

Northern Michigan FruitNet 2017

Northwest Michigan Horticultural Research Center

Weekly Update

FruitNet Report – November 20, 2017

CALENDAR OF EVENTS

11/28	SWD Summit NWMHRC, more information below! Please RSVP to Jenn at 231-946-1510 or goodr100@msu.edu
01/16 – 17/2018	Northwest Michigan Orchard and Vineyard Show

What's New?

- **2017 Spotted Wing Drosophila Summit - Nov 28th, 2017**
 - **There's still time to attend the FSMA-defined grower safety trainings before the year's end**
 - **Review of spotted wing Drosophila management strategies and product selection diversity**
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2017 Spotted Wing Drosophila Summit - Nov 28th, 2017

Please RSVP to Jenn at goodr100@msu.edu or 231-946-1510

Participants are invited to join the Summit in-person or online using ZOOM.

Emily Pochubay, MSU Extension
Nikki Rothwell, MSU Extension and AgBioResearch

This year's 2017 Spotted Wing Drosophila (SWD) Summit will be held on November 28th, 2017 at the Northwest Michigan Horticultural Research Center in Traverse City, MI. Thanks to funding from the Foundation for Food and Agriculture Research's Rapid Outcomes from Agricultural Research (ROAR) grant program, registration is free-of-charge and includes lunch.

Doors will open at 9:30 with coffee and refreshments for in-person attendees. While we encourage in-person attendance to this meeting, the presentations will also be accessible remotely using ZOOM technology. The ZOOM link for the Summit is <https://msu.zoom.us/j/767683463>. To join the Summit using ZOOM, just click on the ZOOM link or copy-paste the link into your web browser on Nov 28th. The virtual ZOOM meeting will go live at 9:45 AM and conclude at 3:15 PM. Participants that join in-person will be able to receive credits toward their applicator recertification.

This year's summit will provide a series of educational lightning talks by MSU researchers spanning the latest result of MSU's SWD research. Following lunch, catered by Ethnic Garden Catering, a series of MSU Extension Educators, consultants, growers, and processor panelists will share the impacts of SWD on these different sectors of the industry and pose the critical challenges that will set the foundation of future research and Extension goals.

If you are planning to attend this meeting in-person, please contact the Northwest Michigan Horticultural Research Center at 231-946-1510 or goodr100@msu.edu to register free-of-charge.

2017 Spotted Wing Drosophila Summit Agenda

November 28, 2017

This meeting is supported by the Foundation for Food and Agriculture Research's Rapid Outcomes from Agricultural Research (ROAR) grant program. Registration is free of charge and includes lunch.

Moderator: Bob Tritten, MSU Extension Southeast Michigan

9:30 AM	Welcome and Refreshments <i>Phil Korson, President, Cherry Marketing Institute</i>
9:55 AM – 10:15 AM	Setting the Stage: SWD Task Force Accomplishments <i>Dr. Julianna Wilson, Dept. of Entomology, MSU</i>
10:15 AM – 10:30 AM	Optimizing Traps for SWD Monitoring <i>Dr. Larry Gut, Dept. of Entomology, MSU</i>
10:30 AM – 10:45 AM	Monitoring Insecticide Resistance <i>Dr. Phil Fanning, Dept. of Entomology, MSU</i>
10:45 AM – 11:00 AM	SWD Management: Implications of 2017 Efficacy Results and Orchard Modification Study <i>Dr. Nikki Rothwell, MSU Extension and AgBioResearch</i>
11:00 AM – 11:15 AM	SWD Wintermorphs: Their Arrival, Survival, and Reproduction <i>Heather Leach, Dept. of Entomology, MSU</i>
11:15 AM – 11:30 PM	Evolving On-Farm SWD Management Programs <i>Emily Pochubay and Dave Jones, MSU Extension</i>
11:30 PM – 12:30 PM	Lunch catered by Ethnic Garden Catering
12:30 PM – 1:10 PM	Spreading the SWD Message: Education and Management Recommendations <i>Bob Tritten, MSU Extension, Southeast MI</i> <i>Mark Longstroth, MSU Extension, Southwest MI</i> <i>Amy Irish-Brown, MSU Extension, West MI</i> <i>Dave Jones, MSU Extension, West-Central MI</i> <i>Emily Pochubay, MSU Extension, Northwest MI</i>
1:10 PM – 1:50 PM	Consulting with Growers on SWD Management <i>Jim Laubach, HortSystems, Northwest MI</i> <i>Al Clarke, Wilbur-Ellis Company, West-Central MI</i> <i>Matt Disterheft, Crop Production Services, Southwest MI</i> <i>Jason Jablon, CHS, Northwest Michigan</i>
1:50 PM – 2:30 PM	Grower Experiences: Managing SWD in The Field <i>Pete Nyblad, Nyblad Orchards, West MI</i> <i>Mike VanAgtmael, VanAgtmael Orchards, West-Central MI</i> <i>Francis Otto, Cherry Bay Orchards, Northwest MI</i> <i>Mark Evans, Evans Brothers Fruit Co, Northwest MI</i> <i>Bob White, Vermeersch Farms, Northwest MI</i>

