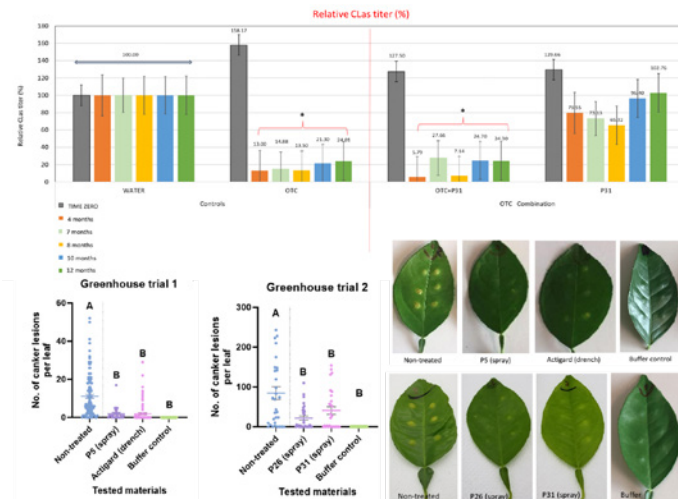


A Collaborative Approach between Academics, Growers, and the Agrochemical Industry to Discover, Develop, and Commercialize Therapies for Huanglongbing

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Summary: Researchers from UF/IFAS, Texas A&M, UC Davis, and Bayer Crop Science, situated in France, Germany, and California, USA, continue developing effective therapies for huanglongbing (HLB). A therapeutic screening pipeline was established where thousands of compounds with the potential to control HLB are screened first in silico and later in laboratory, greenhouse, and field conditions. In this process, we identified compounds of interest that include a class of synthetic plant defense inducers (PDI) and natural antimicrobial extracts that are now being tested for their efficacy in preventing HLB infection of young shoots and slowing HLB infection of new trees. Although some compounds were phytotoxic when used in high concentrations, we utilized the hairy

root (laboratory) and greenhouse screening assays to determine non-phytotoxic concentrations. By applying PDI treatments before Asian citrus psyllid (ACP) colonization to activate plant defense (priming) and prevent bacterial infection, we observed that young flushes were protected from HLB. Some preliminary experimental results were encouraging and provided a substantial delay in HLB infection (approximately 3-7 months) after 2-3 applications. Moreover, some PDIs also were significantly effective in citrus canker control (see photo). We are now testing some of these compounds on newly established citrus trees in four different grove sites in Florida. We are analyzing leaves from these treated plants for metabolomic response to develop an early and

more sensitive HLB detection method, allowing us to better assess the efficacy of our applications without any lengthy delay.

Take Home Message:

- Researchers from UF/IFAS, Texas A&M, UC Davis, and Bayer Crop Science collaborate globally to develop therapies for HLB.
- A screening pipeline evaluates thousands of compounds through in silico, laboratory, greenhouse, and field tests, focusing on synthetic PDI and natural antimicrobial extracts aimed at mitigating HLB infection in young shoots and newly planted trees.
- Initial results indicate some PDIs applied preemptively before ACP colonization effectively delay HLB infection, with some compounds showing promise against citrus canker. Testing continues in four Florida grove sites, alongside metabolomic analysis for improved early HLB detection methods.

Funding:

