

Ohio Vegetable & Small Fruit Research & Development Program

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Final Report

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Project Title: Comprehensive Spotted Wing Drosophila Monitoring and Management Program

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This is the final report that describes the four major objectives to be addressed by this proposal. Each objective is listed below with full details of how it was conducted and any subsequent findings.

Objective 1. Maintain statewide spotted wing Drosophila (SWD) monitoring network

Since the first SWD detection in September, 2011, the OSU Extension IPM program and the Dept. of Entomology have joined forces to create a statewide monitoring network for this invasive pest from 2012-15. This network has mostly been run by Extension educators who monitor for this pest on a weekly basis at grower farms in their county on crops such as raspberry, strawberry, blueberry, grapes, blackberry, and peaches, and then report that information at <http://u.osu.edu/pestmanagement/> for others to view. The key to this network being successful is the short time between trap check and identification of any SWD flies in the sample, so that growers can swiftly begin their management plan upon the first detection of this pest.

The network this year was slightly expanded from 2014, with 14 total Extension educators covering 20 counties (Figure 1). There were a total of 41 sites (small fruit plantings on a farm), each with 1-4 traps per site. This year we changed the type of trap used in 2014 from the standard 24 oz. peanut butter jar with a screw top lip to a slightly larger 32 oz. plastic deli cup with a snap lip. This new trap has been used as the standard trap in many other state monitoring programs (Figure 2).

Unfortunately the new trap was found to have some flaws such as the indentation in the lid causing rain to drain into the trap, sometimes overfilling the capacity of the trap and “flushing” the trap contents out through the side holes. The thin plastic became brittle and the lid would often crack from repeated removal during the season. We will likely seek another trap design when we set up the network in 2016.

The bait attractant used for most traps this year was a new lure produced by Trec'e, which was blended to preferentially attract SWD over other insects. This lure was also used as a standard attractant in many other state monitoring programs. In addition to the Trec'e lure, some locations used the basic apple cider vinegar (ACV) bait and one site (Franklin Co.) used fermented bait, mostly as a comparison to the Trec'e lure.

was not explicitly communicated all Extension educators setting out traps, so some lures may not have been optimized at all sites. If the lure design does not change in 2016, we will certainly remind all cooperators to remove that plastic strip prior to deploying the lure in the field.

Table 1. List of counties involved in the SWD trapping network.

| County | Extension Educator | Crop(s) | Lure Type | Week of 1st Detect | Total SWD all Traps |
|---------------|---------------------------|---|--------------------------------|---------------------------|----------------------------|
| Ashland | Malinich | Elderberries | Trec'e | 9-Aug | 7 |
| Athens | Brown | Blackberry, Raspberry | Trec'e | 5-Jul | 446 |
| Clark | Jasinski | Raspberry | ACV, Trec'e | 5-Jul | 1564 |
| Clinton | Jasinski | Raspberry | ACV, Trec'e | 14-Jun | 3047 |
| Cuyahoga | Kowalski | Raspberry | Trec'e | 19-Jul | 6 |
| Franklin | Welty | Raspberry | ACV, Trec'e, Fermented bait | 28-Jun | 2567 |
| Geauga | Draper | | Trec'e | no detects | 0 |
| Greene | Jasinski / Griffith | Blackberry, Blueberry, Raspberry | ACV, Trec'e | 21-Jun | 2419 |
| Harrison | Cross | Grapes | Trec'e | 19-Jul | 265 |
| Huron | Malinich | Grapes | Trec'e | 16-Aug | 28 |
| Lake | Draper | Grapes | Trec'e | 9-Aug | 78 |
| Loraine | Malinich | Brambles | Trec'e | 19-Jul | 35 |
| Mahoning | Barrett | Blueberry, Peaches | Trec'e | 16-Aug | 19 |
| Miami | Bennett | Blackberry, Raspberry | Trec'e | 28-Jun | 1 |
| Monroe | Landefeld | Blueberries, Raspberry | Trec'e | 23-Aug | 12 |
| Pike | Gao | Grapes | Trec'e | 2-Aug | 83 |
| Richland | No educator | Blueberry | ACV | June 14 | 1 |
| Sandusky | Gahler | Grapes, Raspberry, Aronia | ACV, Trec'e | 12-Jul | 96 |
| Warren | Jasinski | Grapes | ACV, Trec'e | 19-Jul | 129 |
| Wayne | Lewandowski / Scurlock | Strawberry, Grapes, Raspberry, Black Raspberry, Sweet cherry | ACV, Trec'e | 5-Jul | 2145 |

