

Section I
Invasive & Emerging Pests

Improved monitoring of the spotted wing *Drosophila*, *Drosophila suzukii*

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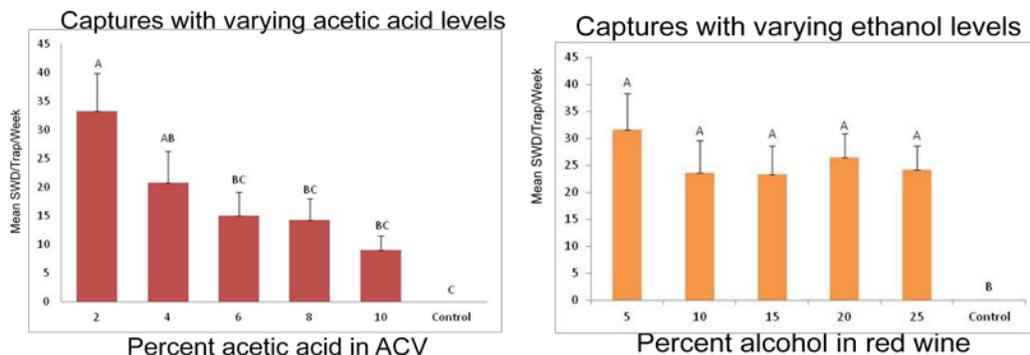
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The spotted wing *Drosophila* (SWD), *Drosophila suzukii*, is a significant problem in many countries, negatively impacting the fruit industries of places it is introduced. Adult females lay their eggs in ripe and ripening fruit. The larvae hatch and feed on the fruit, causing the fruit to collapse and deteriorate, sometimes while still on the plant. The larvae then pupate either in the fruit or after having dropped to the ground. The current recommended method to monitor adult SWD is using clear plastic cup traps containing apple cider vinegar (ACV) as an attractant and drowning solution. However, even when using these traps, growers may still experience low levels of fruit infestation in the absence of adult captures. This project was undertaken to identify a defined attractant and trap design with improved sensitivity to monitor the presence and population density of SWD in the field.

Two attractants commonly being used are apple cider vinegar (ACV) and red wine. Acetic acid and ethanol are important components of vinegar and wine respectively, and other research (Landolt et al, 15 Jun 2011, Journal of Applied Entomology) shows that acetic acid is an attractant for SWD and ethanol may work synergistically with acetic acid to increase attractiveness. In order to test the most attractive levels of these compounds, mixtures with different levels of acetic acid in ACV and ethanol in wine were compared:

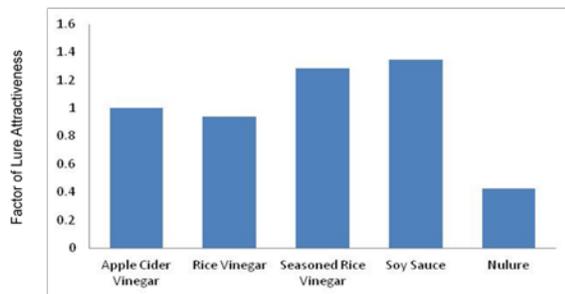


The difference in catches between 2 and 6 percent acetic acid indicates lower levels are preferred by SWD. Lower concentrations could be explored to find the ideal concentration. There is no difference in SWD captures between any of the ethanol levels tested. Further research on higher or lower concentrations could reveal a preferred alcohol content attractive to SWD.

The current traps are not effective at monitoring for low level infestation. Odors that are found to be as or more attractive than ACV can be analyzed to determine the attractive

compound and potentially concentrated in a mixture to create a more effective attractant.

Field SWD captures relative to ACV



The lures on the graph were found to be as attractive as ACV. Other lures tested that were not as attractive as ACV were balsamic vinegar, raspberry vinegar, ume plum vinegar, balsamic cherry vinegar, balsamic honey vinegar, Bird Shield, and a water control.

All the acetic acid, ethanol, and other attractants were field tested by pouring 150 mL of the lure and two drops of soap in a clear cup trap. The catches were collected and the odor changed every week. To compare the capture numbers of the different treatments, the factor of attractiveness compared to ACV was figured by dividing the mean captures of the treatments by the mean captures of ACV. The vinegars and soy sauce were bought from the supermarket, Insect Bait and NuLure are insecticide adjuvants and the control is soap water.