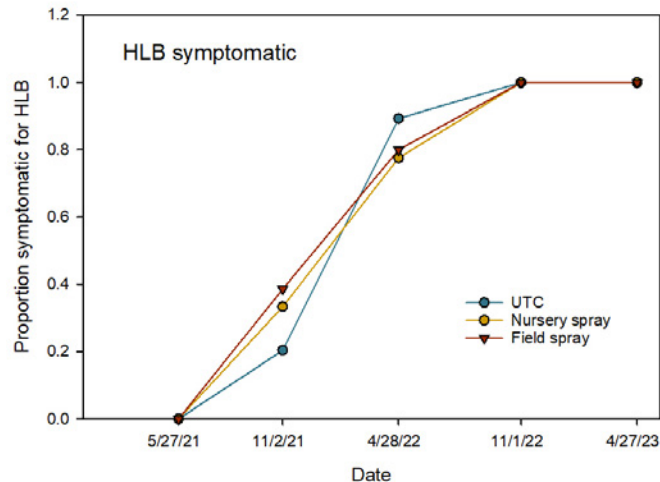


Field Trials with the Antimicrobial Peptide SAMP

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Effort Statement: The data collection was completed and final data analysis is underway.

Summary: Public interest has been high concerning the new type of antimicrobial peptide (named stable antimicrobial peptide or SAMP) announced by the University of California, Riverside in 2021. This peptide from the citrus relative, *Microcitrus australiasica*, has been reported to be able to prevent huanglongbing (HLB) or improve infected tree health in very controlled circumstances. Antimicrobial peptides in general are small proteins with features that allow them to kill microorganisms like bacteria, fungi, and some viruses. The ways that these small proteins kill microorganisms

can vary, but SAMP appears to poke holes in the outer membrane of the bacterium. The effect would be similar to sticking holes in a rigid balloon, allowing the contents to escape. While SAMP is reported to be effective in very controlled conditions, it is important to verify if the peptide works in the field. Field conditions are much harsher with challenges such as UV light, rainfall, or microorganisms that could break the peptide into smaller pieces which may affect its effectiveness. We have two early-stage field trials with SAMP. The first trial is to look at whether SAMP can protect newly planted trees from HLB. The trees were planted in October 2020. The second trial is focused on whether young HLB-affected trees

(4-years-old) can improve their yield, fruit size, and fruit quality after treatment. In both trials, there was minimal improvement of tree health from the foliar or injected SAMP. A follow-up project is starting to see if plants that always express SAMP will be as susceptible to HLB as those without the SAMP.

Take Home Message:

- Promising products in lab and greenhouse assays need to be tested in the field to see if the effect can be replicated under real-world conditions.
- Foliar application of the SAMP did not protect or cure plants from HLB.
- Fruit quality was not improved by application of SAMP.

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