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CONTENTS

97/129 Outbreak of *Xanthomonas axonopodis* pv. *citri* in Florida

In USA, *Xanthomonas axonopodis* pv. *citri* (EPPO A1 quarantine pest) was introduced into Florida in 1912 and then into some other States. It was then eradicated from Florida in 1933 and from the other States by 1947. However, it was found again in Florida in 1986. An eradication programme was implemented and was thought to be successful until the 1995 record of the disease, which was found in private gardens in Miami but not in commercial citrus-growing areas (see EPPO RS 95/228).

An abstract of a paper to be presented at the next APS Annual meeting gives more details on the spread of *X. axonopodis* pv. *citri* in the urban area of Miami. In September 1995, citrus canker was found in private gardens in Dade County in Florida (US). Within 17 months, the infested area increased from 33 to 230 km^2 despite all efforts. It is thought that inadvertent human transport has ensured short distance spread, whereas rainstorms and winds have contributed to long distance dissemination. Studies showed that a putative original focus of the disease was situated at 2.5 km south-east of the Miami International Airport. The oldest stem lesions in this focus area suggest the existence of citrus canker approximately 2-3 years before the first finding. It is also noted that the age of the newly infested areas is well correlated with individual tropical storms which have led to the spread of citrus canker 24 km to the north-east. It is concluded that the occurrence of storms combined with the damage of *Phyllocnistis citrella* resulted in a rapid increase of inoculum of *X. axonopodis* pv. *citri*.

Source: Gottwald, T.; Graham, J.; Schubert, T.; Sun, X. (1997) Analysis of the dynamics of spread of citrus canker in urban Miami.
Abstract of a paper to be presented at the APS Annual Meeting, Rochester (US), 1997-08-09/13.
Phytopathology, 87 (6), Supplement, S34-S35.

Additional key words: new record **Computer codes:** XANTCI, US

97/130 First report of citrus blight disease in Mexico

Citrus blight disease (EPPO A1 quarantine pest) is a serious tree decline of unknown etiology, reported in Florida and Louisiana (US) and several countries in South America, southern Africa and the Caribbean. As there are no reliable symptoms, physical and chemical tests have to be used for diagnosis (water injection into the trunk, zinc and potassium analysis of the outer trunk wood, immunological test for specific blight protein in the leaves). Tests were done on declining citrus trees in Yucatan, Mexico, in June 1996. Results showed that these trees are affected by citrus blight disease. This is the first report of this disease in Mexico. The authors felt that the lack of earlier reports was probably due to climatic conditions and also to changes in rootstocks. Because of the threat of tristeza, growers are planting Valencia orange grafted onto Cleopatra mandarin (*C. reshni*) and onto Volkamer lemon (*C. volkameriana*) which are both susceptible to citrus blight (but less to tristeza) instead of the usual sour orange rootstock (*C. aurantium*) which is highly resistant to citrus blight.

Source: Wutscher, H.K.; Cervantes, A.; Derrick, K.S. (1997) Citrus blight found in Yucatan, Mexico.
Plant Disease, 81(5), p 551.

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

97/131 Situation of *Ralstonia solanacearum* in Spain

The Plant Protection Service of Spain has informed the EPPO Secretariat that during the 1996 potato campaign, several cases of *Ralstonia solanacearum* (EPPO A2 quarantine pest) were found in Castilla-Léon, Spain. Four cases were found on seed potatoes produced by two growers and four cases were also discovered on ware potatoes produced in small farms. The Plant Protection Service stressed that all these positive results were found on potatoes in stores, and that no positive result was obtained on growing plants in the field. However, quarantine measures (prohibition to grow solanaceous plants, regular surveys) have been taken in the fields where these potatoes were previously grown. In addition, studies have been done on irrigation water and on weed hosts of the bacterium, and so far the results obtained are negative. Concerning the Spanish potato production in 1996, 1013 tests have been carried out on seed potatoes and 138 on ware potatoes. 592 tests, as well as numerous visual inspections, were also done on seed potatoes imported from other EU countries. This is the first time that *R. solanacearum* is reported from mainland Spain.

