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Service

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EPPO *Reporting Service*

95/135 New data on diseases and nematodes of quarantine importance

By browsing through the literature, the EPPO Secretariat has noted the following items of interest concerning several pathogens and nematodes of quarantine importance.

New distribution records

- Beet necrotic yellow vein furovirus (EPPO A2 quarantine pest) found in Kyrgyzstan. Review of Plant Pathology, 73, p 286, (2490).

- *Puccinia horiana* (EPPO A2 quarantine pest) found in the central region of Venezuela in commercial fields of *Chrysanthemum*. Review of Plant Pathology, 73, p 483, (3987).

- *Phytophthora megasperma* f. sp. *glycinea* (EPPO A2 quarantine pest) has been isolated in China, from diseased soybean tissues, in the provinces of Heilongjiang, Jilin and the municipality of Beijing. According to the EPPO Secretariat this is the first report of the disease in Asia. Review of Plant Pathology, 73, p 533, (4391).

- *Verticillium albo-atrum* (EPPO A2 quarantine pest) has been detected for the first time in the majority of lucerne meadows during a survey in Hokkaido (JP). Yield losses up to 30 % have been observed on susceptible cultivars. Review of Plant Pathology, 74, p 256, (2050).

Detailed records

- Severe infections caused by beet leaf curl rhabdovirus (EPPO A2 quarantine pest) have been observed in 1993 in Poland, after an interval of many years without the disease. This report confirms earlier data on the possible occurrence of this virus in Poland. Review of Plant Pathology, 74, p 284, (2265).

- *Bursaphelenchus xylophilus* (EPPO A1 quarantine pest) has been found in Shenzhen (near Guangzhou) in China. The EPPO Secretariat had previously no data on the occurrence of the pine wood nematode in this province of China (Guangdong). However, it must be noted that Shenzhen is adjoining Hong Kong where pine wood nematode is present. Nematological Abstracts, 63, p 149 (1287).

- *Clavibacter michiganensis* subsp. *michiganensis* and *Xanthomonas campestris* pv. *vesicatoria* (both EPPO A2 quarantine pests) are reported from tomatoes grown in glasshouses in Poland. These reports confirm earlier data on the possible presence of these two bacteria in Poland. Review of Plant Pathology, 74, p 116, (970).

- *Cronartium himalayense* (EPPO A1 quarantine pest) has reached epidemic levels on chir pine (*Pinus roxburghii*) in Pauri and Tehri Garhwal regions in Uttar Pradesh, in India, according to a survey carried out in 1981-1992. Review of Plant Pathology, 73, p 565, (4652).

- *Ditylenchus dipsaci* (EPPO A2 quarantine pest) has been identified on onions grown in the province of Santa Catarina, in Brazil. Nematological Abstracts, 63, p 169 (1482).

- *Nacobbus aberrans* (EPPO A1 quarantine pest) has been found for the first time in the south east of Buenos Aires in Argentina during a survey conducted in potato fields. Infested potatoes were deriving from certified seed potatoes originating from Tucumán (highlands). Nematological Abstracts, 63, p 167 (1465).

- *Plasmopara halstedii* (EU Annex II/A2) has been reported for the first time on sunflowers in Kansas (US). Review of Plant Pathology, 73, p 555, (4572).

New host records

- *Alstroemeria* spp. has been reported for the first time as a host of tomato spotted wilt tospovirus (potential EPPO A2 quarantine pest) in Italy. Affected plants showed chlorotic and yellow rings on the leaves. Review of Plant Pathology, 74, p 212, (1734).

- Strawberry latent ringspot nepovirus (EU Annex II/A2) has been isolated for the first time from flowering cherry (*Prunus serrulata* sensu lato) in New Zealand. Review of Plant Pathology, 73, p 914, (7411).

