# EPPO

# *Reporting*

# *Service*

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**97/046** New data on pests of quarantine importance

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

***New geographical records***

Apple mosaic ilarvirus (EPPO A2 quarantine pest on *Rubus*) is present on fruit trees in Greece, Turkey and Uruguay. Review of Plant Pathology, 76(1), p 64-65-79 (503-505-601).

Cherry leaf roll nepovirus (EPPO A2 quarantine pest on *Rubus*) was obtained from a wide range of naturally infected plants in Hungary (e.g. *Juglans regia*, *Sambucus nigra*). Review of Plant Pathology, 76(1), p 21 (160).

*Monilinia fructicola* (EPPO A1 quarantine pest) is present in Korea Republic (Gyeonbuk province). Review of Plant Pathology, 76(1), p 80 (607).

Significant yield losses due to *Phialophora gregata* (EPPO A1 quarantine pest) are reported from Brazil (Rio Grande do Sul, Santa Catarina) on soybean crops. Review of Plant Pathology, 76(1), p 41 (321).

***Detailed records***

*Bemisia tabaci* biotype B (EPPO A2 quarantine pest) is present in Federal District of Brazilia (Brazil) on vegetable crops. Review of Agricultural Entomology, 85(2), p 149 (1188).

*Bursaphelenchus xylophilus* (EPPO A1 quarantine pest) is present in the Anhui province in China. Nematological Abstracts, 65(4), 84(12), pp 184-185-226 (1481-1489-1866).

*Bursaphelenchus xylophilus* (EPPO A1 quarantine pest) was found in China, on dying *Pinus thunbergii* trees in Shanghai Sheshan Mountain (Shanghai Municipality) during a survey in 1989-1991. Nematological Abstracts, 65(4), 84(12), 225-226 (1859).

*Ceratitis capitata* (EPPO A2 quarantine pest) is present in Rio de Janeiro, Brazil. Review of Agricultural Entomology, 85(2), p 144 (1144).

*Diabrotica virgifera* (EPPO A2 quarantine pest) has recently become a serious maize pest in New York state (US). Agricultural Entomology, 85(2), p 189 (1474).

Grapevine flavescence dorée phytoplasma (EPPO A2 quarantine pest) is reported, together with bois noir phytoplasma in the region of Treviso (Veneto), in Italy. Review of Plant Pathology, 76(1), p 85 (644-647).

In Turkey, during surveys carried out on virus diseases of vegetables in Izmir (1992) and in Mugla (1993-1994), tomato ringspot nepovirus (EPPO A2 quarantine pest) and tomato black ring nepovirus (EU Annex II/A2) were detected by ELISA. Tomato ringspot nepovirus was found on tomato and capsicum in the region of Izmir, and on cucumbers in Mugla. Tomato black ring nepovirus was found on tomato in Izmir and on aubergines in Mugla. This confirms the occurrence of the two viruses in the Aegean region of Turkey (EPPO RS 94/202). Review of Plant Pathology, 76(1), p 55 (428).

*Spodoptera litura* (EPPO A1 quarantine pest) was trapped in Henan province in China. Review of Agricultural Entomology, p 168 (1325).

***New host plants***

In China, two populations of *Heterodera glycines* (EPPO A1 quarantine pest) were collected from *Paulownia* sp. in Henan province in 1986 and from *Pisum sativum* in Inner Mongolia Autonomous region in 1984 (this is also a new detailed record for China). Both populations were able to infect soybean plants. *Paulownia* and *Pisum sativum* are reported as hosts for the first time. Nematological Abstracts, 65(4), p 200-201 (1634).

**Source: EPPO Secretariat, 1997-03.**

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

**Computer codes:** APMXXX, BEMIAR, BURSXY, CERTCA, CRLRXX, DIABVI, GVFDXX, HETDGL, MONIFC, PHIAGR, TMBRXX, TMRSXX, PRODLI, BR, CN, GR, HU, IT, KR, TR, US, UY