Source: **Plant Protection Service of Spain, 1997-07.**
Additional key words: new record **Computer codes:** PSDMSO, ES

97/132 Surveys carried out in Germany on *Ralstonia solanacearum*

Surveys on *Ralstonia solanacearum* (EPPO A2 quarantine pest) have been carried out in Germany on the 1996 harvest of German potatoes and on imports from the Netherlands made in 1997. Samples were tested by using several methods (IF with polyclonal antisera, PCR, semi-selective medium and biological tests on aubergine and tomato). Sample size varied from 200 tubers/ha to 200 tubers/3 ha for seed potatoes, and for ware potatoes sample size was 200 tubers/25 t. Concerning the German production, 5331 samples have been tested. One positive sample of ware potatoes was found in Brandenburg (see EPPO RS 97/111). In Bayern, three samples of seed potatoes and two samples of ware potatoes gave positive results. Concerning potatoes imported in 1997 from the Netherlands, 1215 samples have been tested so far, and only one positive sample of seed potatoes was detected by a laboratory in Bayern. The corresponding consignment has been intercepted.

Source: **Plant Protection Service of Germany, 1997-07.**

Additional key words: detailed record **Computer codes:** PSDMSO, DE

97/133 Survival and possibilities for eradication of *Ralstonia solanacearum* in cool climates

So far most studies on the ecology of *Ralstonia solanacearum* (EPPO A2 quarantine pest) have been conducted in warm climates with tropical strains. But recently, due to the outbreaks of potato brown rot in some European countries **(see EPPO RS 97/111 for the current status of these outbreaks),** data are needed on the survival of the bacterium in cool climates, means of dissemination, detection and possibilities for eradication.
Concerning the spread of *R. solanacearum* race 3 biovar 2 in Europe, the author reviews the various possibilities. It seems that the outbreaks observed in 1995 in the Netherlands, Italy and Portugal could be related to the circulation of latently infected seed potato tubers. Outbreaks observed in Belgium, France, Sweden, United Kingdom and also in the Netherlands could be connected the dissemination of the bacterium in infested waters used for irrigation of potatoes. In addition, industrial or domestic wastes could have also played a role in the dissemination.
The author pointed out that under temperate conditions in Australia, Kenya, Sweden, and United Kingdom, *R. solanacearum* could be detected in field soils for no longer than 2 years after harvest of potato crops affected by brown rot. In cool conditions, infection of perennial weed hosts seems to be the most important element in the overwintering and long-term persistence of the pathogen. In several European countries, the bacterium was detected in watercourses used for irrigation and in weeds growing along these courses (in particular

Solanum dulcamara). The following weed species could be potential hosts, as infection was found after artificial inoculation, but this has not been verified in natural conditions: *Solanum nigrum*, *Eupatorium cannabinum*, *Tussilago farfara*, *Portulaca oleracea*, *Cerastium glomeratum*, *Ranunculus sceleratus*.

Several detection methods are available. The EPPO phytosanitary procedure no. 26 involve the use of IF and a bioassay on tomato seedlings. More recently, indirect ELISA, culture on semi-selective media and PCR have been proposed. It is generally felt that a combination of different methods is necessary to overcome the disadvantages presented by each method when used alone. The author also stressed that the detection is also highly dependent on the sampling strategy used. The present recommended sampling rate is 200 tubers per 25 t of potatoes.

The author reviews the current quarantine measures which have been set up to prevent the spread of *R. solanacearum* through infected plant material and stressed that their success will depend on the efficiency of detection methods and national surveys, and also on international cooperation. He also explained the measures which have been applied in European countries to contain the disease in areas where it has been found (see also EPPO RS 97/111). It can be added that strategies of integrated control of race 3 biovar 2 in temperate highland conditions of the tropics included: control of weeds and potato groundkeepers, growing of non-hosts crops (particularly cereal and grass). Soil fumigation is generally not recommended as bacteria in the lower layers are not affected and antagonistic rhizosphere organisms situated in the upper layers are destroyed.

