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

EPPO
Reporting
Service

Paris, 1994-11-01 **Reporting Service 1994, No. 11**

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EPPO Reporting Service

94/214 **UA...Quarantine list of Ukraine**

The Ukrainian quarantine list, published in 1993-11, falls into two parts:

1. Quarantine pests absent from Ukraine

Insects:

Acrobasis (*Numonia*) *pyrivorella*,
Agrilus mali,
Bactrocera (*Dacus*) *dorsalis*,
Bruchidius incarnatus,
Callosobruchus chinensis,
Callosobruchus maculatus,
Carposina niponensis,
Caryedon serratus (*C. gonagra*),
Caulophilus latinasus,
Ceratitis capitata,
Ceroplastes japonicus,
Ceroplastes rusci,
Chionaspis furfura,
Dinoderus bifovealatus,
Dysmicoccus wistariae,
Epichoristodes acerbella,
Graphognathus (*Pantomorus*) *leucoloma*,
Icerya purchasi,
Liriomyza trifolii,
Paralipsa gularis,
Popillia japonica,
Pseudaulacaspis pentagona,
Rhagoletis pomonella,
Rhizoecus kondonis,
Sinoxylon conigerum,
Spodoptera littoralis,
Spodoptera litura,
Trogoderma angustum,
Trogoderma granarium,
Trogoderma sternale,
Zabrotes subfasciatus.

Fungi:

Phymatotrichopsis (*Phymatotrichum*) *omnivora*,
Tilletia indica.

Bacteria:

Clavibacter (*Corynebacterium*) *tritici*,
Erwinia (*Bacterium*) *stewartii*,
Erwinia amylovora,
Pseudomonas caryophylli,
Xanthomonas campestris pv. *citri*,
Xanthomonas campestris pv. *hyacinthi*.

Viruses:

Andean potato latent tymovirus,
potato vein yellowing disease,
potato yellow dwarf rhabdovirus.

Nematodes:

Globodera pallida,
Heterodera glycines.

Weeds:

Acanthospermum hispidum,
Aeschynomene virginica,
Artemisia biennis,
Cassia occidentalis,
Cassia tora,
Cenchrus spp.
Croton capitatus,
Diodia teres,
Emex australis,
Emex spinosa,
Helianthus spp.,
Paspalum spp.,
Physalis angulata,
Solanum carolinense,
Solanum eleagnifolium,
Solanum triflorum,
Striga spp.

2. Quarantine pests of limited distribution in Ukraine

Insects:

Cydia (*Grapholitha*) *molesta*,
Dialeurodes citri,
Hyphantria cunea,
Lopholeucaspis japonica,
Phthorimaea operculella,
Pseudococcus comstocki,
Quadraspidiotus perniciosus,
Viteus vitifoliae.

Fungi:

Cochliobolus heterostrophus (*Helminthosporium maydis*),
Diaporthe helianthi,
Mycosphaerella linicola (*M. linorum*),
Puccinia horiana,
Synchytrium endobioticum.

Virus:

Plum pox potyvirus

Nematode:

Globodera rostochiensis

Weeds:

Acroptilon repens,
Ambrosia artemisiifolia,
Ambrosia psilostachya,
Ambrosia trifida,
Cuscuta campestris,
Ipomoea hederacea,
Solanum rostratum.

Nomenclature follows EPPO ; names in brackets are those of the original text.

Source: **Zashchita Rastenii (1993), no. 11, 12-13.**

94/215 UA...Quarantine pests in Ukraine

Following the publication of the Ukrainian quarantine list (RS 94/214), an article by Litvinov *et al*. provides a variety of details on quarantine pests in Ukraine.

Quadraspidiotus perniciosus: introduced into Zakarpat'e region in 1952, the pest has spread every year since, and is now present in 16 of the 25 regions of Ukraine. Phytosanitary measures included inspection and methyl bromide fumigation of imported material, surveillance in quarantine nurseries, production of healthy planting material and budwood in registered nurseries which must be at least 3 km from any outbreak, surveillance of newly planted orchards for 3-5 years.

Pseudococcus comstocki: first recorded in Ukraine in 1973. This polyphagous pest mostly damages citrus, apple, pear, pomegranate, peach, grapevine and mulberry. Heavy infestation of peach can cause 50 % losses of fruit yield. Measures like those for *Q. perniciosus* are taken.

Cydia molesta: first found in Ukraine in Zakarpat'e region in 1966. It spread to two regions by 1970, and to 10 at present. Specially damaging to peach, quince and pear. Measures are taken as for the two previous species.

Hyphantria cunea: first found in Ukraine in Zakarpat'e region in 1952, and has now spread to 8 regions. This polyphagous pest attacks in practice many rosaceous fruit trees. Since it spreads naturally, phytosanitary measures aim at containment, by surveillance of a 3-5 km zone around outbreaks (and eradication of any foci found), and regulated use of fruits from infested areas.