**97/047** Progress made on the management of *Anisogramma anomala* in USA

As recalled by Johnson *et al*. (1996) in their review, *Anisogramma anomala* (EPPO A1 quarantine pest) causes an insignificant and endemic disease of American hazel (*Corylus americana*), but induces a very serious canker on European hazelnut (*Corylus avellana*). In the past, the fungus was essentially present in the north-east of USA (where it has prevented the production of *C. avellana*) but was absent from the main hazelnut-producing regions situated in the West. 98 % of the North American production of *C. avellana* are situated in Oregon. Despite quarantine measures applied to avoid movement of plants from infected areas to the west of the Rocky Mountains, *A. anomala* was reported for the first time in the Lewis county (south-west Washington state) in 1973. In 1976, it was established in several orchards and by 1994 most of the Lewis county orchards were destroyed. In 1986, the disease was found in Willamette Valley (Oregon), the main production site. The disease moved southward at an average rate of 2 to 3 km per year. It is estimated that 30-40 % of the Oregon hazelnut trees are diseased or situated within a few km from a diseased orchard. Most orchards situated near the initial detection sites have been destroyed. In the face of such a serious disease, research programmes have been initiated to understand the biology of the fungus and its dispersal, to develop cultural and chemical control methods and to initiate breeding programmes for resistant cultivars.
Research has shown that *A. anomala* is an obligate parasite which cannot survive in dead hazelnut branches, that external symptoms appeared only after a 12 to 16 month period, and that infection occurred only through immature tissues near the apical meristem of growing shoots in spring. Several methods are being applied in Oregon to slow down the spread of the disease. Fungicide treatments (chlorothalonil, copper hydroxide, fenarimol, propiconazole) can provide protection when applied in spring, and 3-5 applications are needed at 8-17 day intervals. Disease scouting and pruning of diseased branches (generally in winter) which are then destroyed can reduce the inoculum. Removal and replacement of susceptible pollinizer cultivars is gradually performed. Elimination of volunteer and non-managed hazel trees is also recommended. The development of resistant cultivars is under study. A source of resistance has been found in an obsolete pollinizer cultivar (Gasaway) and may offer some good perspectives. In addition, Coyne *et al*. (1996) have developed an indirect ELISA method which allows a rapid detection and screening of potentially resistant cultivars.

**Source:** Coyne, C.J.; Mehlenbacher, S.A.; Hampton, R.O., Pinkerton, J.N., Johnson, K.B. (1996) Use of ELISA to rapidly screen hazelnut for resistance of Eastern Filbert Blight.
**Plant Disease, 80(12), 1327-1330**.

Johnson, K.B., Mehlenbacher, S.A.; Stone, J.K.; Pscheidt, J.W., Pinkerton, J.N. (1996) Eastern Filbert Blight of European hazelnut - It's becoming a manageable disease.
**Plant Disease, 80(12), 1308-1315**.

**Additional key words:** biology, detection, detailed record **Computer codes:** CRYPAN, US

**97/048** First report of *Xylella fastidiosa* on sugar maple and sweetgum

In Kentucky (US), in October 1995, bacterial leaf scorch caused by *Xylella fastidiosa* (EPPO A1 quarantine pest), has been identified in a mature sugar maple (*Acer saccharum*) and in a ten-year-old sweetgum (*Liquidambar styraciflua*). Symptoms were characterized by premature leaf browning, marginal necrosis of leaves, and defoliation. The presence of the bacterium was confirmed by a specific ELISA test and electronic microscopy. The authors noted that in addition, bacterial leaf scorch is associated with death of many oaks in some Kentucky cities. *Acer saccharum* and *Liquidambar styraciflua* are reported for the first time as host plants of *X. fastidiosa*.

**Source:** Hartman, J.R.; Jarlfors, U.E., Thomas, R. (1996) First report of bacterial leaf scorch caused by *Xylella fastidiosa* on sugar maple and sweetgum.
**Plant Disease, 80(11), p 1302.**

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

**97/049** *Xylella fastidiosa* suspected on *Nerium oleander* in California (US)

In southern California (US), a bacterial leaf scorch of *Nerium oleander* has been observed. The suspected causal agent is *Xylella fastidiosa* (EPPO A1 quarantine pest) but Koch's postulates are still under verification. Further studies are necessary on this apparently new disease of oleander.

**Source:** Grevus, M.E.; Henry, J.M.; Hartin, J.E.; Wilen, C.A. (1996) Bacterial leaf scorch of oleander: a new disease in southern California. Abstract of a paper presented at the APS/MSA Joint Annual Meeting, Indianapolis (US), 1996-07-27/31. **Phytopathology, 86(11), Supplement, p S100.**

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

**97/050** Differentiation of species of *Elsinoe* causing citrus scab

So far, three scab diseases have been described on citrus: 1) *Elsinoe fawcettii* (citrus scab) which is cosmopolitan in humid regions, has a rather broad host range and attacks leaves and fruits; 2) *Sphaeceloma fawcettii* var. *scabiosa* (Tryon's scab), present in Australia but also in some other countries, mainly on lemon and rough lemon; 3) *Elsinoe australis* (sweet orange scab), occurs primarily in South America, on sweet orange and mandarin and attacks fruits only. Studies have been carried out in Florida (US) and Australia on different citrus scab isolates from Florida, Australia and Argentina, representing the three species. *Elsinoe* species are listed by the European Union as quarantine pests (EU Annex II/A1). Although the three forms can be distinguished by host range, and are considered to be morphologically different (colony colour, conidial shape), they cause very similar diseases and some doubts have been previously expressed on the validity of the distinct taxa. Also, the teleomorphs are only known from South America.

Morphological characteristics of the three scab fungi were studied, and it was found that neither the colony colour or conidial shape could differentiate them. Detached-leaf assays were performed to compare pathogenicity on various citrus species. It was found that *E. fawcettii* could readily be differentiated from *E. australis* on the basis of the host range. Molecular analysis of the different isolates was also conducted. Restriction analysis of the internal transcribed spacer (ITS) of rDNA, and nucleotide sequence of the ITS showed that *E. australis* is different from both *E. fawcettii* and *S. fawcettii* var. *scabiosa*. PCR amplification of segments of the ITS

region and endonuclease cleavage produce different profiles for the three scabs but correlate with their geographical origin and the results of host-range studies. Australian isolates of *S. fawcettii* var. *scabiosa* and the Florida isolates of *E. fawcettii* appear more closely related to each other than to *E. australis* isolates. The authors concluded that *E. fawcettii* and *E. australis* could be considered as two valid and separate species, and that *S. fawcettii* var. *scabiosa* could be a pathotype of *E. fawcettii*. However, further studies on more isolates from other hosts or origins, are still necessary as other pathotypes may exist within *E. fawcettii*. Finally, the authors felt that molecular analysis could provide a rapid and useful tool in identifying citrus scab types on shipments of fruit and reduce the risk of introduction of exotic types into new areas.

**Source:** Timmer, L.W.; Priest, M.; Broadbent, P.; Tan, M.K. (1996) Morphological and pathological characterization of species of *Elsinoe* causing scab diseases of citrus.
**Phytopathology, 86(10), 1032-1038.**

Tan, M.K.; Timmer, M.; Broadbent, P.; L.W.; Priest; Cain, P. (1996) Differentiation by molecular analysis of *Elsinoe* spp. causing scab diseases of citrus.
**Phytopathology, 86(10), 1039-1044.**

**Additional key words:** etiology **Computer codes:** ELSIFA, ELSIAU, SPHAFS

## **97/051** A clostero-like virus associated with cherry little cherry disease

Molecular studies carried out in Germany have shown that the properties of the dsRNA associated with cherry little cherry disease (EU annex II/A1 for non-European isolates) are similar to those of a monopartite clostero-like virus.

**Source:** Keim-Konrad, R.; Jelkmann, W. (1996) Genome analysis of the 3'-terminal part of the little cherry disease associated dsRNA reveals a monopartite clostero-like virus.
**Archives of Virology, 141(8), 1437-1451.**
**Review of Plant Pathology, 76(2), p 188 (abst. 1450).**

**Additional key words:** taxonomy **Computer codes:** CRLCXX

**97/052** Detection methods for cherry little cherry disease

In Canada, comparative studies were carried out on the detection of cherry little cherry disease (EU Annex II/A1, for non-European isolates). Sweet and sour cherry trees (*Prunus avium* and *P. cerasus*) from orchards in the Kootenay and Okanagan valleys of British Columbia were tested for the presence of cherry little cherry disease by three different methods: Northern blot analysis of dsRNA with a specific radiolabelled probe, inoculation of *P. avium* cv. Lambert for fruit symptoms, and inoculation of cv. Canindex 1 for foliar symptoms. Results of the three methods were in agreement for 85 % of the samples. The authors felt that the Northern blot analysis was the most reliable and rapid method of diagnosis, as testing on woody hosts is often impaired by the poor transmission of the disease to the indicator tree.