Finally, prospects for eradication are reviewed. It appears that of all biovars of *R. solanacearum*, biovar 2 is probably the most easy to eradicate, and it can be noted that its eradication from Sweden was successful. In cool conditions, it seems that *R. solanacearum* does not survive very well in soil but it is able to persist in aquatic *S. dulcamara* for several years. Further research is needed to determine the origin of the bacterium in waters, in *S. dulcamara*, and the role of other weed hosts, to be sure of the effectiveness of eradication measures.

Source: Elphinstone, J.G. (1996) Survival and possibilities for extinction of *Pseudomonas solanacearum* (Smith) Smith in cool climates.
Potato Research, 39 (extra edition), 403-410.

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

97/134 Situation of *Erwinia amylovora* in Switzerland

The Plant Protection Service of Switzerland has informed the EPPO Secretariat of the situation of *Erwinia amylovora* (EPPO A2 quarantine pest) observed in 1996, since the previous report (EPPO RS 96/144). In July 1996, the situation was considered as rather satisfactory, as less than 50 plants were found infected (essentially *Pyrus* and *Cydonia*). All plants were growing in 4 zones which were previously reported as contaminated in 1995. Infected plants were immediately destroyed, as well as potential hosts of fireblight situated in their vicinity. In August 1996, several foci of fireblight were detected, mainly on *Cotoneaster salicifolius* and to a lesser extent on *C. dammeri*, in the north-east of Switzerland (region of approximately 300 km^2, from St-Gall to the Rhine). An extensive programme of elimination of *Cotoneaster* plants has been set up. At present, approximately 85 % of *C. salicifolius* populations have been destroyed and will continue in autumn in the urban part of St-Gall. The Swiss Plant Protection Service concluded that fireblight has caused very little damage to fruit orchards in 1996, and that, with the exception of one area in the north-east on *Cotoneaster* plants, all foci detected in 1995 are now well contained. On the basis of the 1996 situation, the areas presenting a risk have been delimited during the 1996-97 winter. Surveys are being intensified in these areas, and restrictions have been imposed on the movement of bee hives. So far, it appears that the pressure from the disease is extremely low.

Source: **Plant Protection Service of Switzerland, 1997-07.**

Additional key words: detailed record **Computer codes:** ERWIAM, CH

97/135 Detection and eradication of chrysanthemum stunt viroid in Tenerife (ES)

In a propagation glasshouse located on Tenerife island (Islas Canarias, Spain), several plants of chrysanthemum (cv. Teide) were stunted and flowered 10 days earlier than the rest of the plants within the same plot. By using electrophoresis and molecular hybridization, chrysanthemum stunt viroid (EPPO A2 quarantine pest) was detected in symptomatic plants. Eradication measures were taken. An imprint-hybridization method (with digoxigenin-labelled probes) was used to survey chrysanthemum crops on the island during the course of the eradication of the viroid. Tests were done on 39 cultivars and chrysanthemum stunt viroid was detected in 6 cultivars. The affected plants were traced to a shipment of mother plants from a single source. All affected plants were destroyed. No other outbreak of chrysanthemum stunt viroid has been reported.

Source: Duran-Vila, N.; Romero-Durbán , J.; Hernandez, M. (1996) Detection and eradication of chrysanthemum stunt viroid in Spain.
Bulletin OEPP/EPPO Bulletin, 26(2), 399-405.

Additional key words: eradication **Computer codes:** CHSXXX, ES

97/136 Impatiens necrotic spot tospovirus on ornamental and vegetable crops in Italy

