



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

# EPPO

## Reporting Service

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## 529/01 - EPPO....New EPPO Member Countries

EPPO has two new Member Governments:

Latvia adhered to the Convention in 1992-08, while Romania became again a member at the Council Session in 1992-09, after having withdrawn in 1988. The total number of EPPO Member Governments is now 33.

**Source:** EPPO Secretariat, Paris (1992-09)

## 529/02 EPPO....New Phytosanitary Regulations of 12 Member Governments

On 1993-01-01, the 12 Member States of the European Community (BE, DE, DK, ES, FR, GB, GR, IE, IT, LU, NL, PT) establish a single market in commodities, including plants and plant products. This implies the removal of all intra-Community frontier controls and the introduction of a new system of plant passports, delivered at the place of origin, for plants and plant products moving within the Community. The new regulations providing for this are made up of a series of amendments to Directive 77/93/EEC. These regulations essentially concern movements between Member States, but have indirect effects on other countries. EPPO and the Commission of the EC organized on 1992-09-22 a colloquium on "The phytosanitary impact of the single market" of which the proceedings will shortly be published as an EPPO Technical Document. The EPPO summary of the phytosanitary regulations of the EC Member States will very soon be revised to take account of the new regulations

**Source:** EPPO Secretariat, Paris (1992-11)

## 529/03 EPPO....Latest EPPO Bulletin

The latest issue of Bulletin OEPP/EPPO Bulletin (Vol. 22, No. 3) has now been published. It contains 35 papers which were submitted to the Joint EPPO/IOBC-EPIS Conference on Plant Protection in Glasshouses, held in Naramowice (PL), 1991-06-04/07. Additionally, a paper by Lipa (PL) on the integrated pest management approaches in orchard, cereal and potato protection in Poland and a case study on costs and benefits of an eradication campaign against *Frankliniella occidentalis* and tomato spotted wilt virus in Finland, submitted by Rautapää, can be found in this issue of the Bulletin OEPP/EPPO.

The EPPO Bulletin can be ordered by:

Blackwell Scientific Publications  
PO Box 88  
Oxford OX2 0NE  
England

**Source:** EPPO Secretariat, Paris (1992-11)



# EPPO *Reporting Service*

**529/04**

**BTNYVX...Distribution of beet necrotic yellow vein furovirus  
in sugar beet roots**

Tissue print-immunoblotting was used in Germany to determine the distribution of beet necrotic yellow vein furovirus (EPPO A2 organism) particles in roots of sugarbeet. It was found that even at very high virus titres the virus is not evenly distributed in the roots, but occurs in patches primarily under the typical root beards. Additionally the virus could be found at some occasions within the xylem of the root.

**Source:**

Kaufmann, A.; Johannink, F.; Barbarossa, L.; Koenig, R.; Vetten, H.J.; Lesemann, D.-E. (1992) Neue Methoden und Reagentien zum Nachweis des Rizomaniavirus und des beet soilborne virus: Tissue print-immunoblotting, PCR und monoklonale Antikörper.

**48. Deutsche Pflanzenschutztagung, Göttingen, 1992-10-05/08**



# EPPO *Reporting Service*

## 529/05      TMSWXX...Taxonomy of tomato spotted wilt tospovirus

Tomato spotted wilt virus (candidate EPPO A2 organism) was previously thought to be the only member of the tospovirus group within the Bunyaviridae until recently the impatiens strain of TSWV was characterized as a separate virus and was named impatiens necrotic spot tospovirus. TSWV no longer being the only member of its group, it now becomes conventional to refer to it as tomato spotted wilt tospovirus.

Serological characterization and differentiation of isolates of TSWV in Germany showed that a third virus can clearly be distinguished from the other tospoviruses by specific antibodies to N nucleoprotein. TSWV isolates could be further differentiated into three serotypes by ELISA.

**Source:** Adam, G.; Riedel, D.; Lesemann, D.-E.; Dalchow, J. (1992)  
Serologische Differenzierung von Isolaten des  
Tomatenbronzefleckenvirus.  
48. Deutsche Pflanzenschutztagung, Göttingen, 1992-10-05/08

## 529/06      TMSWXX/THRIPL...Tomato spotted wilt-like virus on watermelon in Taiwan

In Taiwan, an unusual disease of watermelon was found expressing the symptoms of leaf crinkling, mottling, yellow spotting, short internodes, upright growth of younger branches and tip necrosis.

Serological tests by ELISA and western blotting with polyclonal and monoclonal antibodies revealed that the causal agent is a tospovirus, serologically related to tomato spotted wilt tospovirus (TSWV) (candidate EPPO A2 organism) which causes silver mottle on watermelon in Okinawa (JP), but not to the lettuce, tomato and amaryllis isolates of TSWV from other countries.

