Slovenia	5
Tribolium castaneum*, *Orizaephilus surinamensis	*Avena sativa*	Stored products	Hungary	Slovenia	1
Tribolium castaneum*, *Orizaephilus surinamensis	*Hordeum vulgare*	Stored products	Hungary	Slovenia	2
***Tribolium castaneum*, *Sitophilus* sp.**	*Hordeum vulgare*	Stored products	Hungary	Slovenia	1
***Tribolium castaneum*, *Sitophilus* sp.**	*Triticale*	Stored products	Hungary	Slovenia	2
***Tribolium* sp.**	*Zea mays*	Stored products	Hungary	Slovenia	4
***Uromyces* sp.**	*Hypericum*	Plants for planting	Netherlands	Israel	1
Xanthomonas axonopodis* pv. *citri	*Citrus hystrix*	Fruits	Thailand	France	1

- **Fruit flies**

Pest	Consignment	Country of origin	Country of destination	nb
***Anastrepha* sp.**	*Mangifera indica*	Brazil	France	1
	Psidium guajava	Brazil	France	1
***Bactrocera* sp.**	*Psidium guajava*	Thailand	France	1
***Ceratitis* sp.**	*Mangifera indica*	Kenya	France	4

- **Wood**

One consignment of conifer dunnage from Poland was rejected by Ireland because of the presence of living larvae.

- **Bonsais**

13 consignments of bonsais plants (*Carmona*, *Coprosoma*, *Ligustrum*, *Sageretia*, *Serissa*, *Ulmus*, *Zelkova serrata*) from China (8), Japan (1), or of unknown origin and re-exported form the Netherlands (4) were intercepted by United Kingdom because of the presence of the following nematodes or insects: *Helicotylenchus dihystera*, *Helicotylenchus mucronatus*, *Helicotylenchus* sp., *Rhizoecus* sp., *Tinocallis* sp., *Tinocallis viridis*, *Tylenchorhynchus leviterminalis*, *Tylenchorhynchus* sp., *Tylenchus* sp.

Source: EPPO Secretariat, 1998-03

98/055 EPPO Electronic Documentation Service: many new files are available

As reported previously, the EPPO Electronic Documentation Service 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**

Note: 1) messages should be kept very simple without signature or greetings.
2) a single message can contain several requests.

How to access the EPPO Electronic Documentation Service

1) Register as a user

EPPO files have been separated into five directories according to the topic concerned:

PPPstandards (EPPO standards on plant protection products)
PQstandards (EPPO standards on plant quarantine)
Regulations (EPPO summaries of phytosanitary regulations and original texts)
Reporting (EPPO Reporting Service)
Publications (various EPPO publications, e.g. data sheets)

To receive the EPPO files, you have first to register as a user of the directory(ies) you are interested in (as many as you want), by sending the following e-mail message to **eppo_docs@eppo.fr**

Join (name of the directory you want)

Example : Join Reporting

You will receive in return two messages. One is a transaction report which tells you that you successfully joined the chosen directory and the second gives a full explanation on how to obtain the contents of the directory, and then the files. You can join as many directories as you want in a single message.

Example : Join Reporting
Join Regulations
Join PPPstandards

2) Obtain the contents
Send the following e-mail message to **eppo_docs@eppo.fr**
Dir (name of the directory you want)
Example: Dir Reporting
You will again receive in return two messages. One is a transaction report which tells you that the command was completed and the second will be entitled (for example) 'directory for the list Reporting', and will list all the file names. Similarly, you can ask for the contents of several directories in a single message.

3) Get the files
Send the following e-mail message to **eppo_docs@eppo.fr**
Get (name of the directory name of the file)
Example: Get Reporting rse-9701.doc
You will again receive in return two messages. One is a transaction report which tells you that the command was completed and the second will contain the requested file as an attachment.
You can obtain several files with a single request.
Example : Get Reporting rse-9701.doc
Get Reporting rse-9702.doc
Get Regulations pre-cy.exe
Get Regulations sue-ru.exe

Current contents

At present, the current contents are the following, but the EPPO Secretariat is planning to expand the number of documents. Note that the approved FAO standards for phytosanitary measures (ISPM no. 1 to 4), the glossary of phytosanitary terms have recently been added to the directory 'Publications', and that the EPPO SQRs, A1 and A2 quarantine lists and the EPPO Phytosanitary Procedures have been added to the directory 'PQStandards'.