Source: **EPPO Secretariat, Paris (1995-06).**

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

EPPO *Reporting Service*

95/136 Geminiviruses transmitted by *Bemisia tabaci*

In a recent paper, Dr J.K. Brown has tried to evaluate the global impact of whitefly-transmitted geminiviruses and to establish the current distribution of *Bemisia tabaci* (EPPO A2 quarantine pest) with emphasis on the B biotype (*B. argentifolii*). This biotype has shown an extraordinary ability to adapt to an extremely broad host range. It has developed resistance to several compounds (e.g. DDT, methyl-parathion, endosulfan) and can be distinguished by using an esterase marker, and essentially by its ability to cause phytotoxic disorders (e.g. squash silver leaf). The B biotype occurs in subtropical and temperate regions in the Old World (India, Africa, Arabian Peninsula, Europe and Mediterranean Basin, Japan) and in the New World. In the southern States of US in the 1988/89: A and B biotypes were present in Arizona and California; in Florida and Texas only the B biotype occurred. Now in south US only the B biotype is present (Arizona, California, Florida, Georgia, Tennessee, Texas), and it is also present in New York and Hawaii. It is present in Mexico (Yucatán Peninsula (Quintana Roo), Sonora, Tamaulipas). In the Caribbean only the B biotype is now present (Antigua & Barbuda, Dominican Republic, Grenada, Guadeloupe, Puerto Rico, Trinidad & Tobago, St Kitts & Nevis). In Central and South America, it is present in: Belize, Brazil, Guatemala, Honduras, Panama. In Jamaica, the occurrence of squash silver leaf symptoms suggests its presence. It appears that there is a southward spread of the B biotype into the West coast regions of Mexico and throughout Venezuela. The present situation of the most important diseases caused by geminiviruses transmitted by *B. tabaci* is summarized below.

- **Diseases of cucurbits**

So far, two diseases have been identified and documented.

- Squash leaf curl geminivirus (EU Annex I/A1) is present in Costa Rica*, Dominican Republic*, Guatemala*, Honduras*, Mexico* (Northern States - Sonora, Sinaloa), Nicaragua*, USA (Arizona, California). It appears to be a complex of strains, including watermelon curly mottle virus and melon leaf curl virus.
- Watermelon chlorotic stunt geminivirus has been found in watermelons in Yemen. It causes yellow foliar mottle, stunting and reduction of fruit set.

- **Diseases of Euphorbiaceous crops**

African cassava mosaic and Indian cassava mosaic geminiviruses both occur in the Old World on cassava and can cause serious losses.

- **Diseases of Malvaceous crops (cotton and okra)**

- African cotton mosaic geminivirus has been reported for the first time in Sudan on *Gossypium barbadense* and was called at that time cotton leaf mottle. The virus has been reported throughout Africa, but essentially in the regions south of the Sahara: Benin,

Cameroon, Central African Republic, Chad, Côte d'Ivoire, Ghana, Mali, Nigeria, Sudan, Togo, Tanzania.
Mosaic symptoms on cotton have been observed elsewhere (Brazil, Colombia, Dominican Republic, El Salvador, Guatemala, India, Nicaragua, Puerto Rico) but there is not sufficient information to determine similarities or differences between these disorders and the African cotton mosaic geminivirus.
- Cotton leaf crumple geminivirus was described in US cotton-growing areas in Arizona and California (near the Colorado river Valley) in the 1950s and later in Mexico*. Recently its incidence has increased in these regions.
- African cotton leaf curl geminivirus was first reported in 1912 in Nigeria. The disease is now present in Africa north of the Equator (except Egypt and Maghreb), in Benin, Burkina Faso, Chad, Côte d'Ivoire, Togo. In Pakistan, yield losses due to this disease have recently been very significant.
Diseases caused by uncharacterized whitefly-transmitted geminiviruses are now very important in cotton-growing regions of Africa (Mali, Sudan) and in the Indian sub-continent (India, Pakistan).
Preliminary molecular studies on cotton leaf crumple, African cotton mosaic, leaf curl from Sudan and 4 whitefly-transmitted geminivirus of cotton from the Americas (Dominican Republic, Guatemala, Texas) have shown that the New World viruses are similar though distinct from one another and present differences with the Old World viruses. However, further studies are still necessary.
- Okra leaf curl geminivirus has been reported from Côte d'Ivoire and Nigeria and is likely to occur elsewhere in Africa and Asia where okra is grown in whitefly-infested areas. Similar symptoms (vein thickening, upward leaf curl, stunting) have been observed in the Caribbean Basin and in Guatemala, but the diseases have not been characterized.

- **Leguminous crops**

Very serious epidemics have been reported throughout the world. In the Tropical Americas and the Caribbean Basin, whitefly-transmitted geminiviruses have been the most destructive diseases since the 1960s. Several of them have been characterized.
- Bean golden mosaic geminivirus (EU Annex I/A1) is present in the Caribbean Basin and Latin America. A golden mosaic-like geminivirus from Florida had been reported for the first time in 1993 and has recently been identified as bean golden mosaic geminivirus (see EPPO Reporting Service 95/142)
- Bean dwarf mosaic geminivirus from Colombia differs significantly from bean golden mosaic virus and is therefore thought to be a distinct virus.
- Bean calico mosaic geminivirus (the northernmost isolate in the Americas) has been shown to be a distinct virus.
- Mung bean yellow mosaic geminivirus from Thailand was shown to have sequence similarities with both the Old World virus (African cassava mosaic virus) and two New World viruses (tomato golden mosaic and bean golden mosaic geminiviruses).

Other diseases of legumes have been reported but have not yet been characterized: soybean crinkle leaf in Thailand, soybean yellow mosaic in India and yellow mosaic disease of soybean in Venezuela.

