EPPO

Reporting

Service

Paris, 1998-06-01 **Reporting Service 1998, No. 6**

CONTENTS

98/100 New data on quarantine pests

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

New geographical records

Field experiments were carried out in Peru to evaluate the effectiveness of several fungicides against *Puccinia horiana* (EPPO A2 quarantine pest). The EPPO Secretariat had previously no data on the occurrence of *P. horiana* in Peru. Review of Plant Pathology, 77(6), p 700 (5163).

Colletotrichum acutatum (EU Annex II/A2) is reported for the first time on strawberry in Venezuela. Review of Plant Pathology, 77(5), p 560 (4118).

Detailed records

In China, apple rust ring (?apple russet ring) and apple mosaic ilarvirus (EPPO A2 quarantine pest on *Rubus*) were the most common viruses found in the apple-producing areas, and apple green crinkle virus was reported in Liaoning, Gansu, Henan and Shaanxi. On pear, the most important diseases were vein yellow (?apple stem pitting) and ring mosaic (?apple chlorotic leaf spot trichovirus). Review of Plant Pathology, 77(5), p 508 (3743).

A survey on citrus tristeza closterovirus (CTV - EPPO A2 quarantine pest) was carried out in French Polynesia in 1995 and 1996. Results showed that CTV is present in Tahiti, Moorea, Raiatea, Huahine, Tahaa, Bora Bora and Maupiti. The vector *Toxoptera citricida* (EPPO A1 quarantine pest) was present on these islands (except in Bora Bora). The islands of the Marquises, Australes, Tuamotu archipelagos were found free from CTV. Review of Plant Pathology, 77(5), p 565-566 (4163).

In China in 1996, *Helicoverpa armigera* (EPPO A2 quarantine pest) continued to be the most serious pest of cotton and other crops. It occurred at medium levels in most areas in North China (Yellow River valley) and in much smaller populations than in 1992 and 1993. However, population levels were very high in Xinjiang (north west cotton region) and Jiangsu (Yangtze river valley). Review of Agricultural Entomology, 86(6), p 735-736 (5803).

Tomato yellow leaf curl geminivirus (EPPO A2 quarantine pest) occurs on tomato in Assam, India. Review of Plant Pathology, 77(6), p 670 (4927).

New vector

The castor bean whitefly *Trialeurodes ricini* has recently been introduced into Egypt and is now a widespread pest. Studies were carried out on its ability to transmit tomato yellow leaf curl geminivirus (EPPO A2 quarantine pest). It was found by using PCR that the virus could be detected in *Trialeurodes ricini*. Transmission studies showed that 50 % of adults collected from castor bean acquired the virus after 10 h exposure to infected tomato plants. The rate of transmission increased as the inoculation access period was lengthened, and reached a maximum after 4 h. Review of Plant Pathology, 77(5), p 573 (4222).

Source: **EPPO Secretariat, 1998-06.**

Additional key words: new records, detailed records

Computer codes: APPXXX, CSTXXX, COLLAC, HELIAR, MISRA, PUCCHN, TYLCV, TOXOCI, CN, IN, PE, PF, VE

98/101 EPPO Distribution List for *Anthonomus eugenii*

The pepper weevil, *Anthonomus eugenii* (EPPO A1 quarantine pest) is a serious pest of sweet pepper (*Capsicum annuum*) in Central America and the southern USA, which can also attack *C. frutescens*, aubergines and wild species of *Capsicum* and *Solanum*. By browsing through Web sites, the EPPO Secretariat has noted that some countries were omitted in its distribution list.

A. eugenii occurs in Costa Rica (Coto, 1996). In 1995, serious outbreaks were reported from pepper production areas of northern Costa Rica (in Alajuela and Heredia) (McDonald, 1997).

In USA, *A. eugenii* also occurs in Hawaii (Riley, 1997; Web site of University of Hawaii), it may also be found occasionally in North Carolina, South Carolina and Georgia, but these infestations generally result when weevils are inadvertently transported on plants with small fruits or picking sacks from other infested areas (Sorensen & Baker, 1994).

EPPO Distribution List: *Anthonomus eugenii*

EPPO region: Absent.

North America: Canada (two incidents in British Columbia, one in a retail outlet, one in a glasshouse, both eradicated), Mexico (especially in north), USA (Arizona, California, Florida, Georgia, Hawaii, Louisiana, New Mexico, North Carolina, South Carolina, Texas).

Central America and Caribbean: Costa Rica, El Salvador, Guatemala, Honduras, Puerto Rico.

Source: Sorensen, K.A.; Baker, J.R. (Eds) (1994) Insects and related pests of vegetables. Some important, common, and potential pests in the southeastern United States. p 102-103.
Most of the content of this book is also available on the Web:
http://impwww.ncsu.edu/AG295/html/pepper_weevil.htm

Web Sites on INTERNET (pictures can be viewed on many of them)
McDonald, R.S. (1997) An Integrated Pest Management System in commercial Tabasco pepper for the pepper weevil, *Anthonomus eugenii* Cano (Coleoptera: Cucurlionidae) in Costa Rica.
http://www.cbie.ca/cida/cp7421.htm

Coto, D. (1996) Hoja Tecnica. El Picudo del Chile (*Anthonomus eugenii* Cano) su reconocimiento y posible manejo.
http://www.catie.arc.cr/~cicmip/rev42/ht19.html

Riley, D.G. (1997) The pepper weevil and its management. Texas Agricultural Extension Service.
http://entowww.tamu.edu/extension/bulletins/1-5069.html

Farmer's Bookshelf. An information system of crops in Hawaii. Department of Horticulture. University of Hawaii at Manoa.
http://agrss.sherman.hawaii.edu/booshelf/pepper/pepper2 htm

Additional key words: new record, detailed record **Computer codes:** ANTHEU, CR, US

98/102 Details on the geographical distribution of *Conotrachelus nenuphar* and *Anthonomus grandis* in USA

The Web site of NAPIS (US National Pest Information System) shows distribution maps for some pests in USA. The EPPO Secretariat has noted the following new details:

Anthonomus grandis (EPPO A1 quarantine pest) occurs in New Mexico (map dated 1998-04-28).
Conotrachelus nenuphar (EPPO A1 quarantine pest) occurs in Utah (map dated 1998-05-07). Eradication programmes are being carried out in Florida, Georgia and South Carolina.