**Source:** Eastwell, K.C.; Bernardy, M.G.; Li, T.S.C. (1996) Comparison between woody indexing and a rapid hybridisation assay for the diagnosis of little cherry disease in cherry trees.
**Annals of applied Biology, 128(2), 269-277.**

**Additional key words:** new detection method **Computer codes:** CRLCXX

**97/053** New virus-like disease of cherry observed in Italy

A new disease of cherry (*Prunus avium*) has been observed in Campania (southern Italy). Symptoms are characterized by chlorotic spots which later develop a rusty appearance, small and deformed fruits with colour alterations, and tree decline. Studies were carried out to identify the causal agent. It seems that the disease is induced by a virus- or viroid-like agent, as 12 dsRNAs and one or two small, circular RNAs have been consistently isolated from symptomatic cherry plants. The disease is spreading naturally in infected areas, although no vector could be identified for the moment. The authors proposed to call it cherry chlorotic rusty spot.

**Source:** Di Serio, F.; Flores, R.; Ragozzino (1996) Cherry chlorotic rusty spot: description of a new viruslike disease from cherry and studies on its etiologic agent.
**Plant Disease, 80(10), 1203-1206**.

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

**97/054** New bacterial leaf spot of pelargonium in Florida (US)

Since 1988 in Florida (US), unusual symptoms have been observed on pelargonium grown under glass. Diseased plants presented oval to irregularly shaped lesions (4-6 mm diameter), zonate, shotholed and surrounded by a broad band of chlorosis. Studies showed that the causal agent is a bacterium belonging to the genus *Acidovorax*, which appears to be a distinct species from *A. avenae* and *A. konjaci*. When pelargonium strains and representative strains of *A. avenae* subsp. *citrulli*, *A. a.* subsp. *cattleyae*, *A. a.* subsp. *avenae*, *A. konjaci* and *A. facilis* were inoculated on pelargonium plants, only the pelargonium strains induced significant leaf spot symptoms and defoliation.

**Source:** Jones, J.B.; Bouza, H.; Stall, R.E.; Hodge, N.C.; Roberts, P.D. (1996) A new *Acidovorax* species causing bacterial leaf spot of geranium.
Abstract (378A) of a paper presented at the APS/MSA Joint Annual Meeting, Indianapolis (US), 1996-07-27/31.
**Phytopathology, 86(11), Supplement, S42-S43.**

Simone, S.W.; Cullen, R.E.; Hodge, N.C. (1996) A new leaf spot disease of geranium caused by *Acidovorax* sp.
Abstract (442A) of a paper presented at the APS/MSA Joint Annual Meeting, Indianapolis (US), 1996-07-27/31.
**Phytopathology, 86(11), Supplement, p S50.**

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

**97/055** Comparison between IF and PCR for the detection of *Ralstonia solanacearum*

A comparison study has been carried out in France between IF (with polyclonal antibodies) and PCR for the detection of *Ralstonia solanacearum* (EPPO A2 quarantine pest). 701 samples of potatoes from various origins have been tested: 293 from Mediterranean countries (Egypt, Morocco, Israel, Turkey), 378 from the Netherlands, and 30 from France. Each sample consisted of 200 tubers taken from 25 tons. Details of the two testing methods are given in this paper. Only four samples from Egypt were found infected. The results showed that the levels of sensitivity of IF and PCR are comparable, as well as the costs. PCR is more specific as some cross-reaction can occur with IF. Concerning the practical aspects of both methods, PCR is less cumbersome and can be more easily automated. Per day and per person, a maximum of 24 samples can be analysed by IF, compared to 48 with PCR. In addition, once nucleic acids have been extracted for PCR, another test can be made to detect *Clavibacter michiganensis* subsp. *sepedonicus* (EPPO A2 quarantine pest).

The authors concluded that both methods should be kept because they are complementary. They felt that PCR is probably easier to use routinely, as it is rapid and reliable, and that IF can be used as a complement when some difficulties are encountered.