- **PPPstandards**

The revised EPPO guidelines on efficacy testing on fungicides and bactericides have recently been included. In order to facilitate access to these 112 guideline files, lists (in English 'listgl-e.doc' and French 'listgl-f.doc') give the title of the guideline and the corresponding file name.

- **PQstandards**

EPPO A1 and A2 quarantine lists.
EPPO Specific Quarantine Requirements (English only for the moment).
EPPO Certification Schemes (English and French)
EPPO Phytosanitary Procedures (English and French)
A file called contentq.doc gives the titles of the documents and their corresponding file names (it is updated when necessary).

EPPO *Reporting Service*

- **Regulations**

EPPO Summaries of phytosanitary regulations

(Albania, Bulgaria, Belarus, China, Croatia, Cyprus, Czech Republic, Estonia, EU Member States, Guernsey, Hungary, Israel, Latvia, Lithuania, Malta, Morocco, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Tunisia, Turkey, Ukraine).

Texts of phytosanitary regulations

(Albania, Croatia, Cyprus, Czech Republic, Estonia, EU Member States, Hungary, Israel, Lithuania, Malta, Morocco, Norway, Poland, Russia, Slovakia, Slovenia, Turkey, Ukraine)

A file called contentr.doc gives the titles of the documents and their corresponding file names (it is updated when necessary).

- **Reporting**

EPPO Reporting Service for 1996
EPPO Reporting Service for 1997
EPPO Reporting Service for 1998 (January to this current issue)

All files are named in the following way 'rse' for Reporting Service in English, 'rsf' for the French version, and then the four numbers indicate the year and the month. (e.g. rse9801.doc is the EPPO Reporting Service in English of January 1998). Some files were rather big and have been compacted (exe extension), but they are self-extractible. The files called for example 'rse1997.exe' gather all articles published in 1997 in a single file.

- **Publications**

Data sheets in English and French (first edition of Quarantine Pests for Europe):
dse-doc.exe and dsf-doc.exe.
FAO International Standards for Phytosanitary Measures (in English and French)
- Principles of plant quarantine as related to international trade.
- Guidelines for pest risk analysis.
- Code of conduct for the import and release of exotic biological control agents.
- Requirements for the establishment of pest-free areas.

Glossary of phytosanitary terms (English and French versions together in a single file called glo-ef.doc), which corresponds to the EPPO Technical Document no. 1026 of 1996-10.
The file called content.doc gives the titles of the documents included in 'Publications' and their corresponding file names (content.doc is updated when necessary).

Please let the EPPO Secretariat know about your success and/or difficulties in connecting to this new information system.

Source: EPPO Secretariat, 1998-03.

98/056 Membership status for FAO, IPPC and WTO

The EPPO Secretariat had previously published lists of countries which were contracting parties to the International Plant Protection Convention (IPPC) in the EPPO Reporting Service n° 506/11, 507/13 (1990), and 95/069. The following list gives the present membership status for FAO, IPPC and WTO. However, the following EPPO member countries have not yet become contracting parties to the IPPC despite the repeated recommendations of EPPO Council: Albania, Croatia, Cyprus, Estonia, Latvia, Slovakia, Slovenia, and Ukraine. In addition, as the IPPC has been revised all EPPO member countries are now invited to accept the revised text of the Convention.

