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Disease Notes

First Report in Ghana of *Xanthomonas citri* pv. *mangiferaeindicae* Causing Mango Bacterial Canker on *Mangifera indica*

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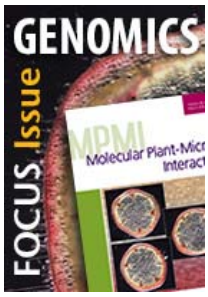

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Bacterial canker of mango (or bacterial black spot), caused by *Xanthomonas citri* pv. *mangiferaeindicae*, is an economically important disease in tropical and subtropical producing areas (1). *X. citri* pv. *mangiferaeindicae* can cause severe infection in a wide range of mango cultivars and induces raised, angular, black leaf lesions, sometimes with a chlorotic halo. Several months after infection, leaf lesions dry and turn light brown or ash gray. Severe leaf infection may result in abscission. Fruit symptoms appear as small water-soaked spots on the lenticels. These spots later become star shaped, erumpent, and exude an infectious gum. Often, a “tear stain” infection pattern is observed on the fruit. Severe fruit infections will cause premature fruit drop. Twig cankers are potential sources of inoculum and weaken resistance of branches to wind damage. Leaf lesions with suspected bacterial canker were collected in January 2010 from mango trees cv. Keitt in several blocks at the Integrated Tamale Fruit Company, Ghana. Non-pigmented *Xanthomonas*-like bacterial colonies were isolated on Kasugamycin-Cephalexin semiselective agar medium (3). On the basis of IS*1595*-Ligation Mediated-PCR data, 16 strains from Ghana produced identical fingerprints and were identified as *X. citri* pv. *mangiferaeindicae* (4). The haplotype corresponding to the Ghanaian strains had not been previously reported. On the basis of multidimensional scaling (4), this haplotype clustered together with a group of strains from multiple origins and the analysis was not informative as an aid for tracing back the outbreak. Five Ghanaian strains (LH2-3, LH2-6, LH2-8, LH2-11, and LH2-15) were compared by multilocus sequence analysis to the type strain of *X. citri* and the pathotype strain of several *X. citri* pathovars, including pvs. *anacardii* and *mangiferaeindicae*. This assay targeted the *atpD, dnaK, efp*, and *gyrB* genes as described previously (2). Nucleotide sequences were 100% identical to those of the pathotype strain of *X. citri* pv. *mangiferaeindicae* whatever the gene assayed, but differed from any other assayed *X. citri* pathovar. Mango cv. Maison Rouge leaves from the youngest vegetative flush were infiltrated (10 inoculation sites per leaf, three replicate plants) using inoculum of each of the same five Ghanaian strains made from suspensions in Tris buffer containing ~1 × 10^5 CFU/ml. Negative control treatments consisted of leaves infiltrated with sterile Tris buffer. Typical symptoms of bacterial canker were observed for all assayed strains a

week after inoculation. No lesions were recorded from the negative control. One month after inoculation, mean *X. citri* pv. *mangiferaeindicae* population sizes ranging from 4 × 10^7 to 1 × 10^8 CFU/lesion were recovered from leaf lesions, typical of a compatible interaction (1). High disease prevalence was observed in Ghana, indicating the suitability of environmental conditions in this region for the development of mango bacterial canker. The budwood for these blocks was imported from Burkina Faso in 2002 and symptoms were observed in these blocks shortly after establishment. To our knowledge, this is the first report of mango bacterial canker in Western Africa.

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