

Nutrient Application to Citrus and its Interaction with **Asian Citrus Psyllid (Hemiptera: Liviidae)** **Populations**

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The current greatest threat to the citrus industry is the spread of the bacterial pathogen *Candidatus Liberibacter* spp., which causes Huanglongbing (HLB) also known as citrus greening disease, an incurable and citrus deadly disease. The vector that is responsible for inoculation and spread of this bacterial pathogen is the Asian Citrus Psyllid (ACP), *Diaphorini citri* Kuwayama, 1908 (Hemiptera: Liviidae). ACP was first discovered in the Americas in Brazil during the 1940s and eventually was detected in Florida by the late 1990s. The HLB pathogen was first detected in the Americas in the early the 2000s, and in the US in Florida in 2005. Currently in the United States, ACP has been detected in all of the major citrus producing states and has been spreading rapidly over time. Due to the large numbers of ACP in a given area, along with the severity of the HLB pathogen they transmit, many different control measures are implemented. Recent research into strategies to mitigate the HLB incidence comprises nutrient application to improve citrus tree health. While some nutrients like nitrogen have been shown to increase ACP densities, others such as calcium significantly reduced ACP infestations and population levels. Nitrogen is a primary macronutrient important for protein production and vital for citric functions such as photosynthesis, while calcium is important in cell membrane integrity and signal transduction, and may enhance the plant's natural ability to resist herbivory. In order to gain more insights into the mechanisms involved in ACP response to nitrogen and calcium applications, several studies will be conducted to determine which morpho-chemical changes in citrus trees are brought about by these two nutrients that are related to ACP life history parameters and population fluctuations. The long term goal of this study is to provide recommendation on a balanced citrus nutrition program with low risks of ACP outbreaks. .