Xanthomonas axonopodis pv.citri 正體中文

System: Undefined

Kingdom	Phylum	Class	Order	Family
Bacteria	Proteobacteria	Gammaproteobacteria	Xanthomonadales	Xanthomonadaceae

Common name citrus canker (English)

Synonym

Similar species *Xanthomonas campestris, Alternaria limicola*

Summary Xanthomonas axonopodis pv.citri is a bacteria affecting citrus trees that thrives in areas with high temperatures, heavy rainfall, and high winds. In areas with these characteristics, X. axonopodis pv.citri causes citrus canker, which imparts heavy economic losses on citrus industries. It is spread through the inadvertent translocation of infected citrus fruits and seedlings to uninfected areas. Locally, X. axonopodis pv.citri is spread with the help of the Asian citrus leaf miner, which exposes the bacteria for spread by wind and rainfall.

view this species on IUCN Red List

Species Description
FDACS (2002) describes the appearance of leaves and fruit of infected plants as brown with raised lesions surrounded by oily, water-soaked yellow rings. Old lesions in leaves may fall out, creating a shot-hole effect. Masses of rod-shaped bacteria streaming from the edges of thinly cut lesion sections can be observed in infected citrus plants.
Please see PaDIL (Pests and Diseases Image Library) Species Content Page *Bacteria: Citrus canker (canker A)* for high quality diagnostic and overview images.

Habitat Description
Xanthomonas axonopodis pv.citri has been found in all types of citrus, including oranges, sour oranges, grapefruit, tangerines, lemons, and limes (FDACS, 2002). *X. axonopodis pv.citri* is unlikely to be found in regions where temperature increases while rainfall decreases because the disease prefers high temperatures and heavy rainfall (Gabriel, 2002).

Reproduction
According to Campbell *et al*. (1999), bacteria reproduce asexually using binary fission. Binary fission is a type of cellular division in which each dividing daughter cell receives a copy of the single parent chromosome.

General Impacts
Xanthomonas axonopodis pv.citri causes the citrus tree to continually decline in health and fruit production until ultimately it produces no fruit at all and kills the tree (FDACS, 2002). Gabriel (2002) notes that the disease causes major economic losses to the citrus industry and is a nuisance to people with ornamental citrus trees. In the United States, Florida is at high risk because of its high humidity throughout the year, seasonal hurricanes, and frequent thunderstorms that are accompanied by high wind gusts. The 8.5 billion dollar citrus industry is critical to the well being of Florida's economy (FDACS, 2002).

Management Info
Preventative measures: The best preventive measure is to catch the infection early before it spreads extensively. Gabriel (2002), however, points out that because of increasing levels of international travel, and in spite of rigorous quarantine measures, the disease is likely to be reintroduced into citrus orchards repeatedly because of people inadvertently bringing infected citrus fruits and seedlings to uninfected places.
\r\nPhysical: According to Gabriel (2002), *X. axonopodis pv.citri*' distribution and survivability is strongly influenced by the ecological conditions surrounding its host. The Asian citrus leaf miner (*Phyllocnistis citrella*), an invasive in Florida, increases the spread of *X. axonopodis pv.citri* by exposing the disease for easier spread by wind and rainfall. FDACS (2002) states that no chemical compound is known to destroy the bacteria within the plant tissue. So in order to eradicate the disease, the infected and exposed trees must be cut down and disposed of properly. When an infected tree is found, all trees within 1,900 feet of it must also be cut down. Researchers determined that approximately 95% of the trees that became diseased were up to 1,900 feet away from a single disease-positive tree.
The American Phytopathological Society (APS) offers on its website illustrated lessons to introduce the symptoms and signs, pathogen biology, disease cycle, epidemiology, disease management, and scientific, economic and social significance of major plant diseases. Please follow this link *\r\nCitrus canker* for details.

Pathway
The disease could be carried in plants or on equipment. Contaminated plants may be exchanged through the nursery trade industry.

Principal source: Citrus Canker Disease (Gabriel, D. W.)

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: C. Vernière, Fruit Department, Centre de coopération International de recherche Agronomique pour le Développement CIRAD, Montpellier - France

Pubblication date: 2005-12-24

ALIEN RANGE

[2] ARGENTINA
[1] BOLIVIA
[1] CHILE
[1] GABON
[1] IRAQ
[1] MALDIVES
[1] OMAN
[1] PARAGUAY
[1] UNITED STATES
[1] YEMEN
[1] AUSTRALIA
[1] BRAZIL
[1] CONGO, THE DEMOCRATIC REPUBLIC OF THE
[1] IRAN, ISLAMIC REPUBLIC OF
[1] MADAGASCAR
[2] MAURITIUS
[1] PAKISTAN
[1] SAUDI ARABIA
[1] URUGUAY

BIBLIOGRAPHY
9 references found for **Xanthomonas axonopodis pv.citri**

Managment information
FDACS (Florida Department of Agriculture and Consumer Services). 2002. *Citrus Canker: The Threat to Florida Agriculture* .
Summary: Basic description, habitat types, general impacts, and control measures. Website is specifically focused on Florida but provides general information.
Gabriel, D. W. 2002. *Citrus Canker Disease*. University of Florida.
Summary: Detailed description, habitat info, look alike info, distribution, general impacts, and control measures used.

Gottwald, T.R. 2000. Citrus canker. The Plant Health Instructor.DOI: 10.1094/PHI-I-2000-1002-01 Updated, 2005.
Summary: The American Phytopathological Society (APS) offers on its website illustrated lessons to introduce the symptoms and signs, pathogen biology, disease cycle, epidemiology, disease management, and scientific, economic and social significance of major plant diseases. The website will also offer basic information on the history, biology, survival, dissemination, host-parasite interactions, epidemiology and management of the major groups of plant pathogens. This section is in development.
APS Introductory Plant Pathology Resources is available from http://www.apsnet.org/education/IntroPlantPath/top.html. This page is available from: http://www.apsnet.org/education/LessonsPlantPath/CitrusCanker/default.htm [Accessed 7 November 2006]
Liberato J.R, Miles A.K, Rodrigues Neto J & Gambley C 2006. Citrus canker (canker A) (*Xanthomonas axonopodis pv. citri*) Pest and Diseases Image Library. Updated on 22/09/2006 3:07:27 PM.
Summary: Available from: http://www.padil.gov.au/pests-and-diseases/Pest/Main/136647 [Accessed 7 December 2011]

General information
Campbell, Neil A., Reece, Jane B. and Mitchell, Lawrence G. 1999. *Biology Fifth Edition* . Addison Wesley Longman, Inc. Menlo Park, California.
Summary: A biology text book. Used for bacteria reproduction info.
Proteome Analysis at European Bioinformatics Institute (EBI)
Summary: Taxonomy
Rawlings, N.D., O Brien, E. A. and Barrett, A.J. 2002. MEROPS: the protease database [Online database]. *Nucleic Acids Res.* 30: 343-346.
Summary: Taxonomy.
Vauterin L., Hoste B., Kersters K, Swings J. 1995. Reclassification of Xanthomonas. Int. J. Syst. Bacteriol.45: 472-489.
Summary: Taxonomy.
Verni□re C., Hartung J.S., Pruvost O.P., Alvarez A.M., Maestri P., Luisetti J. 1998. Characterization of phenotypically distinct strains of *Xanthomonas axonopodis* pv. *citri*from Southwest Asia. Eur. J. Plant Pathol., 104:477-487.
Summary: description of new variants.