DETERMINING ATTRACTIVENESS OF COMPOUNDS TO IMPROVE MONITORING OF SPOTTED WING DROSOPHILA, *DROSOPHILA SUZUKII*

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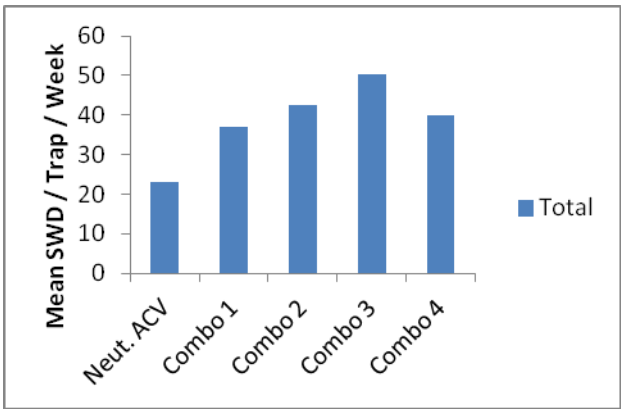
Monitoring for a pest species is an important part of any integrated pest management program: it allows monitoring of populations and movement, knowledge of infestation levels in a field, and can help farmers make management decisions. In order to have confidence in the data collected from monitoring traps, the traps themselves need to be effective enough to compete with the natural pest target and illuminate even small populations of the pest.

The spotted wing Drosophila (SWD), *Drosophila suzukii*, is an economically important pest of small and stone fruits that lacks an effective monitoring trap. Apple cider vinegar (ACV) or active yeast traps are the current recommendation for attractants of SWD, but there have been reports of larvae infesting fruit before adults are caught in the traps. In order to be able to trust that the catches in a trap are a correct and consistent picture of what's going on in a field, there needs to be a more effective trap for the SWD. This research was carried out to determine the attractiveness of compounds in known lures to the SWD.

The compounds tested were all similar to components of ACV and wine, two known attractants for the SWD. Acetic acid, ethanol, ethyl acetate and phenyl ethanol all occur in both wine and vinegar, and are all components of a *D. melanogaster* attractant. To test the biological activity of similar compounds to SWD, a range of compounds in four classes was tested: short chain carboxylic acids, short chain alcohols, short chain acetates and phenethyl esters. These compounds were presented to SWD in vials suspended in a drowning solution in a clear cup trap. Laboratory bioassays were performed to exclude deterrent compounds from field studies. Field trapping experiments were performed for the attractive compounds individually then in combination.

Laboratory Bioassays: Meter cubed mesh cages were set up in a greenhouse with a treatment trap and a soap water control trap. Two hundred SWD were released in each cage for 24 hours and the catches in the two traps enumerated. Treatments that caught more than the controls were determined to be attractive and used in field experiments.

Individual Field Trapping Experiments: The attractive compounds from the laboratory bioassays were grouped into experiments by class and presented in the field in vials suspended in a soapy ACV moat in clear cup traps. An



ACV control trap was placed in the field with the treatment traps. ACV neutralized to pH 7 was used in the moat for the acids so the acetic acid in the ACV would not interfere with the attraction of the acid being tested.

Combination Field Trapping Experiments: Vials of the most attractive compound or compounds from each class were combined and suspended in a neutralized ACV moat in the field. They were tested with a neutralized ACV control.
Combination 1: Acetic acid, ethyl acetate, methanol, phenethyl propionate
Combination 2: Acetic acid, ethyl acetate, ethanol, phenethyl propionate
Combination 3: Acetic acid, ethyl acetate, methanol, phenethyl butyrate
Combination 4: Acetic acid, ethyl acetate, ethanol, phenthyl butyrate

Although there was no significance between treatments because of high variability, there is promise since all of the combination treatments were catching numerically more SWD than the neutralized ACV control.

Conclusions: Ethyl acetate volatiles were shown to add attractiveness to ACV, but the delivery system tested in our trials is not practical for growers or scouts to use. More work is required to determine if the combinations of volatiles provide a more attractive lure that is able to detect SWD activity in the field prior to fruit becoming infested.