Many 'data sheets' and pictures are provided on these two pests, mostly by American Universities or extension services through Internet. The following addresses can be useful:
A. grandis
http://ceris.purdue.edu/napis/pests/bw/news/history.mo
http://ceris.purdue.edu/napis/pests/bw/facts.txt
http://entweb.clemson.edu/caps/state/survey/eradicat/bw/bw.htm
http://www.azlink.com/~azcotton/weevil.htm
C. nenuphar
http://www.uky.edu/Agriculture/Entomology/entfacts/fruit/ef202.htm
http://www.msue.msu.edu/msue/imp/modc3/05289604.html

http://ipmwww.ncsu.edu/small_fruit/curculio.html
http://res.agr.ca/kentville/pubs/fact9-33.htm
http://ohioline.ag.ohio-state.edu/hyg-fact/2000/2043.html
http://ctr.uvm.edu/ctr/el/el97.htm
http://www.cce.cornell.edu/factsheets/home/pests/old/fr.pst.plumcurc.html
http://www.nysaes.cornell.edu/impnet/ny/fruits/FruitFS/plumcurc.html

Source: **NAPIS Web Site on INTERNET**
http://ceris.perdue.edu/napis/pests/bw/mgif/bwall.gif (*A. grandis*)
http://ceris.perdue.edu/napis/pests/pc/mgif/pcall.gif (*C. nenuphar*)

Additional key words: new detailed records. **Computer codes:** ANTHGR, CONHNE, US

98/103 First report of tomato mottle geminivirus in Mexico

Geminiviruses transmitted by *Bemisia tabaci* (EPPO A2 quarantine pest) are a major constraint on tomato production in Mexico. In Yucatan State, where serious losses can be observed, particularly on late season tomato crops, studies were carried out to characterize the geminiviruses present. Four tomato plants showing typical symptoms of geminivirus infection (stunting, leaf mottling, leaf deformation) were collected in a single field from Yucatan, in 1996. The occurrence of tomato mottle geminivirus (EPPO A1 quarantine pest) was demonstrated by molecular analysis. In one sample, another bipartite geminivirus was also detected in mixed infection with tomato mottle geminivirus. This is the first report of tomato mottle geminivirus in Mexico.

Source: Garrido-Ramirez, E.R.; Gilbertson, R.L. (1998) First report of tomato mottle geminivirus infecting tomatoes in Yucatan, Mexico.
Plant Disease, 82(5), p 592.

Additional key words: new record **Computer codes:** ToMoV, MX

98/104 Further studies on the non-transmission of plum pox potyvirus through seeds

Seed transmission of plum pox potyvirus (PPV - EPPO A2 quarantine pest) has been re-examined (Myrta *et al.*, 1998), using seeds from apricot and plum cultivars infected with well-characterised PPV isolates. The question of seed transmission of PPV is raised as conflicting results have been obtained. The authors recalled that seed transmission was reported in apricot in Hungary, by Szirmai (1961), in Romania in peach and plums (Savulescu & Macovei, 1965; Coman & Cociu, 1976) and in Hungary by Németh & Kölber (1982). However, these findings were not confirmed in many other studies. Jordovic (1963) in

Yugoslavia and Schimanski *et al*. (1988) in Germany could not detect PPV in seedlings grown from infected seeds of plum and apricot. In Italy, Eyard *et al*. (1991, see also EPPO RS 96/174) and Triolo *et al*. (1993) found no PPV transmission through seeds of 4 apricot cultivars, and Dulic-Markovic and Rankovic (1997) found similar results in Yugoslavia with apricot and peach.

In the present studies, PPV-infected apricots (cv. Tirynthos from south-eastern Italy and Greece; cv. Bebeco from Greece, cv. Cafona from central Italy) and plums (cv. Pistilka from Albania) were used. Seeds were collected from mature symptomatic fruits, and PPV isolates infecting mother trees were identified by DASI-ELISA. Serological tests were done immediately after seed collection (on approximately half of each seed lot, on seed coats, cotyledons and embryos), during germination and on one year-old seedlings. Characterization of isolates showed that both PPV-M and PPV-D were present in the tested trees (PPV-M in Cafona, Bebeco and Tirynthos (GR); PPV-D in cv. Tirynthos (IT); mixture in plum cv. Pistilka). ELISA tests showed that mature seeds of all cultivars had a high rate of infection (e.g. 70% for plum cv. Pistilka, 89% for apricot cv. Tyrinthos (GR), 94% Bebeco, 95% Tyrinthos (IT), and 97% Cafona). PPV was almost always found in the seed coat, it was only detected in two seeds out of 936 in cotyledons and was never found in embryos. During seed germination, the number of positive seed coats was greatly reduced and none of the plumules and radicules of seeds with infected cotyledons was positive. No PPV symptoms were observed in the leaves of the seedlings, and all ELISA tests were negative in one-year old seedlings. Again, these studies demonstrate that PPV is highly unlikely to be transmitted by seeds.

Source:

Coman, T.; Cociu, V. (1976) Transmission de la sharka par le pollen et par les graines. **Bulletin d'Information Sharka, no. 2, 15-21.**

Dulic-Markovic, I.; Rankovic, M. (1997) An experiment with plum pox virus transmission by apricot and peach seed. **Proceedings of the Middle European Meeting 96 on Plum Pox, Budapest, 117-119.**

Eynar, A.; Roggero, P.; Lenzi, R.; Conti, M.; Milne, R.G. (1991) Test for pollen and seed transmission of plum pox virus (Sharka) in two apricot cultivars. **Advances in Horticultural Science, 3, 104-106.**

Myrta, A.; Di Terlizzi, B.; Savino, V. (1998) Study on the transmission of plum pox potyvirus through seeds. **Phytopathologia Mediterranea, 37, 41-44.**

Németh, M.; Kölber, M. (1982) Additional evidence on seed transmission of plum pox potyvirus in apricot, peach and plum proved by ELISA. **Acta Horticulturae, 130, 293-299.**