- **Diseases of Solanaceae**

Diseases characterized by leaf curl, yellow or golden mosaic, poor yield and reduction of fruit quality have been reported from many parts of the world. Epidemics on tomato and pepper have been seen throughout the Mediterranean Basin and Asia (India, Sri Lanka, Taiwan). The earliest reports involve diseases of tomato, capsicum, tobacco: in India in 1946 and 1963/64, in Israel and the Near East in 1966. Similar symptoms were then described in tomato or tobacco in Brazil, Cape Verde, Turkey, Côte d'Ivoire, Japan, Jordan, Nigeria, Philippines, Sri Lanka, Venezuela. Since 1984, whitefly-transmitted geminiviruses in pepper, tobacco and tomato began to be widespread in Southern parts of US (Florida, Texas), Mexico, Caribbean (Antigua & Barbuda, Dominican Republic, Puerto Rico, Trinidad & Tobago), Central America (Belize, Costa Rica, Guatemala, Nicaragua, Panama). And recently, outbreaks on tomato have been reported from Brazil.
Tomato yellow leaf curl geminivirus (EPPO A2 quarantine pest) is now a well characterized virus. 'Florida tomato virus' appears in EU Annex I/A1 and is now correctly named tomato mottle geminivirus. Further studies are needed on the relations between these and other more or less characterized whitefly-transmitted geminiviruses of tomato and capsicum, and on the relationships between Old World and New World viruses.

Dr Brown suggests that the changes observed are linked to the worldwide dispersion of the B biotype of *B. tabaci* (rather than a genetic change occurring simultaneously in local populations throughout the world), which can be transported on ornamental and vegetable plants (especially *Euphorbia pulcherrima* and chrysanthemum). She stresses that additional data is needed concerning uncharacterized whitefly-transmitted geminiviruses and associated diseases. Better knowledge on the disease incidence, virus identity, distribution, composition of mixed infections and investigations of the molecular mechanism of virus transmission in the hope to design resistant modified plants are obviously needed. Finally, only an IPM approach could provide control of these diseases (reduction of *B. tabaci* population pressure, host plant resistance, etc.),

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* new records according to the EPPO Secretariat.

Source: Brown, J.K. (1994) Current status of *Bemisia tabaci* as a plant pest and virus vector in agro-ecosystems worldwide.
FAO Plant Protection Bulletin, 42 (1-2), 3-32.

Additional key words: detailled records, new records.

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95/137 Studies on overwintering hosts of *Bemisia tabaci* biotype B in Spain

Glasshouse studies have been carried out in Spain to evaluate adult preference, distribution, fecundity and mortality of *Bemisia tabaci* biotype B (*B. argentifolii* - EPPO A2 quarantine pest) on several winter-spring crop hosts: potato, faba bean, cabbage and lettuce (leaf and cos types). The authors pointed out that in addition to protected crops, ornamental crops and weeds, several vegetables grown in winter-spring could serve as potential overwintering reservoirs for *B. tabaci* biotype B in countries having mild winters. Adults of *B. tabaci* biotype B have been released into a glasshouse containing cabbage, faba bean, lettuce and potato. Numbers of adults and eggs per plant, distribution of the pest within the plants and mortality were recorded. The results indicated that the number of eggs laid per adult was highest on potato, cabbage and faba bean. Within the plants, the adults were most often found on the newest leaves of cabbage and faba bean, and were more evenly distributed on potato. On both types of lettuce, adults were usually on older leaves. Survival from egg to adult emergence was much higher for potato (81.8 %), faba bean (73.1 %) and cabbage (59.6 %) but than for the two types of lettuce (13.5 % for cos and 3.9 % for leaf lettuce). The authors concluded that that potato, cabbage and faba bean can be significant winter-spring hosts of *B. tabaci* biotype B in many areas with mild winters. Lettuce did not appear to be a preferred host or to allow good reproduction of the pest. Note: the EPPO Secretariat had previously no information on the possible presence of the B biotype of *B. tabaci* in Spain.

Source: Zalom, F.G.; Castañé, C.; Gabarra, R. (1995) Selection of some winter-spring vegetable crop hosts by *Bemisia argentifolii* (Homoptera: Aleyrodidae).
Journal of Economic Entomology, 88(1), 70-76.

95/138 *Bemisia tabaci* biotype B (*B. argentifolii*) is present in Guadeloupe

The B biotype of *Bemisia tabaci* (EPPO A2 quarantine pest), considered by the authors as a separate species (*B. argentifolii*) has been found for the first time in Guadeloupe. *B. tabaci* and *B. argentifolii* have both been described on the island. Studies are currently being carried out on the distribution of *B. argentifolii* and *B. tabaci*, their host range, their parasitism and their respective roles in the transmission of geminiviruses in vegetables.