Plum pox potyvirus: first found in Ukraine in 1967, now in 8 regions. It is prohibited to move planting material of hosts out of infested zones, or to take budwood from non-tested mother trees. Nurseries must be isolated by at least 1 km from infested orchards.

It should also be noted that besides Lists 1 and 2 of quarantine pests, a third group of pests has been categorized as 'potentially dangerous and requiring further study'. These include 29 insects (of which *Aonidiella aurantii*, *Aleurocanthus woglumi* and *Frankliniella occidentalis*) and 26 pathogens (of which *Xylella fastidiosa*, peach latent mosaic viroid, American plum line pattern ilarvirus).

Source: Litvinov, P.I.; Titova, L.G.; Palagina, O.V.; Kul'minskaya, L.A. (1994) Quarantine pests and diseases of fruit crops in Ukraine. **Zashchita Rastenii, no. 7, 30-32.**

Additional key words: detailed record.

94/216 HELIAR/HU...Situation of *Helicoverpa armigera* in Hungary

The cotton bollworm, *Helicoverpa armigera* (EPPO A2 quarantine pest) was recorded as a cotton pest in Hungary in 1951, and became a more and more regular immigrant into the Carpathian Basin. It has been reported as a regular pest since 1986 on maize, tobacco and since 1993 on paprika. Under Hungarian conditions, sporadic populations develop but cannot survive in winter, so the damage is normally limited. In 1993, *Helicoverpa armigera* occurred in unusually high numbers and caused some damage to maize, tobacco, vegetables and ornamentals. It is thought that adults of this species flew in two waves in June and July from the south-west towards the Carpathian Basin. However, no development stage has been able to survive to winter frost. The Hungarian Plant Protection Service will continue to monitor this pest during the next growing seasons.

Source: Szeöke, K. (1994) Occurrence and damage of the cotton bollworm (*Helicoverpa armigera* Hübner) in 1993 in Hungary. **Növényvédelem, 30 (4), 153-157.**

Gyulai, P. (1994) Occurrence and damage of cotton bollworm (*Helicoverpa armigera* Hübner 1808) in North Hungary. **Növényvédelem, 30 (4), 159-162.**

Additional key words: detailed record.

94/217 LIRIHU/ES...Situation of *Liriomyza huidobrensis* near Valencia (ES)

During surveys carried out in 1992 and 1993 in the Community of Valencia (ES), *Liriomyza huidobrensis* (EPPO A2 quarantine pest) has been found on 22 plant species belonging to 9 different botanical families. The main damage was observed on outdoor crops of lettuce (*Lactuca sativa*), sugar beet (*Beta vulgaris*), beans (*Phaseolus vulgaris*) and radish (*Raphanus sativus*). The other plants species attacked were: *Allium cepa*, *Apium* spp., *Brassica oleracea*, *Citrullus lanatus*, *Cucumis melo*, *Cucumis sativus*, *Cynara scolymus*, *Cynara* spp., *Medicago minima*, *Medicago sativa*, *Lycopersicon esculentum*, *Petroselinum* sp., *Solanum tuberosum*, *Vicia faba*, and the weeds: *Calendula* spp., *Hirschfeldia* spp., *Papaver rhoeas* and *Sonchus* spp.

Source: Echevarría, A.; Gimeno, C.; Jiménez, J. (1994) *Liriomyza huidobrensis* (Blanchard, 1926) (Diptera, Agromyzidae) una nueva plaga en cultivos valencianos. **Boletin de Sanidad Vegetal - Plagas, 20 (1), 103-109.**

Additional key words: detailed record.

94/218 **BURSXY/CN...**Situation of *Bursaphelenchus xylophilus* in China

A survey had shown previously that *Bursaphelenchus xylophilus* (EPPO A1 quarantine pest) was only present in Jiansu province around the cities of Nanjing and Zhenjiang (1992, EPPO RS 520/19). Since then, *B. xylophilus* has been isolated from the wood of dead *Pinus thunbergii* and *P. massoniana*, in the nearby province of Zhejiang (in Dancheng Town, Xiangshan County, Ningbo city), in August 1991.

Source: Lai, Y.X (1993) The occurrence of pine wood nematode in Xiangshan, Zhejiang.
Plant Quarantine (Shanghai), 7 (1), 38.

Additional key words: new record.

94/219 **CITRUS/JP...**Citrus pests in Japan

In Japan, the main pests and diseases of Citrus which can cause significant losses are *Scirtothrips dorsalis* (EU Annex II/A1), citrus red mite (*Panonychus citri*), *Diaporthe citri*, *Xanthomonas campestris* pv. *citri* (EPPO A1 quarantine pest), Satsuma dwarf virus (EU Annex II/A1) and post-harvest diseases.