Savulescu, A.; Macovei, A. (1965) Studies on the sharka (plum pox) and related pattern line virus. **Zastita Bilja, 16- 357-365.**

Schimanski, H.H.; Gruntzig, M.; fuchs, E. (1988) Non transmission of the plum pox virus in plum and apricot seed source clones. **Zentralblatt Mikrobiologie, 143, 121-123.**

Szirmai, J. (1961) Report on fruit-tree virus diseases in Hungary. **T. Planteavl (Saernummer), 65, 220-229.**

Triolo, E.; Ginanni, M.; Materazzi, A.; Paolucci, A. (1993) Further evidence of the non-transmission through seed of plum pox virus in apricot. **Advances in Horticultural Science, 7, 109-111.**

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

98/105 Comparison of PCR and monoclonal antibodies to identify D and M serotypes of plum pox potyvirus

The isolates of plum pox potyvirus (EPPO A2 quarantine pest) can be divided into four groups separated by serological, molecular and epidemiological properties. By using polyclonal antibodies, two major serotypes were first identified: PPV-D (Dideron) and PPV-M (Marcus). Clear epidemiological differences are observed in the field between them: PPV-M isolates appear to attack peach more easily and spread more rapidly than PPV-D. Monoclonal antibodies and PCR were later developed to differentiate these two types of isolates. Two other minor groups of isolates have been identified: PPV-El Amar which shows different serological properties, and PPV-SoC (cherry) which occurs on sweet and sour cherry. Large scale studies were carried out to compare the use of monoclonal antibodies and PCR to identify the isolates belonging to these four groups. 84 isolates were studied, covering the whole host range of PPV and its geographical distribution. An excellent correlation between the results given by ELISA-DASI (with PPV-D and PPV-M specific monoclonal antibodies) and by PCR was obtained. Very few exceptions were observed, and these corresponded to unusual isolates. However, isolates belonging to PPV-El Amar and PPV-SoC gave diverging results, indicating that the current typing assays are not suitable for them.

Source: Candresse, T.; Cambra, M.; Dallot, S.; Lanneau, M.; Asensio, M.; Morris, M.T.; Revers, F.; Macquaire, G.; Olmos, A.; Boscia, D.; Quiot, J.B.; Dunez, J. (1998) Comparison of monoclonal antibodies and polymerase chain reaction assays for the typing of isolates belonging to the D and M serotypes of plum pox potyvirus. **Phytopathology, 88(3), 198-212.**

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

98/106 Characterization of plum pox isolates in Hungary

Studies were carried out in Hungary to characterize plum pox potyvirus (EPPO A2 quarantine pest) isolates. 15 isolates were tested by using ELISA with monoclonal antibodies, and it was found that both M (Marcus) and D (Dideron) serotypes are present in Hungary. It was also found that a few isolates showed intermediate relationships between the two main serotypes. It was felt that molecular analysis of these isolates was needed.

Source: Pribék, D.; Gáborjány, R. (1997) Hungarian plum pox virus isolates represent different serotypes. **Acta Phytopathologica et Entomologica Hungarica, 32(3-4), 281-288.**

Additional key words: epidemiology **Computer codes:** PPV, HU

98/107 Squash yellow leaf curl virus: a new poty-like virus transmitted by *Bemisia tabaci* in Oman

A severe virus disease affecting courgette was observed in Oman. Symptoms are characterized by yellow spots, veinal yellowing and leaf curling. It was noted that these symptoms are not very different from those induced by whitefly-transmitted filamentous viruses reported on cucurbits (which include so far, closteroviruses, potyviruses, carlaviruses and DNA-containing rod-shaped viruses). The virus found in diseased plants could easily be transmitted by mechanical inoculation and by *Bemisia tabaci* (EPPO A2 quarantine pest). Host range studies (28 plant species from 10 families) indicated that the virus is limited to courgette, pumpkin and *Luffa aegyptiaca*. By using electron microscopy, flexuous particles of 700 to 750 nm long, and pinwheel-like inclusion bodies could be observed in affected plant material. Serological studies revealed relationships with watermelon mosaic virus-2 potyvirus, but not with zucchini yellow mosaic potyvirus or papaya ringspot potyvirus (watermelon strain). The authors felt that the causal agent of the disease observed in Oman is a distinct virus (maybe a potyvirus) which is tentatively named squash yellow leaf curl virus.

Source: Zouba, A.A.; Lopez, M.V.; Anger, H. (1998) Squash yellow leaf curl virus: a new whitefly-transmitted poty-like virus.
Plant Disease, 85(5), 475-478.

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

98/108 Variability among American and European isolates of strawberry vein banding caulimovirus

In Czechia, molecular studies (coat protein sequence homology) have been carried out to determine the variability among isolates of strawberry vein banding caulimovirus (EPPO A2 quarantine pest). The study included 5 different isolates: one from USA and five from Europe (Czechia (2), Germany, Norway). Results showed that no significant differences could be found between the isolates. The authors felt that European isolates probably originate from a common ancestor and may have been introduced to Europe from America with planting or breeding material. Finally, they noted that the use of molecular techniques (such as PCR or hybridization), in addition to grafting on indicator plants, would be a very useful diagnostic tool for quarantine and certification purposes.

EPPO note: strawberry vein banding caulimovirus has been found in a few places in Czechia, but the Plant Protection Service of Germany and Norway have stated that the virus has so far never been found in production fields of strawberry. The isolate from Germany (cv. Chandler from Weinsberg near Stuttgart) came from plants which had been imported. The Norwegian

isolate was found on cv. Mimek in the south of the country, but plants had been imported from Denmark for scientific purposes (Denmark then stated that the virus has never been found in its strawberry production).

Source: Mráz, I.; Petrzik, K.; Šíp, M.; Fránová-Honetslegrová, J. (1998) Variability in coat protein sequence homology among American and European sources of strawberry vein banding virus.
Plant Disease, 85(2), 544-546.

