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Effect of beneficial bacterial isolates from citrus roots in Florida on citrus Huanglongbing disease development (poster)

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Huanglongbing (HLB) is the most devastating disease of citrus in Florida. HLB is caused by the phloem-inhabiting bacterium ‘*Candidatus Liberibacter asiaticus*’ (Las), which is transmitted by psyllid vector *Diaphorina citri*. The current management strategies of HLB are to control psyllids and eradicate infected plants. However, these management practices have not been able to stop the spreading of HLB (Duan et al. 2009). Alternative approaches are needed to control HLB. In previous studies we isolated multiple bacterial strains from roots of healthy citrus plants in HLB infected groves in Florida, which have the potential to enhance plant growth and suppress diseases (Trivedi et al. 2011). Recently, early infection of roots by Las leading to root decline was suggested to be important in HLB disease development (Johnson et al. 2012). We hypothesize that introduction of beneficial bacteria to roots of citrus plants could decrease root damage by promoting root growth and reducing Las infection and thus improve HLB management. To test this hypothesis, six beneficial bacteria were assessed for their plant growth-promotion ability; and three were found to be able to promote growth of both grapefruit and *Arabidopsis* (Col-0 ecotype) in greenhouse experiments, with increases in root length and weight, compared to mock treated plants. Thus, the three isolates were selected to evaluate the effect on Las infection in greenhouse assays. Details of the beneficial bacterial isolates, plant growth-promotion activity, and effect on Las infection will be discussed.

References

Duan, Y., Zhou, L., Hall, D. G., et al. 2009. Complete genome sequence of citrus huanglongbing bacterium, ‘*Candidatus Liberibacter asiaticus*’ obtained through metagenomics. *Mol. Plant Microbe Interact.* 22:1011–1020.

Johnson, E.G., Bright, D.B., Graham, J.H. 2012. Early root infection and damage in citrus huanglongbing disease development. (Abstr) *Phytopathology* (Suppl 4) 102:S4.59. <http://dx.doi.org/10.1094/PHYTO-102-7-S4.59>.

Trivedi, P., Spann, T.M., and Wang, N. 2011. Isolation and characterization of beneficial bacteria associated with citrus roots in Florida. *Microbial Ecology.* 62:324-336.