Source: Etienne, J.; Luc, A. (1995) *Bemisia argentifolii* and *Bemisia tabaci* in Guadeloupe.
CARAPHIN News, no. 11, p 11.

Additional key words: detailed record.

95/139 *Bemisia tabaci* biotype B is present in Australia

Bemisia tabaci biotype B (EPPO A2 quarantine pest) was detected in Australia for the first time in 1994-10. The insects were identified by esterase isoenzyme patterns and were collected from cucurbit crops in Darwin (Northern Territory) and in a nursery at Tamworth (New South Wales). These populations of whiteflies were able to induce symptoms of silverleaf on cucurbits. Preliminary *in vitro* studies suggested that these populations might be highly resistant to organophosphorus and carbamate insecticides.

Source: Gunning, R.V.; Conde, B.D.; Byrne, F.J. (1995) Resistant B-biotype of *Bemisia tabaci* detected in Australia.
Resistant Pest Management Newsletter, PRC/IRAC, Michigan (US), 7(1), p 13.

Additional key words: detailed record.

EPPO *Reporting Service*

95/140 Situation of *Bemisia tabaci* in the Near East

The situation of *Bemisia tabaci* (EPPO A2 quarantine pest) in the Near East is described in this paper based on data obtained from an FAO questionnaire sent in 1992-11. In the Near East, it is present in: Algeria*, Bahrain*, Cyprus, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Pakistan, Saudi Arabia, Somalia, Sudan, Tunisia, Turkey and the United Arab Emirates. In this region resistance to plant protection products has been reported (e.g. in Sudan and Turkey, resistance to monocrotophos, dimethoate, and cypermethrin). Attack by *B. tabaci* is reported on tobacco from Cyprus, on potato from Cyprus, Egypt and Saudi Arabia, and on cotton from Egypt, Iraq, Pakistan, Sudan, Syria and Turkey. Damage on ornamentals is reported from Bahrain, Cyprus, Iran and Lebanon. Damage is also reported on soybean from Turkey. Most countries considered that the incidence of the pest is increasing, except Bahrain, Cyprus, and Libya where the situation has not evolved significantly during the last five years.

Several viruses transmitted by *B. tabaci* have been observed in the Near East but the main concern at present is tomato yellow leaf curl geminivirus (EPPO A2 quarantine pest) which can cause very serious damage throughout the region (though no case has been reported from Iran). Disease incidence can reach 90 % in protected and autumn-grown field tomatoes, with crop losses up to 85 %. Tomato yellow leaf curl geminivirus has been reported in: Bahrain*, Cyprus, Egypt, Iraq, Jordan, Lebanon, Libya*, Malta, Saudi Arabia. Cotton leaf curl geminivirus has become a severe problem in Sudan but is now better controlled. This virus is currently spreading in Pakistan where severe losses are observed. Other viruses transmitted by *B. tabaci* in the Near East are: cucumber vein yellowing virus (Cyprus, Israel and Lebanon), cucumber yellows virus (Egypt, Lebanon, Israel) but some of these records are not yet sufficiently documented).

Data on other whiteflies is also given. *Trialeurodes vaporariorum* is widely distributed throughout the region. *Dialeurodes citri* is present around the Mediterranean Basin, in Algeria, Egypt, France, Greece, Israel, Italy and Turkey (reported also from Pakistan). *Aleurothrixus floccosus* is present in Algeria, France, Greece, Italy, Lebanon (recently found), Morocco, Portugal, Spain and Tunisia (suspected in Syria). *Parabemisia myricae* (EPPO A2 quarantine pest) is present in Cyprus, Egypt, Greece, Israel, Italy and Turkey (suspected in Syria).

* New records according to the EPPO Secretariat.

Source: Traboulsi, R. (1994) *Bemisia tabaci*: a report on its pest status with particular reference to the Near East.
FAO Plant Protection Bulletin, 24 (1-2), 33-58.

95/141 Resistance management for *Bemisia tabaci*

Studies have been carried out in Israel on resistance management of insect growth regulators (buprofezin and pyriproxyfen) used against *Bemisia tabaci* (EPPO A2 quarantine pest). Insecticide resistance has been monitored during 1991-1992 in a rose glasshouse and in adjacent cotton fields located in western Negev. In the glasshouses, no resistance management was followed (two applications of buprofezin or three consecutive applications of pyriproxyfen, whereas in cotton field an insecticide resistance management was followed (pyriproxyfen was applied once a year). Whiteflies collected were then exposed to a series of concentrations of buprofezin and pyriproxyfen. In the glasshouse, results indicated a 4-fold increase tolerance to buprofezin after two successive applications of this compound, and showed that a relatively high level of resistance to pyriproxyfen was recorded after three successive applications. In cotton fields with one application of pyriproxyfen, however, the susceptibility of *B. tabaci* was not appreciably altered. The authors point out that their study has demonstrated the rapid development of resistance in *B. tabaci* to pyriproxyfen in a glasshouse and stressed the need for insecticide resistance management. They concluded that to prevent the development of resistance to buprofezin and pyriproxyfen, their use should be limited to one application per season.