Scirtothrips dorsalis is the most frequent pest in Japanese Citrus groves, although it became an important pest only in recent years. All cultivars can be attacked, but navel oranges are particularly susceptible. This pest feeds on young plant tissues (young leaves, stems and fruits), and the most significant damage is caused from June to October. Attacked fruits show greyish or silvery scars on the peel. The thrips cannot develop below 9 °C, and it takes approximately 1 month in the cool season and 13-15 days in summer to complete one generation. When climatic conditions are favourable, up to 8 generations per year can be observed. In Japan, normally four insecticide treatments are recommended during the growing season (e.g. acephate or dimethoate + fenvalerate).

Satsuma dwarf virus has been observed in many citrus groves in the major citrus-growing areas of Japan. Symptoms appear on the leaves when new shoots began to grow in spring. Symptoms are characterized by leaf deformation (boat- or spoon-shaped), shortening of internodes, and fruits of severely affected trees are small with thickened peel and insufficient sweetness. Latent infection is observed in many citrus cultivars. The virus is mainly transmitted by propagation material, but other mechanisms of natural transmission are not known, although the role of a soilborne vector is suspected. In order to prevent the spread of the disease, virus-free planting material should be used, and some research is being carried out on the possible use of mild strains.

Xanthomonas campestris pv. *citri* is also a serious disease, especially as some newly selected cultivars of Satsuma mandarin may be more susceptible to citrus canker. In Japan, treatments with copper compounds (Bordeaux mixture, cupric hydroxide, copper sulfate) or antibiotics are applied in spring and autumn.

Source: Furuhashi, K.; Serizawa, S. (1994) Present situation in the control of citrus insect pests and diseases in Japan. **Agrochemicals Japan, no. 64, 8-11.**

Additional key words: detailed record.

94/220 **DACUCU/JP...**Eradication of *Bactrocera cucurbitae* in Japan

Bactrocera cucurbitae (EPPO A1 quarantine pest) used to be a very serious pest in the Southwestern Islands of Japan. As already mentioned in EPPO Reporting Service 93/116, it has been eradicated in the following southwestern islands of Japan:

Kume-jima island (eradicated in 1978)
Miyako islands (in 1987)
Amami islands (in 1989)
Okinawa islands (including North and South Daito-jima, in 1990)

Finally, an eradication programme started in 1989 in the Yaeyama islands (585 km^2) and the pest was eradicated in October 1993. It is stressed that the eradication programme implemented to eliminate *B. cucurbitae* from the whole area of Southwestern Islands of Japan took 22 years, cost a total amount of 20.4 billion yen and that 62.5 billion sterile flies were released. Although, it is considered that *D. cucurbitae* has been eradicated from Japan, a monitoring system and preventive control measures (release of sterile flies) will still be maintained to avoid any reinfestation.

Source: Anonymous (1993) Eradication of the melon fly from Japan. **FAO Quarterly Newsletter. Asia and Pacific Plant Protection Commission, 36 (3-4), 4-5.**

94/221 XYLLFA...*Xylella fastidiosa* is the causal agent of Citrus variegated chlorosis disease

Since 1987 a new and serious disease, called citrus variegated chlorosis of sweet orange (*Citrus sinensis*) has been reported in Brazil. It spread rapidly in nurseries and commercial groves in Sao Paulo and Minas Gerais States. The symptoms are characterized by leaf patterns similar to zinc deficiency on new sprouts, conspicuous chlorotic variegation on the upper side of more developed leaves, and the undersides of variegated leaves contain small, light-brown, somewhat raised lesions which correspond to chlorotic areas on the upper leaf surface. These areas may become dark-brown or necrotic, punctiform or elongated, and occur in clusters or lines. Affected fruits are small and hard. Previous studies have led to the conclusion that the causal agent of this disease was structurally and morphologically similar to *Xylella fastidiosa* (EPPO A1 quarantine pest ; EU Annex I/A1) (1992, Chagas *et al.*). In EU Annex II/A1, the disease also appears separately as 'citrus variegated chlorosis'.

In recent studies, a xylem-limited bacterium serologically related to strains of *Xylella fastidiosa* (EPPO A1 quarantine pest) has been isolated from citrus trees in Brazil showing symptoms of citrus variegated chlorosis. After inoculation of this bacterium, typical symptoms of citrus variegated chlorosis were observed. The authors were able to reisolate the bacterium from petioles of these symptomatic and artificially inoculated plants, and its identity was confirmed by membrane entrapment immunofluorescence and Western blotting with the antiserum prepared against the original strain. The bacterium reisolated from symptomatic plant tissue was culturally, morphologically and serologically indistinguishable from the strain used to inoculate the plants (completing Koch's postulates and confirming the results obtained by Chang *et al.*, 1993).