**Source:** Martin, J.; Ollivier, F.; Chaumette, E.; Hervé, A. (1997) Pourriture brune de la pomme de terre. Evaluation de la méthode de diagnostic 'PCR'.
**Phytoma - La Défense des Végétaux, n° 491, 49-52.**

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

**97/056** Further surveys in Turkey to verify the absence of *Clavibacter michiganensis* subsp. *sepedonicus*

In the past (1962), the presence of *Clavibacter michiganensis* subsp. *sepedonicus* (EPPO A2 quarantine pest) had been suggested in Turkey but was later denied on the basis of several surveys carried out in the potato-growing regions (EPPO RS No. 452, 1984; EPPO RS 95/168). In 1990-1991, further surveys have been carried out in Turkey on *C. m.* subsp. *sepedonicus* in the potato-growing areas of Afyon (Aegean region), Bolu (Black Sea region), Nevsehir and Nigde (central Anatolia). In total, 176 samples (each containing 200 tubers) were collected from these areas and tested. Tubers were visually inspected, then submitted to Gram staining, IFAS and biological tests on aubergine. As a result, approximately 35,200 tubers have been tested and found free from *C. m.* subsp. *sepedonicus*. The authors concluded that ring rot is not present in these potato-growing regions.

**Source:** Benlioglu, K.; Öktem, Y.E.; Özakman, M. (1994) [Examination of the potato growing areas of central Anatolia for the presence of ring rot disease].
**Bitki Koruma Bülteni, 34(1-2), 35-41.**

**Additional key words:** denied record **Computer codes:** CORBSE, TR

**97/057** Potato viruses in northern Saudi Arabia

In Saudi Arabia, potato is a relatively new crop but is constantly increasing. The commercial production was 20 tons in 1976 and reached 60,000 tons in 1990. Potatoes are grown in both spring and autumn. Seed potatoes for the spring crops are imported mainly from the Netherlands but also from France, Northern Ireland and USA. The autumn crop is planted with seed potatoes produced locally from the previous crop. From 1989 to 1991, a survey on virus diseases was conducted in two of the six major potato-growing areas, Tabuk and Hail, which are situated in the north of the country. The following viruses were found in the two areas: alfalfa mosaic alfamovirus, cucumber mosaic cucumovirus, tobacco mosaic tobamovirus, potato leaf roll luteovirus, tomato spotted wilt tospovirus (potential EPPO A2 quarantine pest), tobacco ringspot nepovirus and potato viruses A, M, S, X and Y. Potato yellow dwarf nucleorhabdovirus (EPPO A1 quarantine pest) was found in Hail but not in Tabuk. The EPPO Secretariat will check with the authors this rather surprising record (the virus has been reported from North America only, where it has not been seen on potatoes since many years).

**Source:** Al-Shahwan, I.M.; Abdalla, O.A.; Al-Saleh, M.A. (1997) Viruses in the northern potato-producing regions of Saudi Arabia.
**Plant Pathology, 46(1), 91-94.**

**Additional key words:** detailed record **Computer codes:** TMSWXX, SA

**97/058** *Phoma andigena*: proposed new name for *Phoma andina*

A new name has been proposed for *Phoma andina* (EPPO A1 quarantine pest): *Phoma andigena*.

**Source:** Boerema, G.H.; De Gruyter, J.; Noordeloos, M.E. (1995) New names in *Phoma*.
**Persoonia, 16(1), p 131**.
**Review of Plant Pathology, 76(2), p 139 (abst. 1061)**

**Additional key words:** taxonomy **Computer codes:** PHOMAN

**97/059** First report of tomato yellow leaf curl bigeminivirus in Cuba

Since 1987, typical symptoms of tomato yellow leaf curl bigeminivirus (EPPO A2 quarantine pest) have been observed in Cuba. The presence of *Bemisia tabaci* (EPPO A2 quarantine pest) was also noticed. The disease is now widespread in the country, causing up to 100 % crop losses in some regions (e.g. south of La Habana). When compared with several isolates, it was found that the nucleotide sequence presented the closest similarity with tomato yellow leaf curl bigeminivirus from Israel (97.3 %). In the Caribbean region, tomato yellow leaf curl has been reported in Dominican Republic (EPPO RS 94/224), Jamaica (EPPO RS 95/021, RS 95/073) and in Martinique (EPPO RS 95/021). This is the first report of tomato yellow leaf curl bigeminivirus in Cuba.