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

98/109 Outbreak of Mal de Río Cuarto in Argentina

'Mal de Río Cuarto' is the most important virus disease of maize in Argentina. It was first detected in the department Río Cuarto, in the Province of Cordoba. The disease is currently spreading to most maize-growing areas of Argentina. It is also reported to be present in maize-growing regions in the south of Brazil and Uruguay. A recent outbreak took place in Argentina and it was estimated that in 1996-1997, approximately 300,000 ha of maize were affected and yield losses reached 120 million USD. 'Mal de Río Cuarto' is caused by a fijivirus, whicht was initially thought to be a geographic strain of the maize rough dwarf fijivirus (which occurs also in the Mediterranean region), as symptoms are similar. But molecular hybridization tests indicated that they are most probably distinct viruses. 'Mal de Río Cuarto' is transmitted by the insect *Delphacodes kuscheli* (Homoptera: Delphacidae) in a persistent way, but is apparently not transmitted by seeds. The virus has been detected in many weeds of the families Poaceae and Cyperaceae (e.g. *Arundo donax*, *Cenchrus echinatus*, *Cyperus cayennensis*, *Cyperus rotundus*, *Cynodon dactylon*, *Digitaria sanguinalis*, *Echinochloa colonum*, *Eleusine indica*, *Eragrostis virescens*, *Setaria geniculata*, *Setaria verticillata*, *Sorghum halepense*), in sorghum (*Sorghum bicolor*), millet (*Panicum miliaceum*), foxtail millet (*Setaria italica*) and oat (*Avena sativa*). Recently, it has been shown that wheat could be affected by the virus (up to 24 % disease incidence observed in the endemic disease area), and that it could play a double role in the epidemiology of the disease, as a virus reservoir and as a preferred host for the development of the vector *D. kuscheli*.

Source: Lenardon, S.L.; March, G.J.; Nome, S.F.; Ornaghi, J.A. (1998) Recent outbreak of 'Mal de Rio Cuarto' virus on corn in Argentina.
Plant Disease, 82(4), p 448.

Rodriguez Pardina, P.E.; Giménez Pecci, M.P.; Laguna, I.G.; Truol, G. (1998) Wheat: a new natural host for the Mal de Río Cuarto virus in the endemic disease area, Río Cuarto, Córdoba Province, Argentina.
Plant Disease, 82(2), 149-152.

Further reading on INTERNET
http://www.hq.satlink.com/IPP/iffive/jica/english/mai.htm
http://www.unc.edu.ar/temp
http://www.inta.gov.ar/proynac/80001.htm

Additional key words: outbreak **Computer codes:** AR

98/110 Influence of sowing dates on *Pseudomonas syringae* pv. *pisi*

Pseudomonas syringae pv. *pisi* (EPPO A2 quarantine pest) was first found in United Kingdom in 1985, and statutory action was taken in 1987 to eliminate this pathogen by seed testing and notification of infection in field peas. However, these statutory controls were removed in 1993 due to the standardization of phytosanitary regulations within the European Union. During 1995, *P. syringae* pv. *pisi* was reported in several crops of winter peas in United Kingdom, and in particular it occurred in a field trial which was used to evaluate the influence of sowing dates on the epidemiology of the disease. The disease development in the winter cultivars Rafale, Frilene and Froidure was compared with that in the spring cultivars Baccara, Conquest and Bohatyr, each sown on six dates (October, November, December, mid-March, late-March, April). The results showed that the disease incidence had reached 100 % plants in all treatments by mid-July, and that the disease was more severe on peas sown in autumn and winter than in spring. It was also found that spring cultivars are affected more severely than winter cultivars. The initial source of the infection is not certain, but is thought to be related with infected seeds. Other studies on seed samples have demonstrated that since the removal of statutory controls, the incidence of seed infection has increased (it reached 36.5% of tested samples in 1994). The authors noted that in the absence of statutory controls, the level of seed infection is likely to have increased to date, particularly on winter peas.

Source: Mansfield, P.J.; Wilson, D.W.; Heath, M.C.; Saunders, P.J. (1997) Development of pea bacterial blight caused by *Pseudomonas syringae* pv. *pisi* in winter and spring cultivars of combining peas (*Pisum sativum*) with different sowing dates.
Annals of applied Biology, 131(2), 245-258.

Additional key words: detailed record, epidemiology **Computer codes:** PSDMPI, GB

98/111 Association of a phloem-limited bacterium with a new disease of cucurbits

A new disease has been observed since 1991 on cucurbits in central Texas and Oklahoma (US). This disease called yellow vine causes decline and death of watermelon, melon, courgette and pumpkin. Symptoms are characterized by leaf yellowing, phloem discoloration and plant collapse. Despite many investigations (isolation attempts, transmission tests, serological assays, DNA hybridization) it was not possible to find a consistent relationship between the expression of disease symptoms and the presence of a particular microorganism or virus in the plant. However, electron microscopy consistently show the presence of a bacterium in the phloem. It is a rod-shaped bacterium (0.25 to 0.5 µm width; 1.0 to 3.0 µm length), surrounded by a triple-layered cell envelope. Further studies are needed to better characterize this phloem-limited bacterium and try to clarify its role in the yellow vine disease of cucurbits.

Source: Bruton, B.D.; Fletcher, J.; Pair, S.D.; Shaw, M.; Sittertz-Bhatkar, H. (1998) Association of a phloem-limited bacterium with yellow vine disease in cucurbits.
Plant Disease, 82(5), 512-520.

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

98/112 *Xylella fastidiosa* can attack *Quercus laevis* and *Q. incana*

In 1992-1993, a survey on more than 200 oak trees confirmed the widespread occurrence of *Xylella fastidiosa* (EPPO A1 quarantine pest) in Florida (US). The bacterium was detected using ELISA in several oak species showing decline or symptoms of leaf scorch, and was also detected in a few cases in asymptomatic trees. The occurrence of *X. fastidiosa* in *Quercus laevis* and in *Q. incana* are reported for the first time. The pathogen was also found in *Q. falcata*, *Q. virginiana*, *Q. laurifolia*, and *Q. nigra*.

Source: Barnard, E.L.; Ash, E.C.; Hopkins, D.L.; McGovern, R.J. (1998) Distribution of *Xylella fastidiosa* in oaks in Florida and its association with growth decline in *Quercus laevis*.
Plant Disease, 82(5), 569-572.