Other diseases of citrus have also been tentatively related to *X. fastidiosa*: 'pecosita' and 'citrus blight'. The first one occurs in Argentina. Though it is similar to citrus variegated chlorosis, it does not seem to be a limiting factor of citrus production. Concerning citrus blight, extracts from affected trees present a characteristic set of proteins which have not been found in extracts of trees affected by citrus variegated chlorosis. However, characteristic symptoms of 'citrus blight' have been obtained by inoculation of *Citrus jambhiri* cuttings with certain strains of *X. fastidiosa* (1988, EPPO RS 498/09) but Koch's postulates could not be completed.

.../...

The authors concluded that *X. fastidiosa* is the causal agent of citrus variegated chlorosis which can be considered as a strain of *X. fastidiosa*. Preliminary studies have demonstrated that this strain shows serological relationships with other strains of *X. fastidiosa* causing diseases of grapevine (Pierce's disease), almond (almond leaf scorch), ragweed (*Ambrosia* spp. - ragweed stunt disease) and oak (oak leaf scorch).

Source: Chagas, C.M.; Rossetti, V.; Beretta, M.J.G. (1992) Electron microscopy studies of a xylem-limited bacterium in sweet orange affected with citrus variegated chlorosis disease in Brazil.
Journal of Phytopathology, 134, 306-312.

Hartung, J.S.; Beretta, J.; Brlansky, R.H.; Spisso, J.; Lee, R.F. (1994) Citrus variegated chlorosis bacterium: axenic culture, pathogenicity, and serological relationships with other stains of *Xylella fastidiosa*.
Phytopathology, 84 (6), 591-597.

Chang, C.J., Garnier, M.; Zreik, L.; Rossetti, V.; Bové, J.M. (1993) Culture and serological detection of the xylem-limited bacterium causing citrus variegated chlorosis and its identification as a strain of *Xylella fastidiosa*.
Current Microbiology, 27, 137-142.

94/222 **XYLLFA...**PCR detection of *Xylella fastidiosa* in plant tissue

A PCR protocol for the specific detection of *Xylella fastidiosa* (EPPO A1 quarantine pest) in plant tissue has been developed. By using oligonucleotide specific primers, it was possible to amplify a fragment of genomic DNA in 33 strains of *X. fastidiosa*, from grapevine, citrus, plum, oak, golden rod (*Solidago* ssp.), *Platanus occidentalis* and also from Brazilian strains isolated from citrus trees presenting symptoms of citrus variegated chlorosis. The PCR method consistently detected *X. fastidiosa* in extracts from three naturally infected grapevine tissue sources and citrus rootstocks, as well as from artificially contaminated samples. Plant extracts were obtained by maceration of grape petioles and by vacuum extraction of citrus stems. However, as DNA amplification was inhibited in the presence of plant extract, it was necessary to add acid-washed polyvinylpyrrolidone and sodium ascorbate to the extracts. Detection by PCR is 100-fold more sensitive than by ELISA, and the detection limits are respectively, 1 x 10^2 cfu/ml for PCR and 2 x 10^4 cfu/ml for ELISA. In addition, restriction endonuclease digestion of the PCR products allowed for the differentiation of two pathotypes. The authors felt that this result correlates other studies which have shown the existence of at least two pathotypes corresponding to Pierce's disease group and the group causing other diseases (often referred to as the phony peach group). However, further studies are needed to find new primers that will allow for finer differentiation within and between the pathotypes of *X. fastidiosa*. The authors concluded that the PCR method for detecting *X. fastidiosa* in plant tissue is a useful tool for research and diagnostic programmes, and noted that this protocol may also be adapted for detection of the pathogen in insect vectors.

Source: Minsavage, G.V.; Thompson, C.M.; Hopkins, D.L.; Leite, R.M.V.B.C.; Stall, R.E. (1994) Development of a polymerase chain reaction protocol for detection of *Xylella fastidiosa* in plant tissue. **Phytopathology, 84 (5), 456-461.**

Additional key words: new detection method.

94/223 **PALYXX...**Comparative studies on coconut lethal decline diseases from Caribbean and Africa

Palm lethal yellowing MLO (EPPO A1 quarantine pest) occurs in several countries of the western Caribbean region and other coconut lethal declines have been reported from the West African countries of Ghana (Cape St. Paul wilt), Cameroon (Kribi disease), Togo (Kaincopé), Nigeria (Awka disease) and also from East Africa in Tanzania. So far, these coconut lethal decline diseases have been attributed to the same causal agent, palm lethal yellowing MLO. Comparative studies using DNA hybridization and PCR assays have shown the existence of genetic relationships between MLOs associated with coconut lethal decline diseases in the western Caribbean region and in Africa. But they also indicated that palm lethal yellowing MLO and lethal decline diseases MLOs, although very similar, are not genetically identical pathogens.