**Source:** Martinez Zubiaur, Y.; Zabalgogeazcoa, I.; De Bals, C.; Sanchez, F.; Peralta, E.L.; Romero, J.; Ponz, F. (1996) Geminiviruses associated with diseased tomatoes in Cuba.
**Journal of Phytopathology, 144(5), 277-279.**

Ramos, P.L.; Guerra, O.; Dorestes, V.; Ramirez, N. (1996) Detection of TYLCV in Cuba.
**Plant Disease, 80(10), p 1208.**

**Additional key words:** new record **Computer codes:** TMYCLX, CU

**97/060** Tomato leaf curl geminiviruses present in Tanzania

In October 1994, leaf samples of tomato showing yellow mottle, severe leaf curl, stunting and upright stems were collected from Makutupora in Tanzania (Chiang *et al*., 1997). Leaf tissue squashed on nylon membranes did not hybridize with DNA-A probes from several isolates of tomato yellow leaf curl bigeminivirus (EPPO A2 quarantine pest). Molecular studies have shown that the Tanzanian geminivirus presents rather low similarities with other previously characterised geminivirus of the Old World, and is therefore considered as a distinct virus (called TLCV-Tan). However, other tissue squash blots with samples collected in other areas in Tanzania gave strong reactions with the probe developed for the Egyptian isolate of tomato yellow leaf curl bigeminivirus.
Another study (Nono-Womdim *et al*., 1996) reports that tomato yellow leaf curl bigeminivirus (EPPO A2 quarantine pest) has been found in Tanzania. In 1993-94, surveys were carried out on the major tomato viruses in 12 different regions. Symptomatology, gel immunodiffusion tests, ELISA and squash blot hybridization assays were used. Tomato yellow leaf curl bigeminivirus appears as widespread and economically important in Tanzania. This is the first report of this virus in Tanzania according to the EPPO Secretariat.

**Source:** Chiang, B.T.; Nakhla, M.K.; Maxwell, D.P.; Schoenfelder, M.; Green, S.K. (1997) A new geminivirus associated with a leaf curl disease of tomato in Tanzania.
**Plant Disease, 81(1), p 111.**

Nono-Womdim, R.; Swai, I.S.; Green, S.K.; Gebre-Selassie, K.; Laterrot, H.; Marchoux, G. Opeña, R.T. (1996) Tomato viruses in Tanzania: identification, distribution and disease incidence.
**Journal of the Southern African Society for Horticultural Sciences, 6(1), 41-44.**
**Review of Plant Pathology, 76(2), p 178 (Abst. 1373).**

**Additional key words:** new record **Computer codes:** TMYLCX, TZ

**97/061** Epidemiological studies on tomato mottle geminivirus and *Bemisia tabaci*

Studies were carried out in Florida (US) on the spatial distribution and incidence of both tomato mottle geminivirus (EPPO A1 quarantine pest) and *Bemisia tabaci* biotype B (EPPO A2 quarantine pest), in order to determine whether a correlation could be established between the abundance of *B. tabaci* and the incidence of tomato mottle geminivirus. The authors recalled that, so far, tomato mottle geminivirus is only known on tomato. The incidence of the virus in tomato fields is variable (from 0 to 100 %). It is transmitted in a persistent manner by adults of *B. tabaci* biotype B. The minimum time required for acquisition is approximately 1 h, followed by a latent period of several hours and a transmission feeding period of approximately 1 h. Tomato mottle geminivirus virus is a major concern in tomato production in Florida. The estimated cost to the industry was estimated to 125 million dollars in 1991, due to reduced yields and increase of insecticide treatments.
In 1992 and 1993, 91 experimental plots located on 10 commercial tomato farms were monitored. Chemical insecticide treatments were applied on these farms. The final incidence of tomato mottle geminivirus ranged from 0 to 23.6 % in 1992 and 0 to 34 % in 1993. Over the two years, 21 plots had final disease incidences greater than 5 % and 8 plots had values greater than 15 %. On two plots which had incidences greater than 5 %, the observed pattern of the disease was characterized as having numerous small clusters of symptomatic plants scattered throughout plots prior to harvest. Dispersion pattern of adults *B. tabaci* fluctuated throughout the season, the index used in these studies indicated a uniform dispersion pattern at some time (especially at the end of the season) and an aggregated pattern at other times. No relationship was observed between disease incidence and the degree of aggregation of the vector. The authors concluded that abundant sources of immigrating viruliferous whitefly vectors from other infested fields, rather than secondary spread within fields, appear to be the essential means of spread of the virus. However, it must be recalled that the tomato system production in Florida is characterized by frequent applications of insecticides which alter the dispersion patterns of the vector. As it appears that harvested tomato fields are the main virus reservoirs, the authors recommend to the growers that harvested plants should be eliminated as soon as possible. In particular, harvested tomato plants which were planted in the autumn should be removed several weeks prior to new tomato plantation in spring.