Table 2. First SWD detection by lure type; apple cider vinegar (ACV) and Trec'e lure.

| County | Crop | Week of 1 st Detection | Lure Type |
|----------|-------------|-----------------------------------|--------------------|
| Clark | Raspberry | 5-Jul | ACV & Trec'e (tie) |
| Clinton | Raspberry | 14-Jun | ACV |
| Franklin | Raspberry | 28-Jun | ACV & Trec'e (tie) |
| Greene | Raspberry | 21-Jun | ACV |
| Sandusky | Grapes | 5-Jul | ACV |
| Warren | Grapes | 19-Jul | ACV |
| Wayne | Mixed berry | 5-Jul | Trec'e |
| Wayne | Mixed berry | 5-Jul | Trec'e |
| Wayne | Mixed berry | 12-Jul | Trec'e |
| Wayne | Mixed berry | 9-Aug | Trec'e |

Objective 2. Conduct a webinar for growers to increase identification, monitoring, and management of SWD

In an effort to educate a larger grower audience at one time across the state about management issues surrounding SWD without holding multiple workshops across the state, we conducted a 65 minute webinar on May 6th with similar content as a standard workshop. Eighty seven people signed up for the webinar and 50 people actually attended the webinar to hear Celeste Welty and Jim Jasinski present on a broad range of topics starting with a pest overview, traps and attractants including field placement, brief identification section, cultural management, insecticide management, how to conduct a salt water test to find larval infested fruit, a summary, and finally a brief evaluation. The identification section was not very long or detailed for two reasons; 1. the key characteristics needed to confirm identity of adults are so small they require a stereo microscope to clearly see and 2. we had another workshop planned on May 20th in Wooster where identification would be the main focus of the session. In between the major sections of the webinar, we took a 5-10 minute break for questions from any of the online participants.

Some highlights of the evaluation based on 35 completed online surveys at the end of the webinar indicated nearly 53% of registrants have **never** seen this pest on their farm but based on their 2014 season, 32% had SWD on their farm infesting blueberry, raspberry, blackberry, and grape; some of the infestations were described as severe. Most respondents are not spraying for SWD but some are spraying as many as seven times per season. Nearly 79% of respondents said they will use the salt water test to find SWD larvae in fruit and 67% indicated they will use a baited trap to monitor for adult flies. As a result of the webinar 65% of respondents are somewhat confident and 23% confident they can manage SWD in their crops this year. Nineteen respondents indicated we could follow up with them next year about their season management practices and success. In terms of crop covered by the webinar, respondents managed about 20 A of blueberries, 30 A of raspberries, 6 A of blackberries, 10 A of strawberries, 2 A of grapes, and 4 A of peaches. The growers described themselves mostly as backyard/hobby growers (38%) and conventional growers (35%).

The identification workshop held in Wooster on May 20th was much smaller in nature, attracting only six participants for the two hour session. We purposely moved the location of the workshop to northern Ohio to reach a different grower population than we would normally attract to a workshop held in Columbus.

Something to consider for both the webinar and workshop if we repeat them in 2016 would be to hold them earlier in the year to avoid possible conflicts with being in the field.

Objective 3. Conduct statewide outreach effort to educate auction house managers to detect SWD damaged produce

In 2014 there were several reports of SWD larval infested fruit bought from 1 of the 13 Ohio based produce auction houses (www.ohiofoodshed.org/listingtype/produce-auctions/). In an effort to raise awareness and educate produce auction managers about this pest and to ensure all reasonable steps were being taken to sell only SWD non-infested fruit, we began contacting auction house managers and setting up meetings to discuss this issue beginning April 8th. Below is listed the auction houses visited during this past season and what activities were conducted there.