In bold: FAO member countries
● IPPC contracting parties
○ members of WTO

	Afghanistan
	Albania
●	**Algeria**
○	**Angola**
○	**Antigua and Barbuda**
●○	**Argentina**
	Armenia
●○	**Australia**
●○	**Austria**
	Azerbaijan
●	**Bahamas**
●○	**Bahrain**
●○	**Bangladesh**
●○	**Barbados**
●○	**Belgium**
●○	**Belize**
○	**Benin**
●	**Bhutan**
●○	**Bolivia**
	Bosnia and Herzegovina
○	**Botswana**
●○	**Brazil**
○	Brunei Darussalam
●○	**Bulgaria**
●○	**Burkina Faso**
○	**Burundi**
●	**Cambodia**
○	**Cameroon**
●○	**Canada**
●	**Cape Verde**
○	**Central African Republic**
○	**Chad**
●○	**Chile**
○	**China**
●○	**Colombia**
	Comoros
○	**Congo, Dem. Republic of**
○	**Congo, Republic of**
	Cook Islands
●○	**Costa Rica**
○	**Côte d'Ivoire**
	Croatia
●○	**Cuba**
○	**Cyprus**
●○	**Czech Republic**
●○	**Denmark**
○	**Djibouti**
○	**Dominica**
●○	**Dominican Republic**
●○	**Ecuador**
●○	**Egypt**
●○	**El Salvador**
●	**Equatorial Guinea**
	Eritrea
○	**Estonia**
●	**Ethiopia**
○	**Fiji**
●○	**Finland**
●○	**France**
○	**Gabon**
○	**Gambia**
	Georgia
●○	**Germany**
●○	**Ghana**
●○	**Greece**
●○	**Grenada**
●○	**Guatemala**
●○	**Guinea**
○	**Guinea-Bissau**
●○	**Guyana**
●○	**Haiti**
○	**Honduras**
○	Hong-Kong (China)
●○	**Hungary**
○	**Iceland**
●○	**India**
●○	**Indonesia**
●	**Iran, Islamic Rep.**
●	**Iraq**
●○	**Ireland**
●○	**Israel**
●○	**Italy**
●○	**Jamaica**
●○	**Japan**
●	**Jordan**
	Kazakhstan
●○	**Kenya**

	Korea, Dem. People's Rep. of	●○	**Nigeria**	●	**Sudan**
●○	**Korea, Rep. of**	●○	**Norway**	●○	**Suriname**
○	**Kuweit**	●	**Oman**	○	**Swaziland**
	Kyrgyzstan	●○	**Pakistan**	●○	**Sweden**
●	**Laos**	●○	**Panama**	●○	**Switzerland**
	Latvia	●○	**Papua New Guinea**		**Syrian Arab Rep.**
●	**Lebanon**	●○	**Paraguay**		**Tajikistan**
○	**Lesotho**	●○	**Peru**	○	**Tanzania, United Rep. of**
●	**Liberia**	●○	**Philippines**		
●	**Libyan Arab Jamahiriya**	●○	**Poland**	●○	**Thailand**
		●○	**Portugal**		**The former Yugoslav Rep. of Macedonia**
○	Liechtenstein	○	**Qatar**		
	Lithuania	●○	**Romania**	●○	**Togo**
●○	**Luxembourg**	●	Russian Federation		**Tonga**
○	**Macau**	○	**Rwanda**	●○	**Trinidad and Tobago**
○	**Madagascar**	●○	**Saint Kitts and Nevis**		
●○	**Malawi**	○	**Saint Lucia**	●○	**Tunisia**
●○	**Malaysia**	○	**Saint Vincent and the Grenadines**	●○	**Turkey**
○	**Maldives**				**Turkmenistan**
●○	**Mali**	○	**Samoa**	○	**Uganda**
●○	**Malta**		**Sao Tome and Principe**	○	**United Arab Emirates**
○	**Mauritania**				
●○	**Mauritius**		**Saudi Arabia**	●○	**United Kingdom**
●○	**Mexico**	●○	**Senegal**	●○	**United States of America**
	Moldova, Rep. of	●	**Seychelles**		
●○	**Morocco**	●○	**Sierra Leone**	●○	**Uruguay**
○	**Mozambique**	○	**Singapore**		**Vanuatu**
○	**Myanmar**	○	**Slovakia**	●○	**Venezuela**
○	**Namibia**	○	**Slovenia**		**Vietnam**
	Nepal	●○	**Solomon Islands**	●	**Yemen**
●○	**Netherlands**		**Somalia**	●	**Yugoslavia**
●○	**New Zealand**	●○	**South Africa**	●○	**Zambia**
●○	**Nicaragua**	●○	**Spain**	○	**Zimbabwe**
●○	**Niger**	●○	**Sri Lanka**		

Source: FAO, Rome, 1998-03.