Cucurbits were systemically infected by the virus which is vectored by *Thrips palmi* (EPPO A1 pest).

**Source:** Yeh, S.-D.; Lin, Y.-C.; Jh, C.-L.; Chen, M.-J.; Chen, C.-C. (1992)  
Identification of tomato spotted wilt-like virus on watermelon in Taiwan.  
*Plant Disease* 76, 835-840.



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**529/07**

**CORBMI...Yield reduction of tomatoes caused by *Clavibacter michiganensis* subsp. *michiganensis***

Investigations were conducted in Illinois, US, to assess the yield reductions of processing tomatoes due to the infection by *Clavibacter michiganensis* subsp. *michiganensis* (EPPO A2 organism).

Seedlings were systematically infected during clipping or seedling harvest and the yield reduction and the disease incidence were monitored. The results showed that the average fruit weight decreased by 13 g and the maximum yield up to 46% when the incidence of infection was 31-83%. A linear regression indicated that for each 10% disease increase the yield was reduced by 5-7%.

**Source:** Chang, R.J.; Ries, S.M.; Pataky, J.K. (1992) Reduction of yield of processing tomatoes and incidence of bacterial canker.  
**Plant Disease 76, 805-809.**

**529/08**

**CORBMI...Induced resistance of tomato plants to *Clavibacter michiganensis* subsp. *michiganensis***

In Germany experiments were carried out to induce resistance to *Clavibacter michiganensis* subsp. *michiganensis* (EPPO A2 organism) in tomato plants.

Young tomato plants were inoculated with a non-pathogenic strain of *C. m.* subsp. *michiganensis* which produces the wilting toxin. A subsequent inoculation with a pathogenic strain of the pathogen did not result in the expression of symptoms or in the expression of mild symptoms.

The time factor and the place of inoculation played an important role in the process. With an inoculation of the non-pathogenic strain into the root of the seedlings and the inoculation of the pathogenic into the shoot a time difference of 14 days between the first and the second inoculation were necessary to obtain a resistant plant. If both inoculations were carried out into the roots, the plant became resistant to the pathogenic strain within one day.

**Source:** Griesbach, E.; Krämer, I. (1992) Induktion einer Resistenz gegen *Clavibacter michiganensis* subsp. *michiganensis* in Tomatenpflanzen durch Prämunisierung mit einem apathogenen Stamm des Erregers.  
**48. Deutsche Pflanzenschutztagung, Göttingen, 1992-10-05/08**



# EPPO Reporting Service

## 529/09      ERWIAM...Report from the fireblight workshop

The 6<sup>th</sup> International Workshop on fireblight was held in Athens in 1992-10-20/23. 85 participants from over 30 countries discussed in the 4-day meeting all aspects of the disease as well as the biology, epidemiology, physiology and biochemistry of the causal agent *Erwinia amylovora* (EPPO A2 organism).

This issue of the Reporting Service will especially focus on the results of this workshop. The following Reporting Service articles will summarize the workshop presentations in the fields: occurrence/spread, epidemiology, prediction systems, chemical control, biological control and biology.

Source:            EPPO Secretariat, Paris (1992-10)

## 529/10      ERWIAM...Spread and occurrence of *Erwinia amylovora*

At the 6th International Workshop on fireblight several papers and posters were presented concerning the occurrence and the spread of fireblight in different countries where the disease is already present.

**England:** No major outbreaks of fireblight were reported from England. Blossom blight of secondary blossoms of cider apples was high in 1989.

**Guatemala:** It was reported at the workshop that *E. amylovora* has been present in Guatemala since 1966.

**Italy:** Besides the previously reported outbreak of fireblight in pear orchards of Apulia, a new outbreak was reported from Sicily. *E. amylovora* was found in one pear orchard producing a local pear cultivar.

**Norway:** The discovery of a fireblight focus in and around Stavanger in Norway in 1986 has led to extremely drastic internal quarantine regulations in Norway. An area of 300 km<sup>2</sup> was quarantined with the removal of all *Cotoneaster bullatus* and *C. salicifolius* regardless of their health status. Since then, fireblight has been detected very seldom in this area and has not spread to others outside the quarantine zone.

**Sweden:** Since its discovery in 1986 the disease has spread to several orchards in the extreme south-eastern and south-western areas of the country. 39 pear orchards have been found where infestations occurred. In three of these orchards all pear trees were exterminated. The Plant Protection Service of Sweden is carrying out observations in the central and more northern regions of Sweden to detect a possible spread of the pathogen into the disease-free areas of the country.

**Switzerland:** The previously reported outbreaks of fireblight in the vicinity of Lake Constance have been eradicated by the removal and destruction of the infected *Cotoneaster* plants. A warning system has been built up which predicts the areas at risk which will then be closely monitored.