Additional key words: new hosts **Computer codes:** XYLEFA

98/113 Specific PCR to detect European stone fruit yellows phytoplasma

A specific PCR assay has been developed in France to detect the European stone fruit yellows phytoplasma (ESFY - quarantine status under review). PCR primers were designed according to the partial sequence of a non-ribosomal genomic fragment of European stone fruit yellows phytoplasmas obtained by direct sequencing of a specific PCR product. With these primers, a specific, sensitive and reliable detection of ESFY can be achieved. No PCR products were obtained from healthy control or plants affected by various other phytoplasmas (apple proliferation and pear decline phytoplasmas). This new detection tool was tested on many samples representing all *Prunus* species grown in France (apricot, Japanese plum, European plum, peach, sweet cherry, almond) and collected from all *Prunus*-producing regions. Most samples were collected on trees showing symptoms of phytoplasma diseases. ESFY was detected in samples from 114 out of the 139 examined orchards. The presence of typical symptoms (e.g. off-season growth in winter and chlorotic leaf roll in summer) was highly correlated with the presence of ESFY (in 95% studied cases). In addition, ESFY was detected in 51% of samples derived from trees showing non-specific symptoms, this could mean that ESFY is more widespread in the orchards than previously thought. The authors have also found that for a large number of samples, ESFY could be detected in the aerial parts of the trees in winter which is particularly useful in routine detection procedures for quarantine and certification purposes (as multiplication material is sold as dormant budwood). It is also noted that ESFY has been detected for the first time in France in almond, but not in cherry although 12 trees had been sampled in the Molières region where 20 years ago a severe decline had been reported (Molières disease which is thought to be caused by ESFY).

Source: Jarausch, W.; Lansac, M.; Saillard, C.; Broquaire, J.M.; Dosba, F. (1998) PCR assay for specific detection of European stone fruit yellows phytoplasmas and its use for epidemiological studies in France.
European Journal of Plant Pathology, 104(1), 17-27.

Additional key words: new detection method

98/114 Further data on *Claviceps africana* (sorghum ergot)

As reported previously in EPPO RS 97/031, 97/073 and 97/119, sorghum ergot (also called sugary disease) caused by *Claviceps africana* is spreading in the Americas and Australia. Three species of *Claviceps* infecting sorghum have been described (their anamorph being in all cases *Sphacelia sorghi*): *Claviceps sorghi*, *C. africana* and an unnamed *Claviceps* sp. found on sorghum in Japan. Ergot of sorghum caused by *C. sorghi* was first observed in India in 1915, it occurs also in Myanmar, and the Philippines. In Africa, sorghum ergot was first observed in Kenya in 1924 and is now widespread in eastern, western and southern Africa. In 1991 with the first description of the teleomorph, the pathogen found in Africa was recognized as a separate species: *C. africana*. Recently, *C. africana* has been spreading very rapidly in the Americas, and in Australia, in countries where sorghum (*Sorghum bicolor*) is an important crop. The distribution list below gives details of its spread. *C. africana* attacks sorghum (*Sorghum bicolor*); but other *Sorghum* species (e.g. the weed *S. halepense*) and pearl millet (*Pennisetum glaucum*) can host the disease. Ergot attacks unfertilized ovaries and the two major symptoms are the presence of honeydew oozing from infected florets, and of fungal sphacelia or sclerotia between the glumes of infected florets. The disease is particularly damaging for the production of F1 hybrid seeds. The development of the disease is favoured by cool (approximately 19 °C), wet, cloudy weather during floret opening and from the onset of anthesis to fertilization. Its spread can be extremely rapid, as for example in Brazil, one month after the discovery of the first focus, it was found on 800,000 km². The disease cycle is quite complex but it is thought that the main means of dissemination is wind dispersal of secondary conidia. Secondary conidia are also produced on honeydew that drips and falls onto wet soils. They can also be dispersed during farming and postharvest operation. Sclerotia are present in infected seed lots and can also spread the disease. To control *C. africana*, cultural methods (appropriate dates of sowing, elimination of infected panicules, rotation, etc.), fungicide treatments (crop sprays with benomyl, propiconazole, seed treatment with thiram or captan) and seed processing (washing and drying to remove sclerotia) can be used. Further breeding research is needed to find sources of resistance to the disease.

Distribution List: *Claviceps africana*

EPPO region: absent.
Asia: Japan, Thailand, Yemen[#].
Africa: Angola[#], Botswana, Burundi[#], Ethiopia, Ghana[#], Kenya[#], Lesotho[#], Malawi[#], Mozambique[#], Nigeria, Rwanda, Senegal[#], South Africa, Swaziland, Tanzania[#], Uganda[#], Zambia, Zimbabwe.
North America: Mexico (first in Tamaulipas in 1997 – later in Guanajuato, Jalisco, Michoacan), USA (first in Texas in October 1997 and later in Kansas*, Georgia*, Nebraska*; it may be present in Mississippi (Zummo *et al*., 1998)).
Central America and Caribbean: Dominican Republic (1997), Honduras (end of 1996), Haiti*(1997), Jamaica (1997), Puerto Rico (1997).

South America: Argentina (mid-1996), Bolivia (mid-1996), Brazil (1995 - Goias, Minas Gerais, Sao Paulo), Colombia (end of 1996), Uruguay (mid-1996), Paraguay* (mid-1996), Venezuela (end of 1996).
Oceania: Australia (1996 in Queensland, then in New South Wales).

---

* new records corresponding to recent introductions.

new records according to the EPPO Secretariat, but the disease has been reported in these countries at least 10 years ago.

Source:

Bandyopadhyay, R.; Frederickson, D.E.; McLaren, N.W.; Odvody, G.N.; Ryley, M.J. (1998) Ergot: a new disease threat to sorghum in the Americas and Australia.
Plant Disease, 82(4), 356-367.

Isakeit, T.; Odvody, G.N.; Shelby, R.A. (1998) First report of Sorghum ergot caused by *Claviceps africana* in the United States
Plant Disease, 82(5), p 592.