Source: Harrison, N.A.; Richardson, P.A.; Jones, P.; Tymon, A.M.; Eden-Green, S.J.; Mpunami, A.A. (1994) Comparative investigation of MLOs associated with Caribbean and African coconut lethal decline diseases by DNA hybridization and PCR assays.
Plant Disease, 78 (5), 507-511.

94/224 **TMYLCX/DO...**Further studies on the tomato yellow leaf curl geminivirus in the Dominican Republic

As mentioned in EPPO Reporting Service 94/199, a virus disease caused extremely serious losses on tomato production in the Dominican Republic, and the causal agent was considered as a tomato yellow leaf curl-like geminivirus. Further studies have been carried out. Symptomatic tomato plants and weeds were collected in the Dominican Republic in January and February 1994 and analysed by using nucleic acid squash blot hybridization and PCR. The virus found in the Dominican Republic was compared with tomato yellow leaf curl (EPPO A2 quarantine pest) from Israel and Italy (Sardegna), and tomato mottle geminivirus from USA (Florida). The results showed strong homology with the tomato yellow leaf curl from Israel. According to the authors, these results indicate that the Eastern Mediterranean strain of tomato yellow leaf curl geminivirus has been introduced into the Dominican Republic and is widely distributed in the major tomato-growing regions.

Source: Nakhla, M.K.; Maxwell, D.P.; Martinez, R.T.; Carvalho, M.G.; Gilbertson, R.L. (1994) Widespread occurrence of the Eastern Mediterranean strain of tomato yellow leaf curl geminivirus in tomatoes in the Dominican Republic.
Plant Disease, 78 (9), p 926.

Additional key words: new record.

94/225 **PSDMSO...*Pseudomonas solanacearum* has never been found on potatoes in Canada**

The EPPO Secretariat has recently been informed by the Canadian Plant Protection Service that *Pseudomonas solanacearum* (EPPO A2 quarantine pest) has never been found on potatoes in Canada. The three published reports concerning this disease in Ontario (see EPPO RS 94/149) relate to other hosts (tomato and pelargonium) and the establishment of the pathogen was not demonstrated. For potato crops, it was stressed that during field surveys carried out in Ontario, and also in Alberta, British Columbia, New Brunswick, Prince Edward Island, the pathogen was never found. The Canadian authorities concluded that *P. solanacearum* is not established or distributed in Ontario.

Source: **EPPO Secretariat, 1994-10.**

Additional key words: denied record.

94/226 **PSDMSO/CG...*Pseudomonas solanacearum* is present in Congo**

A paper published in Phytoma describes the phytosanitary situation of vegetable crops in Congo. It is noted that *Pseudomonas solanacearum* (EPPO A2 quarantine pest) can be found on Solanaceae, especially on tomato (*Lycopersicon esculentum*) and aubergine (*Solanum melongena*).

Source: Déclert, C. (1994) Situation sanitaire des cultures légumières au Congo. **Phytoma - La Défense des Végétaux, n° 465, 45-46.**

Additional key words: new record.

94/227 **PSDMSO...EPPO Distribution List for *Pseudomonas solanacearum***

Due to the recent reports concerning the absence of *Pseudomonas solanacearum* on potatoes in Canada and its presence in Congo, its distribution list can be modified as follows.

EPPO Distribution list: *Pseudomonas solanacearum*

P. solanacearum is widespread in tropical, subtropical and warm temperate areas throughout the world.

EPPO region: Algeria (potential EPPO country - unconfirmed), Belarus (potential EPPO country - unconfirmed), Belgium (few reports, under eradication), Bulgaria, Cyprus, Denmark (found in ornamental *Musa* and eradicated), Egypt (potential EPPO country), Greece, Hungary, Italy (found before 1960s, not established), Israel (found but not established), Lebanon (potential EPPO country), Libya (potential EPPO country), Moldova (potential EPPO country), Morocco (found before 1950s, not established), Netherlands (few reports, under eradication), Poland (unconfirmed), Portugal (eradicated), Romania, Russia (European part, less common in the Far East), Spain (only Canary Islands, eradicated on the mainland), Sweden (eradicated), Tunisia, Turkey, Ukraine (in the South), United Kingdom (England only, few reports, under eradication), Yugoslavia. It has been intercepted in Finland and Sweden (1992, RS 525/01).

Asia: Armenia, Bangladesh, Bhutan, Brunei Darussalam, China, Cyprus, Democratic People's Republic of Korea, Georgia, Hong Kong, India, Indonesia, Iran, Israel (found but not established), Japan, Kampuchea, Lebanon, Malaysia, Myanmar (Burma), Nepal, Pakistan, Philippines, Republic of Korea, Russia (less common in the Far East), Singapore, Sri Lanka, Taiwan, Thailand, Turkey, Vietnam.