Source: Horowitz, A.R.; Ishaaya; I. (1994) Managing resistance to insect growth regulators in the sweet potato whitefly (Homoptera: Aleyrodidae). **Journal of Economic Entomology, 87 (4), 866-871.**

EPPO *Reporting Service*

95/142 Tentative distribution list for *Bemisia tabaci* biotype B (*B. argentifolii*)

The B biotype of *Bemisia tabaci* (also considered as a separate species *B. argentifolii*, though this is still debated) is characterized by an extremely broad host range and its ability to induce phytotoxic disorders (e.g. squash silverleaf on cucurbits, uneven repening of tomato). This biotype can also be distinguished from other populations of *B. tabaci* by using an esterase marker. It is thought that the spread of this biotype is also playing a important role it the dispersal of the viruses it may transmit. *B. tabaci* biotype B is thought to originate from the Middle East and is now found throughout the Mediterranean, in South Africa, Caribbean, Central and North America. It is probable that most outbreaks in glasshouses in Northern Europe involve this biotype, such as in the Netherlands (EPPO RS 94/193), Spain (EPPO RS 95/137), in UK (Baker & Cheeks, 1993 - though foci now have been eradicated) and probably in France, as symptoms of silverleaf have been described on courgette in the south (Villevieille & Lecoq, 1992). Though the geographical distribution needs to be further investigated, the EPPO Secretariat felt that it could be useful to have a preliminary list for *B. tabaci* biotype B. Records listed below are reasonably certain ones but the pest is probably more widely distributed.

EPPO region: Cyprus, Israel, France(suspected), Netherlands, Spain, UK (eradicated).
Asia: Cyprus, Israel, India, Japan, Yemen.
Africa: South Africa.
North America: Mexico (Sonora, Tamaulipas, Quintana Roo), USA (Arizona, California, Florida, Georgia, Hawaii, New York, Tennessee, Texas).
Central America and Caribbean: Antigua & Barbuda, Belize, Dominican Republic, Grenada, Guadeloupe, Guatemala, Honduras, Jamaica (unconfirmed), Panama, Puerto Rico, St Kitts & Nevis, Trinidad and Tobago.
South America: Brazil, Venezuela.
Oceania: Australia (New South Wales, Northern Territory).

Source: **EPPO Secretariat, 1995-07.**

Baker, R.H.A.; Cheeks, S. (1993) *Bemisia tabaci* in United Kingdom. **IOBC/WPRS Bulletin, 16 (8), 6-11.**

Villevieille, M.; Lecoq, H. (1992) L'argenture de la courgette - Une maladie nouvelle en France, liée à un aleurode. **Phytoma - La Défense des Végétaux, No. 440, 35-36.**

EPPO *Reporting Service*

95/143 First report of bean golden mosaic geminivirus in Florida (US)

During winter 1993, symptoms due to bean golden mosaic geminivirus (EU Annex I/A1; potential EPPO A1 quarantine pest) have been observed in South Florida (US), and developed into a serious disease throughout the spring. The disease has been found in common bean (*Phaseolus vulgaris*) and lima bean (*P. lunatus*) in southwest Dade County and southeast Palm Beach County. During a survey carried out in 125 fields in Dade County, an average disease incidence of 26 % was observed. In bean fields where the disease was most severe, growers reported yields of 26-87 hL/ha compared to expected yields of 175 hL/ha. In some cases, fields were completely abandoned or destroyed. The disease has not been detected in other winter bean production areas in South Florida. Molecular studies confirmed the occurrence of bean golden mosaic geminivirus and similarities were found between a Florida isolate and isolates from the Caribbean (Guatemala and Dominican Republic). The authors felt that this virus could have been accidentally introduced into Florida from the Caribbean. This is the first report of bean golden mosaic geminivirus in the continental United States.

Source: Blair, M.W.; Bassett, M.J.; Abouzid, A.M.; Hiebert, E.; Polston, J.E.; McMillan Jr, R.T.; Graves, W.; Lamberts, M. (1995) Occurrence of bean golden mosaic virus in Florida.
Plant Disease, 79 (5), 529-533.

Additional key words: new record.