Velasquez-Valle, R.; Narro-Sanchez, J.; Mora-Nolasco, R.; Odvody, G.N. (1998) Spread of ergot of Sorghum (*Claviceps africana*) in Central Mexico.
Plant Disease, 82(4), p 447.

Zummo, N.; Gourley, L.M.; Trevathan, L.E.; Gonzalez, M.S;; Dahlberg, J. (1998) Occurrence of ergot (sugary disease) incited by a *Sphacelia* sp. on Sorghum in Mississippi in 1997.
Plant Disease, 82(5), p 590.

Further reading and pictures on INTERNET
http://www.cgiar.org/icrisat/
http://www.ars-grin.gov/ars/SoAtlantic/Mayaguez/sorghumnews.html
http://www.pioneer.com/xweb/usa/txt/pio/company/high/sorgh.htm

Additional key words: new records **Computer codes:** CLAVSP

98/115 Genetic structure of *Ceratitis capitata* populations

Ceratitis capitata (EPPO A2 quarantine pest) is thought to originate from sub-Saharan Africa and has been introduced into several other parts of the world. It was reported from the Mediterranean region in the early 19th century, and was well established in the New World by the early 20th century. In continental USA, and more particularly in California, there is a debate on the following issues: 1) whether fruit fly populations in different years and localities represent independent infestations (single introduction of the pest followed by fluctuation of populations levels between detectable and non-detectable levels and dispersal) or new introduction events; 2) origin of the introduction(s). Studies were carried out on the variation of mtDNA using 3 restriction enzymes of more than 100 populations of *C. capitata* collected from South and Central America, USA, Mediterranean countries, sub-Saharan Africa and Australia. Results showed that the highest levels of mtDNA diversity are found in samples from the sub-Saharan region (8 different haplotypes), which supports the hypothesis of the origin of *C. capitata*. Lower levels were found in the Mediterranean region (2 haplotypes). In South and Central American populations, the situation is quite different, as results showed that in most countries populations are based on a single haplotype, which may differ from one country to another. This could reflect multiple introductions into the New World. However, it is felt that further studies are needed, in particular on the situation in USA, using additional molecular markers and behavioural characteristics, in order better to understand patterns of variation among populations of *C. capitata*.

Source: Gasparich, G.E.; Silva, J.G.; Han, H.Y.; McPheron, B.A.; Steck, G.J.; Sheppard, W.S. (1999) Population genetic structure of Mediterranean fruit fly (Diptera: Tephritidae) and implications for worldwide colonization patterns.
Annals of the Entomological Society of America, 90(6), 790-797.

Additional key words: genetics **Computer codes:** CERTCA

98/116 Potential efficacy of a natural compound (anethole) against *Ceratitis capitata*

Anethole is an aromatic ether present in high concentrations in the essential oil of fennel (*Foeniculum vulgare)*. Useful biological activity of this compound has been observed on pathogenic fungi, insects (Coleoptera, Diptera, Hymenoptera) and mites. During preliminary studies, it was observed that sugar solutions containing anethole were very attractive to *Ceratitis capitata* (EPPO A2 quarantine pest) and that their ingestion produced clear signs of systemic toxicity. Further laboratory studies were conducted in Italy to assess the efficacy of anethole mixed with three different commercial protein baits. High values of mortality (85% after 24 h) were obtained after oral administration to adults. A total inhibition of reproductive activity was also observed. The authors felt that their preliminary results are very promising, and further testing in the field is necessary.

Source: Bazzoni, E.; Sanna Passino, G.; Moretti, M.D.L.; Prota, R. (1997) Toxicity of anethole and its effects on egg production of *Ceratitis capitata* Wied. (Dipt., Tephritidae).
Annals of applied Biology, 131(3), 369-374.

Additional key words: control methods **Computer codes:** CERTCA

98/117 Publication on *Aphis gossypii*

A monograph (in French) entitled '*Aphis gossypii* Glover (Hemiptera, Aphididae)' has been recently published by J.P. Deguine and F. Leclant. It gives details on taxonomy, biology, host plants, natural enemies of *Aphis gossypii* and control methods. Special emphasis is given to problems caused by *A. gossypii* on cotton crops particularly in subsaharan Africa.

This publication: "Deguine, J.P.; Leclant, F. (1997) *Aphis gossypii* Glover (Hemiptera, Aphididae). Série les déprédateurs du cotonnier en Afrique tropicale et dans le reste du monde n°11, 113 pp" can be obtained at a price of 250 FRF from:

La librairie du CIRAD
Avenue d'Agropolis, BP 5035
34032 Montpellier Cedex 1, France
Tel: (33) 4 67 61 44 17
Fax: (33) 4 67 61 55 47

Source: **EPPO Secretariat, 1997-12**

Additional key words: publication **Computer codes:** APHIGO

EPPO *Reporting Service*

98/118 EPPO Electronic Documentation Service: many new files are available

All published chapters of the **EPPO/Council of Europe decision-making scheme for the environmental risk assessment of plant protection products** are now available as files (in English and French) from eppo_docs@eppo.fr (they are included in the directory PPPStandards – see instructions below).

Introduction (File name: Era01-e.doc (English), Era01-f.doc (French))
Guidance on identifying aspects of environmental concern (File name: Era02-e.doc (English), Era02-f.doc (French))
Soil (File name: Era03-e.doc (English), Era03-f.doc (French))
Ground water (File name: Era04-e.doc (English), Era04-f.doc (French))
Surface water (File name: Era05-e.doc (English), Era05-f.doc (French))
Aquatic organisms (File name: Era06-e.doc (English), Era06-f.doc (French))
Soil microflora (File name: Era07-e.doc (English), Era07-f.doc (French))
Earthworms (File name: Era08-e.doc (English), Era08-f.doc (French))
Arthropods natural enemies (File name: Era09-e.doc (English), Era09-f.doc (French))
Honey bees (File name: Era10-e.doc (English), Era10-f.doc (French))
Terrestrial vertebrates (File name: Era11-e.doc (English), Era11-f.doc (French))

The following **FAO International Standards for Phytosanitary Measures** are now available (in English and French)