Africa: Algeria (unconfirmed), Angola, Burkina Faso, Burundi, Congo, Egypt, Ethiopia, Gabon, Kenya, Libya, Madagascar, Malawi, Mauritius, Morocco (found before 1950s, not established), Mozambique, Nigeria, Réunion, Rwanda, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Tanzania, Tunisia, Uganda, Zaire, Zambia, Zimbabwe.

North America: Canada (found but not established), Mexico (Michoacan, Puebla, Sinaloa), USA (Arkansas, Florida, Georgia, North Carolina).

Central America and Caribbean: Belize, Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, Grenada, Guadeloupe, Guatemala, Haiti, Honduras, Jamaica, Martinique, Nicaragua, Panama, Puerto Rico, St. Lucia, St. Vincent and Grenadines, Trinidad and Tobago.

South America: Argentina, Brazil, Chile, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela.

Oceania: American Samoa, Australia (New South Wales, Northern Territory, Queensland, South Australia, Western Australia), Cook Islands, Fiji, French Polynesia, Guam, Micronesia, New Caledonia, New Zealand, Papua New Guinea, Tonga, Vanuatu, Western Samoa.

Separate information is available for race 2 of P. solanacearum which specifically attacks banana, causing Moko disease, a threat to banana production in Mediterranean countries. As Moko disease has been reported in Indonesia (EPPO RS 94/177), its distribution list can be modified as follows.

EPPO Distribution List: *Pseudomonas solanacearum* race 2 (Moko disease of banana)

EPPO region: Libya (potential EPPO country)

Asia: India, Indonesia, Malaysia, Philippines, Sri Lanka

Africa: Libya, Sierra Leone, Somalia

North America: Mexico

Central America and Caribbean: Belize, Costa Rica, Grenada, Guatemala, Guyana, Honduras, Nicaragua, El Salvador, Trinidad and Tobago

South America: Argentina, Colombia, Ecuador, Peru, Paraguay, Suriname, Venezuela

These distribution lists replace all previous published EPPO Distribution Lists on *Pseudomonas solanacearum*!

Source: **EPPO Secretariat (1994-10)**

94/228 **VIRUSES/MLO...Viruses and virus-like diseases liable to be carried by strawberry germplasm material**

In the FAO/IPGRI Technical guidelines for the safe movement of small fruit germplasm, in particular, viruses and virus-like diseases liable to be carried by strawberry germplasm are described. The main quarantine diseases of strawberry listed by EPPO are included, but some more unusual ones are also mentioned (marked with an asterisk and briefly described below).

arabis mosaic nepovirus (EU Annex II/A2)
aster yellows MLO
chlorotic fleck*
fragaria chiloensis ilarvirus*
June yellows*
leaf roll*
pallidosis disease*
raspberry ringspot nepovirus (EPPO A2 quarantine pest)
strawberry crinkle rhabdovirus (EU Annex II/A2)
strawberry green petal MLO
strawberry latent C disease (EPPO A1 quarantine pest)
strawberry latent ringspot nepovirus (EU Annex II/A2)
strawberry mild yellow-edge disease (EU Annex II/A2)
strawberry mottle virus
strawberry pseudo mild yellow-edge carlavirus
strawberry vein banding caulimovirus (EPPO A2 quarantine pest)
strawberry witches' broom MLO (EPPO A1 quarantine pest)
tobacco streak ilarvirus
tomato black ring nepovirus (EU Annex II/A2)
tomato ringspot nepovirus (EPPO A2 quarantine pest)
vein yellowing*

Chlorotic fleck: This disease is probably caused by a virus and is latent in most cultivars. It induces chlorotic fleck symptoms on the indicator *Fragaria vesca*. It has been reported only in Louisiana in USA. It can be experimentally transmitted to *F. vesca* and *F. virginiana* by leaflet grafting and *Aphis gossypii*, but not by mechanical transmission.

Fragaria chiloensis ilarvirus: This virus was isolated from wild *Fragaria chiloensis* plants imported into USA from Chile, and described in 1993. Fragaria chiloensis ilarvirus is symptomless on *F. chiloensis*. The virus has quasi-isometric particles of 21.4 nm in diameter and bacilliform particles (up to 57 nm long) have also been reported. This virus seems to be limited to Chile, in the Andes and coastal mountain areas. It can be transmitted through pollen and seed. However, its host range and vectors are currently unknown and it is not clear whether the virus is a potentially important pathogen of cultivated strawberry.

June yellows: This strawberry disorder is not graft-transmissible. The causal agent is still unknown but groups of dsRNA have been associated with symptoms of June yellows. Diseased strawberry plants develop clearly delimited, unusually sectorial, chlorotic areas. Symptoms diminish in warm weather. Usually, affected plants become stunted over a few seasons and die prematurely. This disorder is observed world-wide and transmitted by seeds and vegetative propagation, but not by grafting, sap inoculation or vectors. In addition, June yellows has not been eliminated by thermotherapy or meristem tip culture. However, the EPPO Panel on certification of pathogen-tested fruit crops has considered that June yellows was a genetic disorder.

