

Development of efficient and early *Candidatus Liberibacter asiaticus* detection methods in citrus

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Huanglongbing (HLB), a disease with no known cure, has crippled citrus industries worldwide, and currently poses a serious threat to the survival of Texas citrus. HLB is caused by the phloem-limited alpha-proteobacteria, *Candidatus Liberibacter* spp. which is vectored by *Diaphorina citri*. The bacterium is unevenly distributed in the tree canopy and disease symptoms are commonly confused with general nutrient deficiencies and environmental stress which contribute to difficulty in identification. We found that roots serve as a better diagnostic sample compared to leaves. The purpose of this study is to develop an early and reliable detection method for *Ca. L. asiaticus* (CLAs) using root samples. Several DNA extraction methods and DNA amplification methods including conventional PCR (cPCR), quantitative PCR (qPCR), and Loop mediated isothermal amplification (LAMP) were employed in root and leaf samples to determine their efficacy in CLAs early detection.