**Source:** Polston, J.E.; Chellemi, D.O.; Schuster, D.J.; McGovern, R.J.; Stansly, P.A. (1996) Spatial and temporal dynamics of tomato mottle geminivirus and *Bemisia tabaci* (Genn.) in Florida tomato fields. **Plant Disease, 80(9), 1022-1028.**

**Additional key words:** epidemiology **Computer codes:** BEMITA, TMMOXX

**97/062** Studies on geminiviruses in Mexico and Southern United States

In Mexico and some southern states of US, plant samples were collected from important horticultural areas and were tested (electrophoresis, molecular hybridization, PCR) for the presence of geminiviruses. The main crops studied were capsicum, tomato, tomatillo (*Physalis ixocarpa*), squash and tobacco. A general detection strategy confirmed the presence of geminiviruses in all horticultural areas of Mexico. More specific detection methods showed that pepper huasteco geminivirus which was originally isolated from Tamaulipas (MX) is widely distributed on tomato and capsicum in Mexico (Sinaloa, Tamaulipas, Guanajuato and Quintana Roo). It was also found in capsicum samples from the Rio Grande Valley in southern Texas (US). Pepper jalapeño geminivirus, a partially characterized virus originally isolated from Tamaulipas, and chino del tomate geminivirus showed a more restricted distribution. Chino del tomate geminivirus was found on tomatoes in Chiapas, Sinaloa, Morelos and Tamaulipas. Pepper jalapeño geminivirus was detected in Sinaloa (tomato and capsicum) and Michoacán (capsicum).
In addition, comparative studies on partial DNA sequences were done between: 1) pepper jalapeño geminivirus and Texas pepper geminivirus which was isolated on capsicum from southern Texas; 2) chino del tomate geminivirus and tomato leaf crumple geminivirus, which has recently been observed on tomatoes in Sinaloa (EPPO RS 95/043). Results showed that pepper jalapeño and Texas pepper geminiviruses are closely related and the authors felt that they could be two strains of the same virus. Similarly, chino del tomate and leaf crumple geminiviruses are closely related, and might be considered as two strains of the same virus. To avoid confusion, they suggested that only the names Texas pepper geminivirus and chino del tomate geminivirus should be retained.

**Source:** Torres-Pacheco, I.; Garzón-Tiznado, J.A.; Brown, J.K.; Becerra-Flora, A.; Rivera-Bustamante, F.R. (1996) Detection and distribution of geminiviruses in Mexico and the Southern United States. **Phytopathology, 86(11), 1186-1192.**

**Additional key words:** survey, geminiviruses **Computer codes:** MX, US

**97/063** Cucurbit yellow stunting disorder closterovirus: new *Bemisia tabaci*-transmitted virus in Spain

On the south-eastern coast of Spain, melon (*Cucumis melo*) and cucumber (*Cucumis sativus*) grown under plastic greenhouses have been seriously affected by a yellowing disease since 1982. This disease has also been observed in the Middle East: Jordan, Israel, United Arab Emirates and Turkey (Duffus, 1996) where it has reached epidemic levels since 1985. The causal agent of this disease has been identified, characterized and called cucurbit yellow stunting disorder closterovirus (CYSDV). The authors have shown that it was transmitted by *Bemisia tabaci* (EPPO A2 quarantine pest) B and non-B biotypes, but not by *Trialeurodes vaporariorum*. The virus can be retained at least for 7 days by the vector. The experimental host range appears to be restricted to Cucurbitaceae. Comparative studies have also been made between CYSDV and lettuce infectious yellows closterovirus (EPPO A1 quarantine pest) from USA, and showed that these two viruses are related but distinct. The authors concluded that CYSDV could be a member of a newly recognized subgroup of closteroviruses with bipartite genomes of which lettuce infectious yellows closterovirus is the type member, and that further studies are necessary to identify the various whitefly-transmitted closteroviruses that cause yellowing diseases in vegetable crops and which have been reported from many parts of the world.