Leaf roll: In cultivated strawberries, the symptoms are characterized by downward rolling of leaflet margins. Leaves are chlorotic, rugose with vein clearing. This disorder of unknown etiology has only been observed in the northeastern part of North America and Kazakhstan. The disease can be transmitted by grafting but not by mechanical inoculation, and is not eliminated by thermotherapy.

Pallidosis disease: The causal agent of this disease has not been characterized but is thought to be a virus. The disease is associated with several high molecular weight dsRNA bands. The pathogen is either latent or causes very mild symptoms on strawberry. It causes epinasty, distortion, chlorosis and dwarfing in graft-inoculated *F. virginiana* clones UC 10 and UC 11. Pallidosis has been reported from Australia, Canada and USA. This disease is seed borne in *F. vesca*.

Vein yellowing: This disease is thought to be caused by a virus and induces in cultivated strawberries very striking symptoms of vein yellowing. Symptoms are obvious in spring and autumn but are masked in summer. Apparently, the disease is not damaging to infected plants. It has only been reported in Japan. The disease can be transmitted by leaflet grafting but not by mechanical means.

Source: Diekmann, M.; Frison, E.A.; Putter, T. (eds) (1994) FAO/IPGRI Technical Guidelines for the safe movement of small fruit germplasm, FAO/IPGRI, Rome, 13-45.

94/229 **SYLRSX/TMBRXX...**Tomato black ring and strawberry latent ringspot nepoviruses are present in Czech Republic

In Czech Republic, the presence of tomato black ring and strawberry latent ringspot nepoviruses (both mentioned in EU Annex II/A2) have been detected by ELISA on leaf samples of raspberry (*Rubus idaeus*). The samples were collected in spring 1990 near Prague. Arabis mosaic nepovirus (EPPO A2 quarantine pest) has also been detected.

Source: Smrcka, L. (1993) The occurrence of arabis mosaic, tomato black ring and strawberry latent ringspot nepoviruses and cucumber mosaic cucumovirus in raspberry (*Rubus idaeus*) near Prague. **Ochrana Rostlin, 29 (2), 87-92.**

Additional key words: detailed record.

94/230 SYCXXX...EPPO Distribution List for strawberry crinkle rhabdovirus

Due to detailed data provided by countries during the validation of geographical information, and information on the occurrence of strawberry crinkle rhabdovirus (EU Annex II/A2) in China (RS 94/176), its distribution list can be modified as follows.

EPPO Distribution List: strawberry crinkle rhabdovirus

SCrV occurs world-wide, wherever strawberry aphids of the genus *Chaetosiphon* are found on strawberry (Frazier *et al.*, 1988). Its distribution thus probably covers more countries than are specifically listed below, including countries in Europe.

EPPO region: Belgium, Bulgaria, Czech Republic (few reports), France, Germany (locally), Israel, Italy (widespread), Netherlands, Poland (few reports), UK (widespread), Yugoslavia.

Asia: China, Israel, Japan, Kazakhstan.

Africa: South Africa (few reports).

North America: Canada, USA.

South America: Chile.

Oceania: Australia (locally), New Zealand (few reports).

This distribution list replaces all previous published EPPO Distribution Lists on strawberry crinkle rhabdovirus !

Source: **EPPO Secretariat, 1994-10.**

94/231 SYLRSX...EPPO Distribution List for strawberry latent ringspot nepovirus

Due to modifications sent by several countries during the validation of geographical information, data concerning Czech Republic and Turkey (EPPO RS 94/202), the distribution list of strawberry latent ringspot nepovirus (EU Annex II/A2) can be modified as follows.

EPPO Distribution List: Strawberry latent ringspot nepovirus

SLRSV is a European virus which has to a limited extent spread to other continents.

EPPO region: Belgium, Czech Republic (few reports), Finland, France, Germany (few reports), Ireland (locally),,Italy (found in the past but not established), Luxembourg, Netherlands (locally), Poland (locally), Portugal, Romania, Switzerland, Spain, Turkey (locally), UK (locally), Yugoslavia. Probably throughout western Europe.

Africa: South Africa (found in the past but not established)

North America: Canada (locally), USA (one record only in California).

Oceania: Few reports in Australia and New Zealand.

This distribution list replaces all previous published EPPO Distribution Lists on Strawberry latent ringspot nepovirus !

Source: **EPPO Secretariat, 1994-10.**

94/232 **SYMYEX...EPPO Distribution List for strawberry mild yellow edge disease**

Due to the record of strawberry mild yellow edge disease (EU Annex II/A2) in China (EPPO RS 94/176) and new information provided by several countries during the validation of geographical distribution, its distribution list can be modified as follows. However, in this distribution list no specific reference is made to strawberry mild yellow edge luteovirus and strawberry mild yellow edge associated potexvirus, as in many cases, details on the virus(es) present are not given. Some clarification on this point would be needed in the future.