98/057 Volume 3 of revised EPPO Standards: guidelines for the efficacy evaluation of plant protection products is now available

As explained in EPPO RS 97/165, the whole set of EPPO standards for the efficacy evaluation of plant protection products is being revised. All revised guidelines will be published as four separate paperback books, according to the topic concerned:

Volume 1: Introduction, general guidelines, molluscicides, nematicides, rodenticides, side-effects on beneficials, general index.

Volume 2: Fungicides, bactericides.

Volume 3: Insecticides, acaricides.

Volume 4: Herbicides, plant growth regulators.

Volume 2 appeared in 1997, and Volume 3 (in English and French) on insecticides and acaricides has just been published. The other two volumes will appear very soon in the course of 1998. The set of revised EPPO guidelines is now on sale, either as a whole or as separate volumes. A special discount price of 1500 FRF is offered for the complete set of four volumes. Otherwise, separate volumes can be ordered at the price of 500 FRF each. These prices apply separately to the English and French versions. The Plant Protection Services of EPPO member countries and regular subscribers to earlier versions of EPPO guidelines have already been informed individually by the EPPO Secretariat. For other interested persons, orders should be addressed to:

EPPO Secretariat
1 rue Le Nôtre
75016 Paris
France
Tel: (33) 1 45 20 77 94
Fax: (33) 1 42 24 89 43
E-mail: hq@eppo.fr

Source: EPPO Secretariat, 1998-03

Additional key words: publication

98/058 BBCH Growth Stage Keys

The BBCH Growth Stage Keys provide a standard and uniform description of the clearly visible growth stages of plants. Keys have been prepared for many important crops, such as cereals, rice, maize, rape, potato, fruit trees, small fruits, vegetables, etc. In 1997, they were recommended by the EPPO Working Party on Plant Protection Products and by Council for use in EPPO countries. They thus replace the previously recommended EPPO Growth Stage Keys. The BBCH Growth Stage Keys are available in two different forms:

1) As BBCH Monograph, published by Blackwell, in four languages (English, Spanish, French and German) combined in one volume. The price of one book is GBP 50.
Orders can be addressed to: Blackwell Science
Osney Mead, Oxford OX2 0EL, UK
Tel: (44) 1 865 206206
Fax: (44) 1 865 206 219

2) As plastified booklets, published by Novartis and BASF in four languages (English, Spanish, French and German) in 4 separate volumes which can conveniently be used in the field.

Language	Price for ≥ 6 copies	Price for ≤ 5 copies	Send order to
English French German	CHF 20.00	CHF 40.00	Novartis Crop Protection AG att. M. C. Dachler CP 2.1 Rosental 4002 Basel Switzerland Fax: (41) 61 697 85 21
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Additional key words: publications

98/059 New book on virus diseases of ornamentals

A book on virus diseases of ornamentals by J. Albouy and J.C. Devergnes has recently been published by INRA (in French) entitled 'Maladies à virus des plantes ornementales' (492 pp). The first part is dedicated to general aspects of plant virology: viruses, symptomatology, etiology and diagnostic methods, dissemination of viruses, control methods. The second part includes a dictionary of the main ornamental plants (180 plant species) and the viruses which may affect them. For each plant species, symptoms, virus(es) involved and the importance of the disease are described. Many drawings and colour pictures illustrate this book.

It can be obtained at a price of 492 FRF from:
INRA
147 rue de l'Université
75338 Paris Cedex 07
France
E-mail: INRA-Editions@versailles.fr
Web site: http://www.inra.fr

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Additional key words: publication