**Source:** Célix, A.; López-Sesé, A.; Almarza, N.; Gómez-Guillamón, M.L.; Rodríguez-Cerezo, E. (1996) Characterization of cucurbit yellow stunting disorder virus, a *Bemisia tabaci*-transmitted closterovirus. **Phytopathology, 86(12), 1370-1376.**

Duffus, J.E. (1996) Whitefly-borne viruses. In: *Bemisia*: 1995 Taxonomy, Biology, Damage, Control and Management (Ed by Gerling, D. & Mayer, R.T.), pp 255-263, Intercept limited, Andover, Hants, UK.

**Additional key words:** new pest **Computer codes:** BEMITA, ES

**97/064** Studies on *Bemisia tabaci* biotypes in Spain

During 1993, 94 and 95, studies have been carried out on populations of *Bemisia tabaci* (EPPO A2 quarantine pest) from different areas of the Mediterranean region of Spain and of the Canary Islands. The aim was to study the biotypes present in these populations. The ability to produce silverleaf symptoms on squash and PCR techniques were used to differentiate the B biotype from the non-B biotypes. In addition, two populations of biotype B from US were used as control. Results showed that the B biotype of *B. tabaci* is indeed present in Spain. Non-B biotypes are also present. The B-biotype was observed in the regions of Barcelona (cabbage), Málaga (tomato), Madrid (hibiscus), Tenerife (poinsettia), Níjar (courgette). The authors pointed out that further studies are necessary to establish a spatial distribution of the B biotype in the Mediterranean region of Spain and in other regions of the country.

**Source:** Guirao, P.; Cenis, J.L.; Beitia, F. (1996) Determinacíon de la presencia en España de biotipos de *Bemisia tabaci* (Gennadius). **Phytoma-España, no. 81, 30-34.**

**Additional key words:** biology, detailed record **Computer codes:** BEMITA, BEMIAR, ES

**97/065** Update on the situation of *Bemisia tabaci* in China

In China, the first major outbreak of *Bemisia tabaci* (EPPO A2 quarantine pest) was reported in the mid-1970s in Beijing. Within a few years, it spread to more than 10 Chinese provinces. A preliminary survey has shown that *B. tabaci* is present in the following provinces: Fujian, Guangdong, Guangxi*, Hainan, Hubei*, Shaanxi, Shanghai*, Shandong*, Sichuan, Yunnan, Zeijiang. It has not been found in Hebei, Henan and Hunan. It is mainly present under glasshouse conditions, but also outside as damage has been reported on cotton from Yunnan and Hainan provinces. It is stressed that further work is needed on the distribution of the pest in China and on the identification of the biotypes present.

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* New detailed records

**Source:** Rumei, X. (1996) The occurrence and distribution of *Bemisia* in China. In: *Bemisia*: 1995 Taxonomy, Biology, Damage, Control and Management (Ed by Gerling, D. & Mayer, R.T.), pp 125-131, Intercept limited, Andover, Hants, UK.

**Additional key words:** new detailed records **Computer codes:** BEMITA, CN

**97/066** EPPO electronic documentation service

The EPPO Secretariat is currently improving its electronic documentation service. Many EPPO documents are now available in electronic form by e-mail at the following address: mail-server@eppo.fr (see EPPO RS 96/202). As the system will be modified very shortly in April, the EPPO files may not be available temporarily. When the new system is in place, the EPPO Secretariat will inform its usual correspondents by e-mail and an announcement will appear in due course in the EPPO Reporting Service. The new system will give access to an expanded range of EPPO documents, including in particular the EPPO standards in both English and French.

**Source: EPPO Secretariat, 1997-03.**