95/144 EPPO Distribution List for bean golden mosaic geminivirus

Golden mosaic symptoms have been seen on legumes in many countries of tropical America. In many cases, bean golden mosaic geminivirus (BGMV) has specifically been identified, and these cases are indicated as unqualified records below. In other cases, a related virus has been identified or only symptoms have been seen. Since the relationships between BGMV and similar viruses have not yet been fully worked out, these other records are also mentioned here.

EPPO Distribution List: bean golden mosaic geminivirus

EPPO region: Absent.

Africa: Nigeria (lima bean golden mosaic).

North America: Mexico (bean dwarf mosaic; Sonora, bean calico mosaic and cotton leaf crumple; Chiapas, Sinaola and Yucatan, symptoms only), USA (Florida).

Central America and Caribbean: Costa Rica, Cuba, Dominican Republic, El Salvador (symptoms only), Guatemala, Haiti, Honduras, Jamaica, Nicaragua (symptoms only), Panama (symptoms only), Puerto Rico.

South America: Argentina (including also bean dwarf mosaic), Brazil (widespread including Goias, Rio Grande do Sul, Sao Paulo), Colombia (including also bean dwarf mosaic), Venezuela; widespread in tropical and subtropical America.

Source: **EPPO Secretariat, 1995-07.**

EPPO *Reporting Service*

95/145 First report of tomato mottle geminivirus in South Carolina, Tennessee and Virginia (US)

Tomato plants (*Lycopersicon esculentum*) showing symptoms of stunting, chlorotic mottling, distortion and leaf curl were observed in 1994 in South Carolina (Charleston County), Tennessee (Bledsoe and Rhea Counties) and Virginia (Northampton County), in USA. The incidence of the disease varied from farm to farm but reached 100 %. Samples were collected and analyzed, and it was shown that the causal agent was tomato mottle geminivirus. So far, this geminivirus (EU Annex I/A1) transmitted by *Bemisia tabaci* (EPPO A2 quarantine pest), was only reported in Florida (US) (see EPPO RS 94/045). This is the first report of tomato mottle geminivirus in South Carolina, Tennessee and Virginia.

Source: Polston, J.E.; Bois, D.; Keinath, A.P.; Chellemi, D.O. (1995) Occurrence of tomato mottle geminivirus in South Carolina, Tennessee and Virginia.
Plant Disease, 79 (5), p 539.

Additional key words: new records.

EPPO *Reporting Service*

95/146 New disease of lisianthus caused by tomato yellow leaf curl geminivirus

In Israel, in 1992, unusual symptoms appeared on lisianthus (*Eustoma grandiflorum*) at various places of the country. Symptoms were characterized by distortion of the growing tips, cup-shaped leaves, and swelling of veins on the lower surface of the leaves. The authors stressed that this disease is devastating in plants infected at an early stage, as plants do not produce flowers, and late infections significantly reduce flower quality. This disease has become a limiting factor to the production of lisianthus in Israel. The occurrence of these virus-like symptoms associated with high populations of *Bemisia tabaci* (EPPO A2 quarantine pest) indicated that the disease might be caused by tomato yellow leaf curl geminivirus (EPPO A2 quarantine pest). The viral causal agent of the disease has been purified from infected plants and identified with a molecular probe prepared from cloned tomato yellow leaf curl virus DNA and a specific antiserum against the virus. Purified viral preparations could also be transmitted to healthy lisianthus during transmission experiments with *B. tabaci*. The authors concluded that the causal agent of this new disease of lisianthus is tomato yellow leaf curl geminivirus and felt that the recent spread of this leaf curl disease may be due to a new biotype of *B. tabaci* with better adaptation to lisianthus (in Israel, several biotypes are present including the B biotype).

Source: Cohen, J.; Gera, A.; Ecker, R.; Ben Joseph, R.; Perlsman, M. (1995) Lisianthus leaf curl a new disease of lisianthus caused by tomato yellow leaf curl virus.
Plant Disease, 79 (4), 416-420.

Additional key words: new host plant.

95/147 EPPO Distribution List for tomato yellow leaf curl geminivirus

Due to the new records of tomato yellow leaf curl geminivirus in Bahrain and Libya (EPPO RS 95/140), Dominican Republic (EPPO RS 94/224), Jamaica, Martinique (EPPO RS 95/021), Nigeria (EPPO RS 95/059), Yemen (EPPO RS 95/075) and the detailled information provided for Turkey (EPPO RS 95/019) and Spain (EPPO RS 95/040), its distribution list can be modified as follow:

EPPO Distribution List: tomato yellow leaf curl geminivirus

EPPO region: Cyprus, Egypt (potential EPPO country), Israel, Italy (Calabria, Sicilia, Sardegna), Lebanon (potential EPPO country), Libya (potential EPPO country), Malta (present locally), Spain (Almeria and Islas Canarias: Tenerife), Tunisia, Turkey (Aegean region and Province of Adana).

