



**Fig. 1.** Citrus canker; raised corky lesion on leaf (a) and on fruit (b). Gel showing molecular detection of citrus canker (c). Eradication efforts in Qld - cover of Queensland Country Life from July 2004 (d). Image (d) used with permission is copyright of Rural Press Ltd (Fairfax Media).

**Disease:** Citrus Canker

**Classification:** Bacteria: Proteobacteria, gamma subdivision; Xanthomadales; Xanthomonadaceae  
*Xanthomonas axonopodis* pv. *citri* (Hase) Vaut. ; Synonym = *Xanthomonas smithii* subsp. *citri*

Citrus canker is of serious quarantine concern to Australia and is currently under eradication from the Emerald area in Qld. The impact of the disease can be serious especially under warm humid conditions when in addition to leaf spotting and fruit blemish it causes defoliation, shoot dieback and fruit drop. The economic impact of disease is greatest in terms of the resulting loss of market access.

**The pathogen:** Gram negative, rod shaped, aerobic, motile by a single polar flagellum, produces slow growing, non-mucoid colonies in culture, ecologically obligate plant parasite.

**Key features:** Small, round blister-like cankers on fruit, leaves, twigs. Cankers are usually raised, crater-like, coloured tan to brown, surrounded by an oily, water-soaked margin and a yellow halo.

**Distribution:** The pathogen prefers a sub-tropical to tropical climate and probably originated in South-East Asia. It is currently recorded throughout Asia, the Middle East, some countries of Central and Western Africa, parts of the Pacific, South and Central America and parts of North America including Florida. The most virulent strain of the bacterium is found in Asia. Although not established in Australia, previous detections of citrus canker in the Northern Territory have been eradicated, and it is currently under eradication in Qld.

**Host Range:** Susceptible hosts include all commercial citrus varieties and other genera within the Rutaceae family. Some of Australia's native citrus including *Citrus australasica* (finger lime), *C. glauca* (Desert lime) and *Murraya ovatifoliolata* (native mock orange) are also hosts.

**Impact:** Premature loss of leaves and fruit, defoliation, shoot dieback and fruit drop. Blemished fruit are unmarketable and fruit from disease affected areas are restricted in market access. The economic impact of restricted market access is much greater than that from yield and quality issues.

**Eradication efforts:** Citrus canker has been successfully eradicated previously from areas of Florida, Australia and South Africa. Characteristics that favour its eradication include: an inability to survive outside of the host for long periods; molecular and other methods for quick and accurate diagnosis; and limited host range. Citrus canker is currently under eradication in the Emerald region of Qld. This has involved the removal and destruction of 500,000 commercial citrus trees, 4,300 non-commercial host plants and large areas of native citrus. Surveillance has not detected the pathogen since 2005. Replanting of citrus is anticipated for July 2007 and declaration of eradication for 2009.

**Control:** In regions where citrus canker is endemic, integrated control measures that rely on the planting of disease free stock, resistant varieties and on-farm biosecurity practices are implemented. Copper-based bactericides are the most effective chemical control for citrus canker.

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**Further Reading:** JH Graham, TR Gottwald, J Cubero & DS Achor (2004). *Molecular Plant Pathology* 5( 1 ) , 1–15. QDPI&F <<http://www2.dpi.qld.gov.au/citruscanker>>.

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