In Italy, impatiens necrotic spot tospovirus (INSV - EU Annexes I/B & II/A2) was first found in 1993 on ornamental crops (*Bouvardia* sp. and *Fatsia japonica*). Later it was detected, alone or in combination with tomato spotted wilt tospovirus, on the following ornamental species: *Anemone* sp., *Anthirrinum majus*, *Ranunculus* sp., *Limonium sinuatum*, *Pittosporum tobira*, *Zantedeschia aethiopica*, *Columnea*, sp., *Gerbera* sp., *Sinningia speciosa*, *Begonia* sp., *Impatiens* sp., *Lobelia* sp. and *Eustoma grandiflorum*. A survey carried out in 1995 and 1996 in Emilia-Romagna, Toscana and Lazio (using ELISA and electron microscopy techniques) revealed that INSV infections were increasing, and could also involve vegetable crops. Concerning ornamentals, INSV was found on *Gerbera* in Lazio and Toscana (in association with tomato spotted wilt tospovirus), on *Fatsia japonica* in Lazio and on *Cyclamen* in Toscana. The pathogen was found on glasshouse cucumber (*Cucumis sativus)* in Emilia-Romagna. Affected plants showed small chlorotic rings on dwarfed, deformed and wrinkled cucumber fruits. In 1996, outdoor lettuce plants (*Lactuca sativa*) showing symptoms of vein necrosis, necrosis of apical bud and growth suppression were observed in Emilia-Romagna. In addition, some plants were showing dense chlorotic concentric rings and leaf deformation. The presence of INSV was demonstrated in these plants. It was also observed that high populations of *Frankliniella occidentalis* (EPPO A2 quarantine pest) occurred in infected lettuce fields. The authors pointed out that this is the first report of a natural INSV infection on outdoor vegetable crops grown in Italy.

Source: Vicchi, V.; Bellardi, M.G. (1997) Impatiens necrotic spot tospovirus (INSV) infecting ornamental and vegetable crops in Italy.
Proceedings of the 10th Congress of the Mediterranean Phytopathological Union, 1997-06-01/05, Montpellier (FR), 91-93.

Vicchi, V.; Bellardi, M.G. (1997) [Impatiens necrotic spot tospovirus infection on lettuce in Italy].
Informatore Fitopatologico, no. 3, 55-57.

Additional key words: detailed record **Computer codes:** IMNSXX, TMSWXX, IT

97/137 Occurrence of *Xanthomonas arboricola* pv. *pruni* in Lazio (IT)

During spring and summer 1993, symptoms of necrotic spots on leaves, water-soaked lesions on fruit, and cankers on branches were observed on plum trees (*Prunus domestica* cvs President and Angeleno) in several orchards situated in the north of Lazio (central Italy). Investigations revealed the presence of *Xanthomonas arboricola* pv. *pruni* (EPPO A2 quarantine pest). The authors noted that this is the first report of this pathogen in Lazio.

Source: Balestra, G.; Varvaro, L. (1997) [Occurrence of *Xanthomonas campestris* pv. *pruni* on plum in the North of Latium]
Informatore Fitopatologico, no. 6, 55-57.

Additional key words: detailed record **Computer codes:** XANTPR, IT

97/138 *Pseudomonas syringae* pv. *pisi* found in Sicilia (IT)

In 1996, *Pseudomonas syringae* pv. *pisi* (EPPO A2 quarantine pest) was found for the first time on field peas grown in Sicilia (IT). Symptoms were observed on peas (cvs Spring and Navona) from four farms. The bacterium was identified by using ELISA, biochemical and pathogenicity tests. The authors noted that this is the first report of *Pseudomonas syringae* pv. *pisi* in Sicilia. Although climatic conditions in Southern Italy are not favourable to the disease, it is felt that the introduction of infected seeds and the epiphytic survival of the bacterium could lead to outbreaks of the disease.

Source: Cirvilleri, G.; Caldarera, G. (1997) *Pseudomonas syringae* pv. *pisi*, in coltivazioni di pisello in Sicilia.
Informatore Fitopatologico, no. 7-8, 53-56

Additional key words: detailed record **Computer codes:** PSDMPI, IT

97/139 First report of *Cacyreus marshalli* in Italy

Cacyreus marshalli (EPPO A2 quarantine pest), a pest of cultivated pelargonium has been reported for the first time in Italy. The pest was found in September-October 1996 in Roma, Ostia and Sabaudia (Lazio). It is recalled that this pest originating from southern Africa, was first reported in Europe in Mallorca (Islas Baleares, ES) in 1987. It then spread to other Balearic islands (Menorca, Ibiza) and to mainland Spain (now reported as present in Alicante, Valencia, Murcia, Zaragoza, Lognoño, Granada, Barcelona, Málaga, Teruel, Madrid, Navarra and Guadalajara).