**Turkey:** *E. amylovora* was detected for the first time in Turkey in 1985. Since then the

pathogen has spread within the country and the disease can now be found in all parts of Turkey.

**Source:** 6th International Workshop on Fireblight, Athens (1992-10-20/23)

**529/11** **ERWIAM...Detection and prediction of fireblight**

The detection and identification of *Erwinia amylovora* by polymerase chain reaction (PCR) was reported by Bereswil and associates from Germany. This technique can be used for reliable detection and identification of the causal agent of fireblight even in infected pollen grains.

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Clark & Hale reported from New Zealand the successful use of a sensitive DNA hybridization technique to detect fireblight in large scale apple testing and for epidemiological studies.

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The use of a fatty acid class analysis to detect *E. amylovora* was reported by Van der Zwet & Wells (US). The use of this method and the subsequent build up of a fatty acid library resulted, according to the authors, in the reliable detection and identification of different strains of the pathogen.

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MARYBLYT<sup>TM</sup>, a computer model to forecast the occurrence of fireblight was presented in a new improved version. Lightner & Steiner (US), the developers of this programme, explained the modifications of this system which were made following suggestions from researchers on fireblight.

Several evaluations of MARYBLYT<sup>TM</sup> were presented by various participants of the workshop. Van der Zwet & Lightner (US) and Bonn & Leuty (CA) evaluated the prediction model as accurate in its ability to predict blossom blight occurrence in orchards. Smith (US) and Sobiczewki & Berczynski (PL) stated that the prediction model has the tendency to overestimate *E. amylovora* occurrence in some cases.

**Source:** 6th International Workshop on Fireblight, Athens (1992-10-20/23)

**529/12** **ERWIAM...Physiology and biochemistry of *Erwinia amylovora***

The in vitro behaviour of *Erwinia amylovora* towards some natural compounds was investigated by Scortichini & Rossi (IT). A wide range of essential oils, pure terpenes and terpenoids were tested and it was found that oregano oil, citronellol and geraniol showed some bactericidal activity.

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The influence of chemical growth regulators on the host susceptibility of pear trees for



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fireblight was studied by Deckers and Daemen (BE). They found that the formation of secondary blossoms is positively influenced by the application of growth regulators which increases the danger of fireblight infections.

Source: 6th International Workshop on Fireblight, Athens (1992-10-20/23)

## 529/13 ERWIAM...Control of *Erwinia amylovora*

Sugar et al. (US) reported that fosetyl-Al gave some control of fireblight but that further tests have to be carried out to define the optimum application time and to confirm the results.

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In Greece (Tsiantos & Psallidas) experiments with various chemical compounds were carried out. It was reported that streptomycin, flumequin and oxonilic acid gave the best control of fireblight.

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Inoculation with avirulent strains of *E. amylovora* before inoculation with virulent strains resulted in the decrease of the virulent strain population in apple and provided a high level of protection, as reported by Tharaud et al. (FR).

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Interactions between *Pseudomonas fluorescens* strain A506 and *E. amylovora* in pear blossoms were reported by Wilson & Lindow (US). They reported that if the biological control agent is applied 72 h in advance of the pathogen it has the capability to exclude the pathogen from the stigma through a preemptive utilization of resources either nutritional or physical. Additionally Lindow (US) presented results which showed that application of this biological control agent can reduce fireblight incidence on shoots 60-80%.

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It was reported by Kearns & Hale (NZ) that *E. herbicola* (isolate Eh 1087) applied at early and mid-blossom stages gave 70 to 80% protection from fireblight in apples.

Source: 6th International Workshop on Fireblight, Athens (GR) (1992-10-20/23)

## 529/14 ERWIAM...Quarantine Procedures for *Erwinia amylovora*

A hot-water treatment for the eradication of *Erwinia amylovora* from propagating wood was presented by Aldwincklé & Gustaffson (US). Treatment at 48° C for 60 min eliminated *E. amylovora* without damaging the buds.

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An Austrian/French research report on the effect of heat treatments on the survival of *E. amylovora* was presented by Keck et al. Incubation in a humid atmosphere or hot water at



45°C for 3 h eliminated the bacteria without damaging the buds. It was concluded that thermotherapy can be used under certain conditions to eliminate E. amylovora from budwood of apple and pears.

Source: 6th International Workshop on Fireblight, Athens (GR) (1992-10-20/23).

529/15 ERWIAM...Control of *Erwinia amylovora*

Experiments were carried out in Germany to test several bactericides in their efficacy for control of *Erwinia amylovora* (EPPO A2 organism) in *Cotoneaster salicifolius floccosus*. The bactericides flumequine, oxonilic acid, nourseothricin (antibiotic) and fosetyl-Al were tested.