EPPO Distribution List: Strawberry mild yellow edge disease

Strawberry mild yellow edge is one of the widespread and common virus diseases in cultivated strawberries.

EPPO region: Throughout western Europe, specifically recorded in Belgium, Bulgaria, Czech Republic, France, Germany (in this case strawberry mild yellow edge associated potexvirus was most constantly mound with the disease, but strawberry mild yellow edge luteovirus was also present), Hungary (unconfirmed), Ireland, Israel, Italy, Luxembourg, Poland (found in the past but not established), Switzerland (unconfirmed), UK.

Asia: China, Israel, Japan, Kazakhstan.

Africa: South Africa (few reports).

North America: Canada (report not yet confirmed of strawberry mild yellow edge associated potexvirus), USA.

South America: Chile (few reports), Paraguay.

Oceania: Australia, New Zealand.

This distribution list replaces all previous published EPPO Distribution Lists on Strawberry mild yellow edge disease !

Source: **EPPO Secretariat, 1994-10**

94/233 SYVBXX...EPPO Distribution List for strawberry veinbanding caulimovirus

Due to detailed information provided by countries during the validation of geographical data, and information on the occurrence of strawberry veinbanding caulimovirus (EPPO A2 quarantine pest) in China (EPPO RS 94/176), its distribution list can be modified as follows.

EPPO Distribution List: strawberry veinbanding caulimovirus

EPPO region: Czech Republic (few reports), Denmark (unconfirmed), Germany (unconfirmed), Hungary (locally), Ireland (locally), Italy (locally), Norway (unconfirmed) and Russia (Asiatic parts), Yugoslavia. Concerning Denmark and Norway, the virus was found on strawberry plants exported from Denmark to Norway, but Denmark reported that this virus has never been detected in strawberry plants inside or outside the compulsory certification system (1991, RS 515/04 and 1992, RS 519/03).

Asia: China, Japan (few reports), Russia (Asiatic parts).

North America: Canada (British Columbia), USA (found in two distinct zones, one along the east coast, the other on the west coast).

South America: Brazil, Chile (few reports).

Oceania: Australia (locally).

This distribution list replaces all previous published EPPO Distribution Lists on strawberry veinbanding caulimovirus !

Source: **EPPO Secretariat, 1994-10.**

94/234 TMBRXX...EPPO Distribution List for Tomato black ring nepovirus

Due to detailed data provided by countries during the validation of geographical distribution of tomato black ring and information concerning Czech Republic and Turkey (EPPO RS 94/202), its distribution list can be modified as follows.

EPPO Distribution List: Tomato black ring nepovirus

EPPO region: Czech Republic (locally), Denmark (unconfirmed), Finland (few reports), France, Germany (few reports), Greece, Hungary (locally), Ireland (locally), Italy (unconfirmed), Morocco (unconfirmed), Moldova (potential EPPO country), Netherlands (few reports), Norway (locally), Poland (locally), Romania, Russia, Sweden (few reports), Turkey (locally), UK (few reports) and Yugoslavia.

This distribution list replaces all previous published EPPO Distribution Lists on Tomato black ring nepovirus !

Source: **EPPO Secretariat, 1994-10.**

94/235 IPSXAM/RU...Limited distribution of *Ips amitinus* in Russia

Ips amitinus (EPPO A2 quarantine pest) occurs only in the extreme west of Russia, in Kaliningrad region (i.e. the detached area lying between Poland and Lithuania, formerly known as East Prussia). In EPPO Reporting Service 94/192, this was mistakenly given as 'East Russia'.

Source: **EPPO Secretariat, 1994-10.**

94/236 EPPO...PQR - release of version 3.0

A new version of EPPO's phytosanitary information system PQR has just been released. It has the following new features:

1) pest distribution can now be listed for subnational areas of certain countries, either large countries (Australia, Brazil, Canada, China, India, Russia, USA) or countries which include islands (France, Greece, Indonesia, Italy, Japan, Malaysia, Portugal, Spain, United Kingdom) ;
2) information has been added on the pests recently added to the Annexes of EU Directive 77/93 which were not included in 'Quarantine Pests for Europe' ;
3) records obtained by CABI by bibliographic searching, as part of its joint contract with EPPO for the EU, have been added where PQR did not already have them ;
4) new data validation has been provided by Czech Republic, Hungary, Ireland and USA ;
5) all new information from the EPPO Reporting Service has been added.

PQR Version 3.0 is available on diskette from EPPO Headquarters, 1 rue Le Nôtre, 75016 Paris, France.

Source: **EPPO Secretariat, 1994-11.**