Source: Trematerra, P.; Zilli, A.; Valentini, V.; Pazzei, P. (1997) *Cacyreus marshalli*, un lepidettero sudafricano dannoso ai gerani in Italia.
Informatore Fitopatologico, no.7-8, 2-6

Additional key words: new record **Computer codes:** CACYMA, IT

97/140 Situation of tomato spotted wilt tospovirus in Greece

Tomato spotted wilt tospovirus (TSWV - potential EPPO A2 quarantine pest) was recorded for the first time in 1972 in tobacco crops in northern Greece, and remained confined to tobacco for more than 15 years. In 1989, TSWV infections were found for the first time on vegetable crops (tomato and pepper) in northern Greece. The virus then spread throughout the country on several vegetable and ornamental crops. The early presence of TSWV was associated with *Thrips tabaci*, whereas its more recent spread seems to be related to the introduction of *Frankliniella occidentalis*. Surveys carried out in 1995 and 1996 showed that in tobacco crops, a very high virus incidence was found (up to 90 %) in Thessaloniki, Kilkis and Xanthi, a high incidence in Evros and Pellas and a low incidence in Drama, Serres and Kavala. Lettuce infection in the area of Chalkidiki was high (up to 80 %). Tomato and pepper crops were severely affected in glasshouses (up to 80 % on tomato, up to 85 % on pepper) or in open fields (up to 100 % on tomato, up to 90 % on pepper). Almost all ornamentals (*Anemone*, *Chrysanthemum*, *Gerbera*, *Iris*, *Matthiola*), except *Aster*, were heavily infected. Although, it appears that the spread of TSWV in vegetable and ornamental crops is ensured by *F. occidentalis*, the virus incidence in tobacco is still associated with *T. tabaci*.

Source: Chatzivassiliou, E.K.; Katis, N.I.; Jenser, G. (1997) Tomato spotted wilt tospovirus in Greece: nine years after the invasion of *Frankliniella occidentalis*.
Proceedings of the 10th Congress of the Mediterranean Phytopathological Union, 1997-06-01/05, Montpellier (FR), 675-680.

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

97/141 Details on tomato yellow leaf curl bigeminivirus in Egypt

Tomato yellow leaf curl bigeminivirus (TYLCV - EPPO A2 quarantine pest) has invaded tomato plantations in Egypt (lower and middle Egypt) in 1989. Before this date, TYLCV was found very sporadically on some isolated plants in the field. Studies have been carried out in the region of Fayyum. This area has been affected continuously by TYLCV for the last five years, and disease incidence can be quite high (up to approximately 70 %). A high correlation between the incidence of the disease and the presence of viruliferous *Bemisia tabaci* populations has been found. Genetic studies were carried out and showed that the Egyptian isolate of TYLCV has 98 % homology with the Israeli isolate.

Source: Aboul-Ata, A.E.; El-Saied, M.A.; Abdel-Aziz, S.; Megahed, H.; Mazyad, H.M. (1997) Epidemiology of tomato yellow leaf curl geminivirus in the Fayium area, Egypt.
Proceedings of the 10th Congress of the Mediterranean Phytopathological Union, 1997-06-01/05, Montpellier (FR), 637-643.

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

97/142 Perspectives for better diagnosis of *Curtobacterium flaccumfaciens* pv. *flaccumfaciens* in bean seeds

Preliminary studies have been carried out in Italy on the improvement of detection methods for *Curtobacterium flaccumfaciens* pv. *flaccumfaciens* (EPPO A2 quarantine pest) in bean seeds.
1) In order to improve cultural methods, a semi-selective medium has been obtained for *C. flaccumfaciens* pv. *flaccumfaciens*
2) To develop better detection methods, work is being carried out on identification of stable metabolic traits. Preliminary studies showed that bacteriocins are produced by most strains and are of proteic nature. The final aim will be to find corresponding oligonucleotides to be used as primers for specific PCR detection of the bacterium in bean seeds.