The field experiments showed that all tested bactericides (except fosetyl-Al) controlled fireblight with >80% efficacy. The antibiotic nourseothricin controlled the disease up to 95% and reached a higher rate of control than the control application with streptomycin.

Source: Zeller, W. (1992) Zur Bekämpfung des Feuerbrandes (*Erwinia amylovora*) mit neueren Bakteriziden.  
48. Deutsche Pflanzenschutztagung, Göttingen, 1992-10-05/08



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**529/16**      XANTVE...*Xanthomonas campestris* pv. *vesicatoria* in Barbados

A survey was carried out in Barbados to assess the incidence and severity of *Xanthomonas campestris* pv. *vesicatoria* in tomatoes and pepper.

The survey showed *X. c.* pv. *vesicatoria* to be widespread and generally severe, especially during the rainy season. Races 1, 2 and 3 were present with a predomination of race 1. A study on the sensitivity of the strains to bactericides showed that 61%, 64% and 47% were resistant to copper, zinc and streptomycin, respectively.

**Source:**            Ward, H.P.; O'Garro, L.W. (1992) Bacterial spot of pepper and tomato in Barbados.  
**Plant Disease** 76, 1046-1048.



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## 529/17      CYDIMO...Control of *Cydia molesta*

In France field experiments were carried out to investigate the possibilities for controlling *Cydia molesta* (EPPO A2 pest) by mating disruption through pheromone release in pear orchards. Two pheromones were evaluated and the results showed that control of the oriental fruit moth was successful and equal to that with chemical treatments. Natural enemies were twice as abundant as in the plots which were subject to a chemical control programme.

**Source:**            Audemard, H.; Gendrier, J.-P. (1992) Oriental fruit moth (*Cydia molesta* Busck) control by the mating disruption technique and integrated plant protection in pear orchards.  
*Acta Phytopathologica et Entomologica Hungarica* 27, 59-64.



# EPPO *Reporting Service*

**529/18**      **FRANOC...Transmission of ilarviruses by *Frankliniella***  
***occidentalis***

The role of *Frankliniella occidentalis* (EPPO A2 pest) in the transmission of prunus necrotic ringspot ilarvirus (PNRSV) and prune dwarf ilarvirus (PDV) was studied in a joint Australian/US project.

Cucumber seedlings were dusted with pollen from PRNSV and PDV infected sweet and sour cherry trees and subsequently placed in a cage with *F. occidentalis*. Up to 75% (average 20%) of the seedlings became infected by the viruses. Seedlings which were dusted with the infected pollen but not subjected to the western flower thrips did not get infected with the exception of one seedling. The overall transmission of PDV was four times greater than that of PNRSV and PDV was still transmitted by infected pollen which was stored at a temperature of -20° C for a period of two years.

**Source:**            Greber, R.S.; Teakle, D.S.; Mink, G.I. (1992) Thrips-facilitated transmission of prune dwarf and prunus necrotic ringspot viruses from cherry pollen to cucumber.  
**Plant Disease 76, 1039-1041.**



# EPPO *Reporting Service*

## 529/19      LEPTDE...Influence of nitrogen on *Leptinotarsa decemlineata*

The influence of nitrogen on the performance of *Leptinotarsa decemlineata* (EPPO A2 pest) on tomatoes was studied in Ontario, Canada. Tomato plants were fertilized with different dosages of nitrogen and the activity of the Colorado beetles feeding on this plants was assessed.

The insects which were feeding on the plants receiving more nitrogen had a significantly higher survival rate from first instar to adult and had a significantly more rapid insect development and greater pupal mass.

**Source:**            Hunt, D.W.A.; Drury, G.F.; Maw, H.E.L. (1992) Influence of nitrogen on the performance of Colorado potato beetle (Coleoptera: Chrysomelidae) on tomato.  
**Environmental Entomology** 21, 817-821.

## 529/20      LEPTDE...Control of *Leptinotarsa decemlineata* by chitin synthesis inhibitors

A comparative evaluation of some chitin synthesis inhibitors as insecticides against *Leptinotarsa decemlineata* (EPPO A2 pest) was carried out in Poland.

The bioactivity of chlorfluazuron, hexaflumuron, teflubenzuron, triflumuron and novaluron was evaluated in laboratory and field experiments. According to the authors all compounds showed a high potential for the control of the Colorado beetle. A single treatment was able to suppress the beetle population density below the dangerous level and was sufficient for the whole growing season.

**Source:**            Malinowski, H.; Pawinska, M. (1992) Comparative evaluation of some chitin synthesis inhibitors as insecticides against Colorado beetle *Leptinotarsa decemlineata* Say.  
**Pesticide Science** 25, 349-353.