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Analysis of Methods/Systems for Delivery of Volatile Repellent Compounds to Protect Young Citrus Plantings from HLB

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Control of Asian citrus psyllids is critical for the citrus industry to survive. Citrus growers urgently need to be provided with new tools using recent technological developments for best control practices. One approach is the use of plant-based or natural volatile repellent compounds. Although there have been significant advances in laboratory studies, there is still no effective repellency system developed for field usage. Most importantly, even if the most effective psyllid repellent is utilized, its field performance may be less than desired if the most effective method of delivery is not employed. A system approach is required – the volatile repellent must be “matched” to the delivery methodology – to achieve the optimal overall repellency system, which also requires a physicochemical and engineering understanding of the repellency system employed to provide the sought-after control strategy. This presentation will examine both wax-based and vapor-based dispensing approaches. The volatile substances released from wax-based formulations are analogous to “contact repellents”, whereas those released from vapor-based systems function as “spatial repellents” – two different approaches for delivery of volatile repellent compounds. We present a break-through in the art of controlled delivery of volatile compounds using a system approach. The Auburn vapor-based invention has many advantages, one of which is the flexibility it offers in the design and engineering of vapor delivery systems for biocontrol strategies in the citrus industry.