Africa: Cape Verde, Cote d'Ivoire, Egypt, Libya, Nigeria, Senegal, Tunisia.

Asia: Bahrain, Cyprus, India, Iran, Iraq, Israel, Jordan, Lebanon, Philippines (unconfirmed), Saudi Arabia, Taiwan, Thailand, Tunisia, Turkey (Aegean region and Province of Adana), Yemen.

North America: locally reported in USA in California (but identity not confirmed).

Central America and Caribbean: Dominican Republic, Jamaica, Martinique.

This distribution list replaces all previous published EPPO Distribution lists on tomato yellow leaf curl geminivirus!

Source: **EPPO Secretariat, 1995-07.**

EPPO *Reporting Service*

95/148 Whitefly-transmitted geminivirus of watermelon in Sudan

Severe outbreaks of a yellowing disease of watermelons (*Citrullus lanatus*) have been observed in the Gezira state in central Sudan and Gash Delta in eastern Sudan. Symptoms were characterized by a severe yellowing, stunting and inward leaf curl. The presence of this disease was associated with high populations of *Bemisia tabaci* (EPPO A2 quarantine pest). The disease was also found on other cucurbits (*Cucurbita pepo*, *Cucumis melo*). Disease incidence reached up to 100 % in the late summer crops located in Gezira and in early winter crops in Gash Delta. A geminivirus has been isolated from the affected plants and the first results showed that it is closely related to watermelon chlorotic stunt geminivirus which occurs in Yemen.

Source: Dafall, G.A.; Lecoq, H.; Kheir-Pour, A.; Gronenborn, B. (1994) A whitefly-transmitted geminivirus associated with a yellowing disease of watermelons in Sudan.
Arab and Near East Plant Protection Newsletter, FAO, no. 19, p 39.

Additional key words: new pest.

EPPO *Reporting Service*

95/149 Situation of cowpea mild mottle 'carlavirus'

In their paper, Jeyanandarajah & Brunt present a review on cowpea mild mottle virus (EU Annex I/A1). It was first described in 1973 on cowpea (*Vigna unguiculata*), in Ghana. At this time, it was thought to be only of local and minor importance. However, since then it has shown to have a wide host range and an extensive geographical distribution. Cowpea mild mottle virus has filamentous particles with properties resembling those of aphid-borne carlaviruses. But the virus also presents important differences, as it is transmitted by *Bemisia tabaci* and induces the formation of cytoplasmic brush-like inclusions within infected plants. Therefore, the taxonomy of this virus remains uncertain. The authors felt that it was best to leave it unclassified or tentatively placed in a subgroup of carlaviruses. Studies on seed transmissibility of the virus are still contradictory.

- **Host range**
  It includes tomato (*Lycopersicon esculentum*), a range of leguminous crops such as: cowpeas, groundnuts (*Arachis hypogea*), soybean (*Glycine max*), kidney bean (*Phaseolus vulgaris*), lima bean (*P. lunatus*), faba bean (*Vicia faba*), mung bean (*Vigna radiata*) and many weed species.

- **Geographical distribution**
  EPPO region: Israel.
  Africa: Côte d'Ivoire, Ghana, Kenya, Nigeria, Tanzania.
  Asia: India, Indonesia, Israel, Thailand, Malaysia*, Yemen*.
  South America: Brazil*.
  Oceania: Fiji, Solomon Islands*.

* new records according to the EPPO Secretariat.

Source: Jeyanandarajah, P.; Brunt, A.A. (1993) The natural occurrence, transmission, properties and possible affinities of cowpea mild mottle virus.
Journal of Phytopathology, 137(2), 148-156.

Additional key words: new records.

95/150 *Sorbus folgneri* and *Sorbus alnifolia*: two new host plants of *Erwinia amylovora*

Characteristic symptoms of fireblight have been observed on *Sorbus folgneri* (Chinese montain ash) in the US National Arboretum in Washington DC (US), at the beginning of July 1994. Similar symptoms have also been observed on *Sorbus alnifolia* (Korean montain ash) in New Jersey. The bacteria isolated from these trees have been identified as *Erwinia amylovora* (EPPO A2 quarantine pest). This is the first report of fireblight on these two species of *Sorbus*.

Source: van der Zwet, T. (1995) First report of *Erwinia amylovora* on new host species in the genus Sorbus.
Plant Disease, 79 (4), 424.

Additional key words: new host plants.

95/151 Studies on *Erwinia amylovora* in Turkey

In the east Mediterranean region of Turkey, surveys were carried out in May-October 1990, in apple, quince and loquat orchards, to study the incidence of *Erwinia amylovora* (EPPO A2 quarantine pest). The results have shown that on apple in the provinces of Adana, Içel and Kahramanmaras, the incidence ratio were respectively 13.14, 6.25 and 2.69 %. In the region of Içel, the incidence of fireblight on quince (*Cydonia oblonga*) and loquat (*Eriobotrya japonica*) was respectively 11.76 and 1.16 %. In apple orchards of Gaziantep, and in apple and loquat orchards of Hatay, fireblight was not found.

