# Utilizing Genetic-based Solutions for Developing HLB-resistant Citrus

**Researcher:** Manjul Dutt
**Contact** manjul@ufl.edu
UF/IFAS CREC

The overall goal of this project is to produce solutions that can be utilized to rapidly implement citrus improvement strategies to combat HLB in citrus. While resistant citrus cultivars are desirable, tolerance to the bacterium, allowing the plant to thrive in an HLB endemic environment can be a more practical approach. The two main goals of this project are: 1) to understand and implement strategies that will allow the citrus plant to defend itself against HLB. This will be done primarily by utilizing an approach called Systemic Acquired Resistance (SAR). This process is analogous to the innate immune system found in animals and can be induced through the upregulation of several genes; 2) to understand the HLB resistance mechanism in some citrus relatives such as the Australian limes and utilize that knowledge to improve conventional citrus. The short-term outcome of this project will be in the development of HLB-tolerant rootstocks while the long-term goal will be the development of HLB-tolerant scions. During 2020-2021, we have gained a better understanding of the genetic elements that are responsible for the SAR induced tolerance to HLB. Additionally, we have made progress in understanding the mechanism behind HLB-tolerance in the finger limes. It is anticipated that at the end of this project, citrus growers will be able to utilize our newly developed HLB-tolerant germplasm to keep their groves productive and profitable and reverse the declining citrus acreage.

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