

PCR Detection and Distribution of Huanglongbing Disease and Psyllid Vectors on Citrus Varieties with Changes in Elevation in Kenya

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Abstract: The current decline in citrus production in Kenya is attributed to a great extent to Huanglongbing (HLB) (greening) disease, caused by *Candidatus Liberibacter africanus*. The control or eradication of the disease has been seriously impeded by the lack of appropriate disease indexing methods and lack of current information on the distribution of the disease and its vector. The purposes of this study were three-fold: To design a HLB detection method for Kenyan strains, to determine the impact of variation in altitude and citrus varieties on disease distribution using both morphological and molecular techniques. A PCR detection methodology was designed to amplify the ribosomal protein (*rplJL*) gene of the *Candidatus Liberibacter africanus* strains that cause HLB disease in citrus. A 716 -720 bp fragment of the *rpl10/rpl12* rDNA was PCR amplified from HLB infected samples while samples obtained from greenhouse maintained citrus had no amplification. The PCR amplification of the *rplJL* gene provides a precise tool to detect the presence of *Candidatus Liberibacter africanus* bacteria in citrus in all environments and therefore accurate indexing for the HLB disease before and after symptoms develop on the plant. The HLB disease and its psyllid vectors were found to be most prevalent on Washington navel orange growing in altitudes above 1400 mASL and was least found in the lower midlands (800-1250 mASL). There is need to integrate stringent and early disease detection tools with the use of clean planting material to curb the spread of the disease in the country.

Key words: Citrus, PCR, *Candidatus Liberibacter africanus*, ribosomal DNA, Huanglongbing, *Trioza erytreae*, distribution in Kenya
