

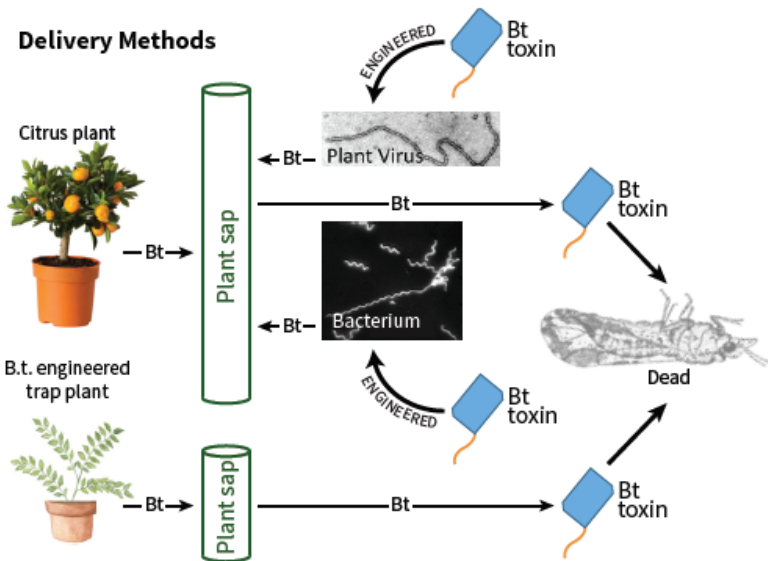
# Bt Toxin-based Strategies for Management of ACP and HLB

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The damage caused by HLB poses an ongoing threat to commodity price stability and affordability of citrus products and has increased the economic and environmental costs for insecticide-based management programs. New, efficient, and sustainable tools are needed to control the insect vector, ACP, to reduce spread of the disease. Pesticidal proteins produced by the bacterium *Bacillus thuringiensis* (Bt) have been used successfully in both the agricultural

and public health settings. We investigated the potential use of these proteins for ACP control and identified several Bt proteins that are toxic to ACP. We then assessed methods for delivery of Bt proteins to the phloem (plant sap), the primary site of ACP feeding. These methods included delivery via a modified plant virus (CTV), phloem-inhabiting bacteria, or trap plants (Indian curry leaf) for use with non-transgenic citrus. Of these strategies, trap plant delivery

of Bt proteins showed the greatest promise for suppression of ACP populations in greenhouse-based trials, along with CTV delivery for delivery of smaller Bt proteins. We also assessed Bt protein delivery via transgenic citrus plants, which also showed potential. Field trials will be required however to accurately determine the potential utility of Bt proteins for ACP control in citrus.

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Image from [Science for Citrus Health](#)