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Affordable Essential Oils for Management of the Asian Citrus Psyllid

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Plant essential oils are commonly used to manage insects; they are widely available and some are inexpensive. In this research we have selected five botanical oils costing less than \$100 US per kilogram, to evaluate for repellency to Asian Citrus Psyllid (ACP), the insect vector of the causal pathogens of huanglongbing. In olfactometer assays, fir oil was repellent; clove and camphor oils were attractive; and litsea and citronella oils elicited no response from ACP females. In no-choice settling experiments, neither the low nor high fir oil treatment deterred ACP from settling. Subsequently, ACP were presented with a choice test between control plants and fir oil plants with a single dose of fir oil contained in a polyethylene vial. In this case, ACP disproportionately settled on control plants, avoiding fir oil baited trees completely. Finally, we conducted a field trial using yellow sticky traps baited with a high or low dose of clove or camphor oil deployed from seven mL polyethylene vials. We expected that the botanical oil baited yellow traps would catch more ACP than unbaited controls. There was no significant increase in trap capture over the course of our experiment in male, female, or total ACP capture. We hypothesize that this result may have been caused by sub-optimal release rates or the overriding visual cue elicited by yellow sticky traps. Our ongoing experiments are designed to improve the behavioral activity of release devices for these essential oils, which may have practical utility for ACP management.