April 8th – *Bremen Farmer’s Produce Auction*; Jim Jasinski met with managers and presented to nearly 20 growers about the basics of SWD biology, identification, monitoring, and management. Demonstrated the salt water test.

Week of April 13th – *Captina Produce Auction*; Brad Bergefurd met with managers and growers to talk about the basics of SWD biology, identification, monitoring, and management. Demonstrated the salt water test.

April 15th – *Chesterhill Produce Auction*; Jim Jasinski met with managers and presented to about 6 growers about the basics of SWD biology, identification, monitoring, and management. Demonstrated the salt water test.

April 29th – *County Line Produce Auction, Blooming Grove Auction, Homerville Wholesale Produce Auction, and Owl Creek Produce Auction*; Jim Jasinski met with managers or assistant managers of all four produce auctions and presented to 22 growers about the basics of SWD biology, identification, monitoring, and management. Demonstrated the salt water test.

July 7th - *Scioto Valley Produce Auction*; Jim Jasinski met with manager at this location and presented to about 14 growers the basics of SWD biology, identification, monitoring, and management. Demonstrated the salt water test.

When Jim Jasinski contacted the manager at *Middlefield Produce Auction*, he had already been working with Erik Draper, OSU Extension educator in Geauga county about this issue and had received the information and training necessary to detect SWD in fruit.

By the end of the season, 9/13 produce auction houses were contacted about SWD awareness which resulted in meetings with the managers, giving brief presentations and handing out the OSU SWD factsheet to over 60 growers about this pest. We did receive a few sporadic reports of SWD larvae being found in fruit through salt water tests at random locations but overall the level and frequency seemed lower than 2014.

Objective 4. Conduct statewide outreach effort to optimize and calibrate sprayers to maximize control of SWD.

The final component to our overall SWD statewide management plan was to conduct a series of on-farm sprayer optimization workshops to help growers understand how effectively they are protecting the fruit when they begin treating for this pest, and to provide suggestions for increasing the efficacy of their sprayer applications.

We held four clinics overall, two in southwest Ohio, one in northern Ohio, and one in northeast Ohio.

The first clinic in Greene county was held on May 11th at a mixed berry farm (blueberry, raspberry, and blackberry) of around six acres. The owner and several local growers listened as Jim Jasinski reviewed the biology, monitoring, and management of this pest. After that, Erdal Ozkan, OSU Agricultural engineer, reviewed some sprayer basics including nozzle selection and boom spacing. Next we pinned water sensitive cards at low, medium, and high levels on blueberry bushes and had him spray the plants with his equipment using only water to determine his spray coverage and droplet size. After the demonstration we collected the cards and showed the growers how his spray coverage was quite variable, and began to troubleshoot his spray equipment. As a result of that demonstration, the grower decided his coverage wasn't as good as he thought, and vowed to upgrade his equipment and nozzles.

A second clinic in Champaign county was held later that day at a large raspberry farm. Again, we repeated the biology and spray basics to the owner and several other local growers, and finished the clinic with a sprayer demonstration using water sensitive cards. Although the coverage was much better with this equipment, there were still some adjustments the grower could make to optimize his spray coverage.

The third clinic was a large blueberry farm in Richland county. We received notification that the grower was facing an early but potentially significant infestation of SWD which we decided to investigate immediately based on the urgency of the call. After inspecting the fruit and traps, it was determined that there was a very minor infestation that required treatment. The growers spray equipment was evaluated and several suggestions were made to upgrade specific components, particularly the spray nozzles.

The fourth SWD sprayer optimization clinic was conducted on a vineyard in Lake county. Erdal Ozkan and the Extension educators of that area taught the session in the same manner as the first three clinics, with basically the same results of being able to tweak the sprayers performance to enhance coverage.

Based on feedback from the owners of the farms we visited and the growers attending the sprayer optimization clinics, these were very worthwhile and useful on-farm programs that we will like try to continue in 2016, serving growers in the northwest and southeast parts of the state.