Guidelines for surveillance. FAO, 1998 (File name: Ispm6.doc (English), Nimp6.doc (French))
Export certification system. FAO; 1997 (File name: Ispm7.doc(English), Nimp7.doc (French))

The EPPO Electronic Documentation (see also EPPO RS 98/055) is an e-mail system (not a Web site) from which you can obtain EPPO files, by sending very simple e-mail messages to the following address: **eppo_docs@eppo.fr**

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

How to access the EPPO Electronic Documentation Service

1) Register as a user

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

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

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

Join (name of the directory you want)

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

Example : Join PPPStandards
Join Regulations
Join Reporting

2) Obtain the contents
Send the following e-mail message to **eppo_docs@eppo.fr**
Dir (name of the directory you want)
Example: Dir PPPStandards
You will again receive in return two messages. One is a transaction report which tells you that the command was completed and the second will be entitled (for example) 'directory for the list PPPStandards', and will list all the file names. Similarly, you can ask for the contents of several directories in a single message. Note that in each directory (except for 'Reporting', a file called content-.doc (e.g. contentp.doc for the directory PPPStandards) has been added and it gives a list of complete document titles with their corresponding file names).

3) Get the files
Send the following e-mail message to **eppo_docs@eppo.fr**
Get (name of the directory name of the file)
Example: Get PPPStandards Era01-e.doc
You will again receive in return two messages. One is a transaction report which tells you that the command was completed and the second will contain the requested file as an attachment. You can obtain several files with a single request.

Example : Get PPPStandards Era01-e.doc
Get PPPStandards Era02-e.doc
Get PPPStandards contentp.doc
Get Reporting rse-9805.doc

Source: EPPO Secretariat, 1998-06.

98/119 EPPO report on selected intercepted consignments

The EPPO Secretariat has gathered the intercepted consignment reports for 1998 received since the previous report (EPPO RS 98/097) from the following countries: Austria, Estonia, Finland, France, Germany, Ireland, Netherlands, Norway, Switzerland, United Kingdom. When a consignment has been re-exported and the country of origin is unknown, the re-exporting country is indicated in brackets. When the occurrence of a pest in a given country is not known to the EPPO Secretariat, this is indicated by an asterisk (*).

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

Note 1: the EPPO Reporting Service 98/077 mentioned four consignments of seed potatoes from Canada intercepted by Italy because of the preliminary detection of *Clavibacter michiganensis* subsp. *sepedonicus*. The Canadian authorities through NAPPO informed the EPPO Secretariat that further tests gave negative results. The EPPO Secretariat is currently checking the situation with the Italian Plant Protection Service.

Note 2. Some remaining interceptions made in 1997 are presented below

Pest	Consignment	Type of commodity	Country of origin	C. of destination	nb
Helicoverpa armigera	*Dendranthema*	Plants for planting	Uganda	Netherlands 97	1
	Dianthus	Cut flowers	Israel	Netherlands 97	1
	Dianthus	Cut flowers	Kenya	Netherlands 97	6
Spodoptera littoralis	*Dianthus*	Cut flowers	Israel	Netherlands 97	1
Xiphinema americanum	*Juniperus*	Plants for planting	Japan	Netherlands 97	1

Pest	Consignment	Type of commodity	Country of origin	C. of destination	nb
Agromyzidae	*Dendranthema*	Plants for planting	Costa Rica	Netherlands	1
Aleurotuberculatus minutus	*Ixora*	Plants for planting	Costa Rica	Netherlands	1
Bagrada hilaris	*Lactuca sativa*	Vegetables	Kenya	United Kingdom	1
Bemisia afer	*Laurus nobilis*	Plants for planting	Netherlands	United Kingdom	1
Bemisia tabaci	*Cucumis sativa*	Plants for planting	Netherlands	United Kingdom	1
	Euphorbia pulcherrima	Plants for planting	Spain (Tenerife)	Netherlands	1
	Hibiscus	Cut flowers	Senegal	France	3
	Lantana	Plants for planting	Israel	Netherlands	1
	Lantana	Cut flowers	Mexico	Netherlands	1
	Manihot esculenta	Vegetables	Madagascar	France	1
	Nerium oleander	Plants for planting	Israel	Netherlands	1
	Rosa	Cut flowers	Israel	France	1
	Solidago	Cut flowers	Israel	Ireland	25

