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DISEASE NOTES

First Report of *Xanthomonas citri* pv. *citri* Pathotype A Causing Asiatic Citrus Canker in Martinique, France

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ABSTRACT

Asiatic canker, caused by *Xanthomonas citri* pv. *citri*, is a major threat to worldwide citriculture. Three pathotypes differing in host range and hypersensitive reactions toward citrus species have been defined. Whereas pathotypes A^w and A* have a restricted host range, *X. citri* pv. *citri* pathotype A infects a broader range including most commercial citrus species and hybrids and can cause important economic losses in tropical and subtropical areas. Pathotype A strains, especially those assigned to lineage 1, were implicated in the major geographical expansion of *X. citri* pv. *citri* during the 20th century from their native area, Asia ([Pruvost et al. 2014](#)). *X. citri* pv. *citri* is listed as a quarantine pathogen in the European Union (EU) – Directive 2000/29/EC annex II A1. Martinique (France) is an outermost region of the EU in the eastern Caribbean Sea. Canker lesions were first observed at Morne Rouge, Martinique in June 2014 on grapefruit (*Citrus paradisi*), mandarin (*C. reticulata*), Tahiti lime (*C. latifolia*), and Valencia and Washington Navel oranges (*C. sinensis*). Official diagnostics, including bacterial isolations on YPGA or KC semiselective medium ([Pruvost et al. 2005](#)), PCR-based identification with 4/7 primers ([Hartung et al. 1993](#)), and pathogenicity tests, were performed following the EPPO standard PM7/44 (www.eppo.int) and identified isolates as *X. citri* pv. *citri*. Three strains isolated in Martinique in 2014 from grapefruit or Tahiti lime were further characterized (LL074-4, LL077-2, and LL079). Multilocus sequence analysis (MLSA) targeting six housekeeping genes (*atpD*, *dnaK*, *efp*, *gltA*, *gyrB*, and *lepA*) ([Almeida et al. 2010](#); [Bui Thi Ngoc et al. 2010](#)) identified Martinique strains as *X. citri* pv. *citri* with 100% sequence identity to the type strain LMG 9322. Using MLVA-31 targeting 31 minisatellites, Martinique strains were assigned to lineage 1 composed of pathotype A strains ([Pruvost et al. 2014](#)). All strains were inoculated by a detached leaf assay onto Mexican lime SRA 140 (*C. aurantifolia*), sweet orange Washington Navel SRA 102, and grapefruit Henderson SRA 336 ([Bui Thi Ngoc et al. 2010](#)). All inoculated leaves produced

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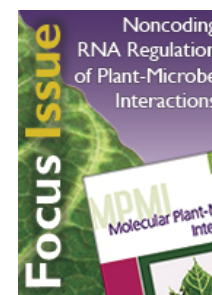
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typical erumpent, callus-like tissue at wound sites. *Xanthomonas*-like colonies were reisolated from lesions that had developed. Boiled suspensions were assayed by PCR with 4/7 primers and produced the expected amplicon, fulfilling Koch's postulates. No lesions developed on the negative control consisting of sterile 0.01M tris buffer pH 7.2. This is the first report of *X. citri* pv. *citri* in Martinique and to our knowledge in the Caribbean region. Surprisingly, all strains collected to date in Martinique grew on YPGA supplemented with 300 mg liter⁻¹ copper sulfate even when no extensive copper spray programs have been used, suggesting that copper-resistant strains may have been introduced. Disease is contained by tree removal and burning and the situation is presently under apparent control although positive trees were sporadically detected in 2015 in backyards or small orchards at Le Lorrain and Saint Pierre. An extensive surveillance program is currently implemented in Martinique for quarantine pathogens of citrus.



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