Source: Tokgönül, S. (1994) [Studies on the fireblight (*Erwinia amylovora* Barr. Winslow et al.) on apple, quince and loquat in east Mediterranean region of Turkiye]
Bitki Koruma Bülteni, 31 (1-4), 31-38.

Additional key words: detailed record.

95/152 Tephritid-free quarantine procedure for avocados from Hawaii is not effective

In USA, in 1990, an infestation-free quarantine procedure had been set up for avocado (*Persea americana* cv. 'Sharwil') grown in Kona, Hawaii (US) and exported to the contiguous United States. This procedure was based on the assumption that 'Sharwil' avocado fruits on trees are not suitable hosts for fruit flies (*Ceratitis capitata* (EPPO A2 quarantine pest), *Bactrocera cucurbitae* and *B. dorsalis* (both EPPO A1 quarantine pests)). Though literature data was contradictory with regard to the relative resistance of 'Sharwil' avocado, further laboratory and field studies carried out over 3 years confirmed that 'Sharwil' avocado was not a host for these fruit flies provided fruit is still attached to the tree or when fruits are harvested with stem attached. Therefore, it was required that mature green fruits with pedicel firmly attached should be harvested only from trees that had been certified by APHIS as being truely 'Sharwil'. No conventional quarantine treatment was required. However, in 1992 during routine inspections, 'Sharwil' fruits infested by *B. dorsalis* have been found. The authors have made further studies in order to explain the failure of this procedure. In the field, they have observed that although 'Sharwil' avocados are poor hosts, *B. dorsalis* can be found on mature fruits. They suggested that differences in sampling methods (e.g. number of fruit samples and timing of sampling) used in the different studies may explain the discrepancies between their results and previous studies.

Source: Liquido, N.J.; Chan, H.T. JR; McQuate, G.T. (1995) Hawaiian Tephritid fruit flies (Diptera): integrity of the infestation-free quarantine procedure for 'Sharwil' avocado.
Journal of Economic Entomology, 88(1), 85-96.

95/153 First report of *Liriomyza huidobrensis* in Sicilia (IT)

The authors recalled that *Liriomyza huidobrensis* (EPPO A2 quarantine pest) was first found in the North of Italy in Liguria (in 1991) and then in Piemonte (in 1994). The pest has been found for the first time in Sicilia in spring 1991, on pepper (*Capsicum annuum*) grown in protected conditions in the coastal region of Ragusa (south-east of the island). The pest has been recorded on many vegetable and ornamental crops: e.g. tomato (*Lycopersicon esculentum*), aubergine (*Solanum melongena*), cucumber (*Cucumis sativus*), kidney bean (*Phaseolus vulgaris*), Cineraria (*Senecio cruentus*) and also on weeds. *L. huidobrensis* has also been found on *Gerbera jamesonii* and *Inula viscosa* (weed) which had not previously been recorded as host plants in the literature. However, the parasitoid *Diglyphus isaea*, which occurs naturally in Sicilian protected crops, has been able to limit the pest populations and damage.

Source: Calabretta, C.; Calabró, M.; Colombo, A.; Campo, G. (1995) [Spread of *Liriomyza huidobrensis* (Blanchard) (Diptera, Agromyzidae) in protected crops of Sicily]
Informatore Fitopatologico, 6, 24-30.

Additional key words: detailed record.

95/154 PQR - Release of version 3.1

A new version of EPPO's phytosanitary information system PQR on quarantine pests (geographical distribution and host plants) has just been released. It has the following new features:

1) many pest distribution and host plant data have been updated and all new information from the EPPO Reporting Service has been added.
2) lists of quarantine pests have been included for Russia, China, Canada and USA.
3) more data on sub-national units for large countries
4) direct access to comments within lists of countries marked with an asterisk.

PQR version 3.1 is available on diskette from EPPO Headquarters, 1 rue Le Nôtre, 75016 Paris, France.

Source: **EPPO Secretariat, 1995-06.**

95/155 What is ECPA ?

ECPA is the European Crop Protection Association. Its mission is 'to promote the interests of the Crop Protection Industry as an innovative, responsible and progressive constituent of the European industry and agriculture'. ECPA is composed of national associations of plant protection industries of 18 European countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Portugal, Sweden, Spain, Switzerland, Turkey, United Kingdom) and of private plant protection firms. It is now EPPO's principal contact point with the agrochemical industry in Europe.

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Source: **EPPO Secretariat, 1995-01.**