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Study of Thermotherapy against Citrus Huanglongbing in Fujian Province, China

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Huanglongbing (HLB) is a major threat to world citrus production. In this study, we investigated using a heat treatment technique for managing HLB-affected citrus trees in the field. A total of 72 5-to-8-year old mandarin citrus, *Citrus reticulata* Blanco, trees were used for the study. Nine trees were regarded as a replicate or a block with four replicates per treatment. A randomized complete block design was used for field experimental design. The treated trees were covered by using plastic sheeting for 6-h during day time, repeated three times weekly. Positive results were observed, judging by disease symptom expression and titer changes before and after treatment. New flushes and healthy young leaves were abundant in the treated trees by the 4th week as well as 11th week after last plastic sheeting. Approximately 60% of treated trees had more than 80% reduction of Las titers, with eleven trees (11 out of 36) showing a decline of more than 95%, and eight trees with a slight increase of Las titers in the 4th week after treatment. Whereas Las titers in the untreated plants exhibited a significant increase, with the highest increase being about 96-fold compared to pre-treatment in the 4th week after treatment. Las titers in the treated citrus trees declined more significantly by the 11th week after treatment, compared to those of untreated. About 44% of treated trees had a more than 90% titer reduction. Change of Las titer in the untreated trees varied substantially in the 11th week after treatment. Twenty trees (20 out of 36) had a wide range of Las titer reductions, Las titers in the remaining 16 trees were increased significantly, with the highest increase being 31-fold, compared to the Las titer level of pre-treatment.

Although the result is preliminary, it confirms that heat treatment can significantly reduce Las titers in the HLB-affect trees. This study provides a foundation for further future work in developing HLB management techniques based on the technology.