Disease Note

FIRST REPORT OF CITRUS BENT LEAF VIROID IN MALAYSIA

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Citrus is among eight major fruit crops grown in Malaysia, with a total production of 36,450 tons in 2013. Citrus bent leaf viroid (CBLVd, genus Apscaviroid, family Pospiviroidae), is widely distributed in citrus with no specific symptoms associated with its infection but responsible for leaf bending on Etrog citron. Leaf samples of citrus species such as calamondin [Citrofortunella microcarpa (Bunge) Wijnands], kaffir lime [Citrus hystrix (Cristm.) Swingle], mandarin orange [C. reticulata Blanco], pomelo [C. maxima Merr.], sweet orange [C. sinensis (L.) Osbeck] with stunting, leaf yellowing and epinasty were collected from different states in Malaysia. The rootstocks of these samples were not known. Total nucleic acids were extracted from leaves around the tree canopy and tested by RT-PCR with two sets of primers, CBLV-CM/CBLV-CP (Ashulin et al., 1991) and the newly designed Y14F/Y14R (5’-CGGAGACCTTCTTGTTGTTCC-3’ and 5’-CTTGGAAGTCCGCTCGACTA-3’), respectively. Altogether 21 of 133 citrus samples were positive for CBLVd. The resulting amplicons of 328 bp and 234 bp in size were cloned. Sequence analysis revealed 95-99% identity with CBLVd isolate Jp (accession No. AB006734), confirming the presence of CBLVd (KU194472, KX823338-KX823343) in the tested samples. No particular symptoms were observed in the test samples correlated with the presence of CBLVd, thus the observed symptoms may not be induced by this viroid. To the best of our knowledge, this is the first report of CBLVd in Malaysia. Additional investigations on geographical distribution, epidemiology and economic impact are essential to formulate CBLVd management strategies in Malaysia.


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CANDIDATUS LIBERIBACTER ASIATICUS CAUSING CITRUS HUANGLONGBING ON CITRUS SINENSIS IN BANGLADESH

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Citrus huanglongbing (greening) is one of the important diseases of citrus in Asia (Bové, 2006). The symptoms include blotchy chlorosis and/or mottling of the leaves, stunted growth, poor root growth, small, green, and malformed fruits and decline of the trees. The disease is caused by the phloem-limited unculturable fastidious bacteria Candidatus Liberibacter asiaticus (CLas), Ca. L. africanus (CLaf), and Ca. L. americanus (CLam) (Bové, 2006; Jagoueix et al., 1994). Among them CLas is the most widespread (e.g., Asia, Brazil and North America). In recent years the presence of huanglongbing was suspected in different regions of Bangladesh. To establish whether this is the case, in July, 2016 symptomatic plant samples of Citrus sinensis were collected from four citrus-growing areas of the country: Jaintapur (Sylhet), Akbarpur (Moulvibazar), Dighinala (Khadraghari) and Hathazari (Chittagong). The samples were analyzed by polymerase PCR using the ‘CLas’ specific primers A2 (5’-TATAAAGGTTGACCTTTCGAGTTT-3’) and J5 (5’-CTTGGAAGTCCGCTCGACTA-3’), respectively. Amplified partial sequence of the β- operon (rp/KAJL-rpoBC operon) of ribosomal protein genes (Hocquellet et al., 1999). A product 703 bp in size specific to Ca. L. asiaticus was amplified, sequenced and deposited in GenBank (accession No. KX826950). The nucleotide sequence of the recovered CLas shared 100% sequence identity with other Ca. L. asiaticus strains from NCBI database (e.g. KC477384, KT164844, KC133065). To our knowledge this is the first molecular-based detection of Candidatus Liberibacter asiaticus infecting Citrus sinensis in Bangladesh.


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