Pest	Consignment	Type of commodity	Country of origin	C. of destination	nb
***B. tabaci* (cont.)**	*Solidago*	Cut flowers	Israel	United Kingdom	1
	Solidago	Cut flowers	Netherlands	Ireland	6
	Solidago	Cut flowers	South Africa	United Kingdom	1
	Trachelium	Cut flowers	Israel	France	1
	Trachelium	Cut flowers	Israel	United Kingdom	1
	Unspecified leaves	Vegetables	Cameroon	United Kingdom	1
***Bemisia tabaci* (Biotype B)**	*Petunia*	Cuttings	Israel	Netherlands	1
	Various plants	Plants for planting	Israel	Netherlands	1
Clavibacter michiganensis subsp. michiganensis	*Lycopersicon esculentum*	Seeds	China	France	1
Ferrisia virgata	*Codiaeum*	Plants for planting	Togo	United Kingdom	1
Ferrisia virgata, Pinnaspis strachani	*Codiaeum variegata*	Plants for planting	Togo	United Kingdom	1
Gynaikothrips ficorum	*Ficus benjamina*	Plants for planting	Côte d'Ivoire	Germany	1
Helicoverpa armigera	*Coriandrum sativum*	Vegetables	Israel	United Kingdom	1
	Dianthus	Cut flowers	Israel	Netherlands	4
	Dianthus	Cut flowers	Kenya	Netherlands	35
	Dianthus	Cut flowers	Morocco	Netherlands	3
	Orchidaceae	Cut flowers	Thailand	Netherlands	1
	Phaseolus vulgaris	Vegetables	Senegal	Netherlands	3
Leptinotarsa decemlineata	*Petroselinum crispum*	Vegetables	Spain	United Kingdom	2
	Solanum tuberosum	Ware potatoes	Spain	United Kingdom	2
Liriomyza huidobrensis	*Apium graveolens*	Vegetables	Spain	United Kingdom	1
	Chrysanthemum frutescens	Plants for planting	Estonia*	Finland	1
	Dendranthema	Cut flowers	Netherlands	Ireland	1
	Dendranthema morifolium	Cuttings	Netherlands	United Kingdom	1
	Dendranthema morifolium	Cut flowers	Spain	United Kingdom	2
	Dendranthema, Dianthus	Cut flowers	Netherlands	United Kingdom	1
	Dianthus	Cut flowers	Israel	Netherlands	17
	Dianthus caryophyllus	Unspecified	Denmark	Norway	1
	Dianthus chinensis	Plants for planting	Estonia*	Finland	1
	Exacum	Pot plants	Netherlands	United Kingdom	1
	Gypsophila	Cut flowers	Israel	Ireland	3
	Gypsophila	Cut flowers	Israel	United Kingdom	1
	Gypsophila	Cut flowers	Netherlands	Ireland	3
	Gypsophila	Cut flowers	Netherlands	United Kingdom	1
	Gypsophila	Cut flowers	Spain	Ireland	1
	Gypsophila paniculata	Cut flowers	Israel	United Kingdom	1
	Gypsophila paniculata	Cut flowers	Kenya*	United Kingdom	1
	Verbena	Plants for planting	Netherlands	United Kingdom	1
Liriomyza sativae	*Ipomea*	Vegetables	Thailand	United Kingdom	1
	Ocimum basilicum	Vegetables	Thailand	France	3
Liriomyza sativae, Spodoptera exigua	*Ocimum basilicum*	Vegetables	Thailand	United Kingdom	1
Liriomyza (probably sativae)	*Ocimum basilicum*	Vegetables	Thailand	United Kingdom	1
Liriomyza (probably trifolii/ sativae)	*Allium*	Vegetables	Dominican Rep.	United Kingdom	1

Pest	Consignment	Type of commodity	Country of origin	C. of destination	nb
Liriomyza sp.	*Gypsophila*	Cut flowers	Israel	Germany	1
	Gypsophila	Cut flowers	Israel	Germany	1
	Gypsophila	Cut flowers	Netherlands	United Kingdom	2
	Tagetes	Plants for planting	Netherlands	United Kingdom	1
	Petunia	Pot plants	Netherlands	United Kingdom	1
	Phaseolus sp.	Vegetables	Senegal	France	1
	Verbena	Plants for planting	Netherlands	United Kingdom	1
Liriomyza trifolii	*Allium cepa*	Vegetables	Mexico	United Kingdom	1
	Aster; Solidago	Plants for planting	Netherlands	United Kingdom	1
	Dendranthema	Cut flowers	Israel	Netherlands	1
	Gypsophila	Cut flowers	Netherlands	United Kingdom	1
Liriomyza trifolii, Spodoptera littoralis	*Ocimum basilicum*	Vegetables	Spain	United Kingdom	1
Maruca testulalis	*Vigna*	Vegetables	Thailand	United Kingdom	1
Meloidogyne sp.	*Chrysalidocarpus lutescens, Schefflera actinophylla*	Plants for planting	USA	Germany	1
	Arecaceae	Plants for planting	Dominican Rep.	Germany	1
Nematodes	*Dracaena reflexa, Veitchia sp.*	Plants for planting	USA	Germany	1
Plum pox potyvirus	*Prunus*	Plants for planting	France	Switzerland	1
	Prunus armenieca	Plants for planting	Poland	Netherlands	1
Puccinia horiana	*Dendranthema*	Cut flowers	Netherlands	Estonia	1
Radopholus similis	*Musa*	Plants for planting	Sri Lanka	Netherlands	1
Ralstonia solanacearum	*Curcuma*	Plants for planting	Thailand	Netherlands	1
	Solanum tuberosum	Ware potatoes	Egypt	Germany	1
	Solanum tuberosum	Ware potatoes	Egypt	Germany	4
Scirtothrips inermis	*Euphorbia ingens*	Plants for planting	Spain (Tenerife)	Netherlands	1
Thrips palmi	*Dendrobium*	Cut flowers	Thailand	Germany	1
	Dendrobium	Cut flowers	Thailand	Netherlands	3
	Dendrobium	Cut flowers	Thailand	United Kingdom	1
	Melia azadirachata	Cut flowers	Thailand	France	1
	Momordica charantia	Vegetables	Dominican Rep.	United Kingdom	1
	Momordica charantia	Vegetables	Thailand	United Kingdom	1
	Orchidaceae	Cut flowers	Singapore	France	1
	Orchidaceae	Cut flowers	Thailand	Netherlands	4
	Orchidaceae	Cut flowers	Thailand	Netherlands	1
Thrips palmi, Bemisia tabaci	*Dendrobium*	Cut flowers	Thailand	United Kingdom	1
Thripidae (probably *T. palmi*)	*Momordica charantia*	Vegetables	Thailand	France	1
	Momordica charantia	Vegetables	Thailand	United Kingdom	2
	Orchidaceae	Cut flowers	Thailand	France	1
	Solanum melongena	Vegetables	Thailand	France	1
	Vigna unguiculata	Vegetables	Dominican Rep.	United Kingdom	1
	Vigna, Solanum	Vegetables	Dominican Rep.	United Kingdom	1
Tomato spotted wilt tospovirus	*Lobelia*	Cuttings	Israel	Netherlands	1

- **Fruit flies**

Pest	Consignment	Country of origin	C. of destination	nb
Anastrepha obliqua	*Mangifera*	Brazil	Netherlands	1
Bactrocera sp.	*Psidium guajava*	Thailand	France	2
Tephritidae	*Psidium guajava*	Colombia	United Kingdom	1

- **Bonsais**

Four consignments of bonsai plants (*Chamaecyparis obtusa, Ligustrum, Pinus pentaphylla, Ulmus)* from China (3) and Japan were intercepted by United Kingdom (3) and Germany (1) because of the presence of: *Helicotylenchus dihystera* and unspecified nematode species.

Source: **EPPO Secretariat, 1998-06.**
NAPPO, 1998-06