8.21 Rapid, Sensitive, and Non-Radioactive Tissue-Blot Diagnostic Method for the Detection of Citrus Greening Disease (HLB)

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Citrus huanglongbing (HLB), also known as citrus greening, is one of the most devastating diseases of citrus worldwide. The disease is caused by gram-negative, phloem-limited α-proteobacterium, Candidatus Liberibacter asiaticus, vectored by the Diaphorina citri Kuwayama. Citrus plants infected by the citrus greening bacterium may not show visible symptoms sometimes for years following infection, and non-uniform distribution within the tree makes the detection of the pathogen very difficult. Efficient management of HLB disease requires rapid and sensitive detection early in the infection followed by eradication of the source of pathogen and the vector. The polymerase chain reaction (PCR) based method is most commonly employed for screening the infected/suspected HLB plants and psyllids. This is time consuming, cumbersome, and not practical for screening large number of samples in the field. To overcome this, we have developed a simple, sensitive, non-radioactive, tissue-blot diagnostic method for early detection and screening of HLB disease. Digoxigenin-labeled molecular PCR and riboprobes specific to Candidatus Liberibacter asiaticus sequences have been developed and used for the detection of HLB in plants and psyllids.