Source: Tegli, S.; Surico, G.; Esposito, A. (1997) Preliminary observations for the diagnosis of *Curtobacterium flaccumfaciens* pv. *flaccumfaciens* in bean seeds.
Proceedings of the 10th Congress of the Mediterranean Phytopathological Union, 1997-06-01/05, Montpellier (FR), 323-327.

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

97/143 Transmission by *Myzus persicae* of potato spindle tuber viroid encapsidated by potato leafroll luteovirus particles

The role of insect vectors in transmission of potato spindle tuber viroid (PSTVd - EPPO A2 quarantine pest) has been unclear. It was reported in the past that *Myzus persicae*, *Macrosiphum euphorbiae* and some other potato pests could transmit the viroid. However, these observations could not be later confirmed. In more recent studies, *M. euphorbiae* has been reported to transmit PSTVd but with a very low efficiency, and *M. persicae* was found unable to transmit the viroid. It has also been observed that *M. persicae* was able to transmit PSTVd to potato, *Physalis floridana* and *Datura stramonium* from source plants doubly infected with PSTVd and potato leaf roll luteovirus (PLRV), but not from plants infected with PSTVd only. The authors have verified that *M. persicae* was able to transmit PSTVd from *P. floridana* plants (doubly infected with PSTVd and PLRV) to tomato, *P. floridana* and *Datura stramonium*. In addition, they have also showed that PSTVd was encapsidated by PLRV particles for transmission by *M. persicae*.

Source: Syller, J.; Marczewski, W.; Pawlowicz, J. (1997) Transmission by aphids of potato spindle tuber viroid encapsidated by potato leafroll luteovirus particles.
European Journal of Phytopathology, 103(3), 285-289.

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

97/144 Some thoughts on *Thrips palmi*

A paper from Dr Vierbergen recalls the spread of *Thrips palmi* (EPPO A1 quarantine pest) outside its region of origin and gives thoughts on why quarantine measures are necessary to prevent its establishment in Europe.
When comparing the biology of *Thrips palmi* with *Frankliniella occidentalis*, it can be noted that *T. palmi* feeds exclusively on cell liquids whereas *F. occidentalis* also feeds on pollen. This urges *F. occidentalis* to look for flowers at a suitable stage and therefore its potential for dispersal seems greater than for *T. palmi*. It is felt that the very wide host range of *T. palmi* is insufficiently known. As a general remark, it is stated that thrips species are incidental visitors on many plants but may not be able to complete their life cycle on them. The author felt that interceptions made on orchids in Europe are probably of minor importance because there have never been introductions into the extensive culture of orchids in Europe.
Concerning eradication, it is pointed out that no report on elimination of Thysanoptera after introduction has been made, except for *T. palmi* from Dutch glasshouses (in 1988 on Cactaceae, in 1992 in 3 *Ficus* greenhouses, in 1994 and 1995). In the first outbreaks,

eradication was achieved with the complete destruction of the plants. In recent findings, eradication was achieved with a combination of insecticides (imidacloprid, carbofuran, dichlorvos, methiocarb). Decrease of thrips populations was monitored with yellow and blue sticky traps during a quarantine period which was calculated as follows:

$T_q = 2 \times T_{pupa} + 2 \times T_{egg}$

T_q = Quarantine period

T_{pupa} = lifetime pupa + 3 x standard deviation

T_{egg} = lifetime eggs + 3 x standard deviation

Observations made in the Dutch glasshouses showed that active dispersal of *T. palmi* was very low. In addition, *T. palmi* has never been found on traps located in the immediate vicinity of heavily infested glasshouses. Dispersal between glasshouses is ensured by exchange of plant material.

The author stressed that quarantine measures against *T. palmi* are useful, as at present introduction pressure is not too high and active dispersal within glasshouses is very low. But he is concerned that, in the long term, the situation may change, especially if more parts of the world are invaded by the pest which would greatly increase introduction pressure.

Source: Vierbergen, G. (1996) After introduction of *Frankliniella occidentalis* in Europe: prevention of establishment of *Thrips palmi* (Thysanoptera: Thripidae).
Acta Phytopathologica et Entomologica Hungarica, 31(3-4), 267-273.

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