2:30 PM – 3:10 PM	Processor and Packer Perspectives: Past, Present, and Future SWD Challenges <i>John King, Kings Orchards</i> <i>Mark Miezio, Shoreline Fruit</i> <i>Tiffany Wernstrom, Peterson Farms</i> <i>Tim Brian, Smeltzer Orchard Company</i>
3:10 PM	Fill out pesticide applicator recertification credit sheets (4 credits available)
3:15 PM	Meeting concludes

There's still time to attend the FSMA-defined grower safety trainings before the year's end

Get the training you need with grower training courses that satisfy the Food and Drug Administration's Food Safety Modernization Act (FSMA) Produce Safety Rule certification requirement.

Posted by **Joanne Davidhizar**, Extension Educator, Innovation Counselor, MSUE News

Day-long training courses addressing sound food safety and environmental practices satisfying the Food and Drug Administration Food Safety Modernization Act (FSMA) Produce Safety Rule [certification requirement](#) will be offered 9:00 a.m. to 4:00 p.m. Nov. 6, in Frankenmuth and Dec. 7, in Grand Rapids.

The seven-part course developed by the [Produce Safety Alliance](#) provides a foundation for growers to identify and manage potential risks, develop a food safety plan and to comply with the FSMA Produce Safety Rule. Upon completion, attendees are eligible for a certificate from the Association of Food and Drug Officials (AFDO). Under the rule, at least one responsible person from produce farms covered by the FSMA Produce Safety rule must take such a course.

FSMA compliance deadlines for most produce are as follows based on three-year average gross sales/farm:

All other businesses (>\$500K)	1/26/2018
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Small businesses (>\$250K-500K)	1/28/2019
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Very small businesses (>\$25K-250K) 1/27/2020

Water-related compliance dates have been extended beyond those originally announced.

Due to a grant from Michigan Department of Agriculture & Rural Development and the US Food and Drug Administration, the training program, materials and certification process are included without charge. Lunch is on your own.

Pre-registration is required. Because of space and funding limitations, please limit participation to one person per operation. Registration and program details are available at <https://events.anr.msu.edu/event.cfm?eventID=196AEDF04F9D27A1>.

Producers who have questions about whether they are exempt or covered by FSMA requirements may consult the [Produce Safety Alliance FSMA information page](#), or the [FDA key FSMA requirements page](#). An operation which produces a crop that is rarely consumed raw is processed with a kill step and/or has sales less than \$25,000 are among those that may be exempt.

Grower training is sponsored by [Michigan State University Extension](#), [Michigan Department of Agriculture & Rural Development](#), [Michigan Farm Bureau](#), U.S. Food and Drug Administration and the [Produce Safety Alliance](#).

Review of spotted wing *Drosophila* management strategies and product selection diversity

Summary and discussion of spotted wing *Drosophila* (SWD) product selection and management strategy assessment in tart cherry production in west central Michigan. Posted by [David Jones](#), and Nikki Rothwell, Michigan State University Extension, MSUE News

Objectives

As part of [Michigan State University Extension](#)'s ongoing effort to increase efficiency and success in controlling [spotted wing *Drosophila*](#) (SWD) in tart cherries, SWD population patterns, anecdotal insecticide efficacy and the diversity of insecticide products used for SWD control were evaluated in the west central region of Michigan during the 2017 growing season in order to:

- Determine common factors in successful SWD programs used in west central Michigan.
- Categorize the diversity in regional insecticide choices and how these selections may or may not be contributing to resistance in SWD populations.

- Compare SWD spray management practices in northwest Michigan to west central Michigan.

The work discussed below was conducted in northwest and southwest Michigan during the 2017 growing season in collaboration with [Nikki Rothwell](#) and [Emily Pochubay](#) at the [Northwest Michigan Horticulture Research Center](#) in Traverse City, Michigan.

Methods

We monitored 10 tart cherry sites in west central Michigan for SWD from May 15 through Sept. 15, 2017. Five deli cup traps per site baited with Scentry SWD lures were placed at each site. The first trap was placed at the block edge (0 meters) and each subsequent trap was placed every 25 meters, moving towards the center of the block. Both male and female traps were counted weekly.

Three gallons of fruits were harvested and tested for SWD larvae at four timings: two weeks before harvest, one week before harvest, at harvest and one week after harvest. Fruits were gently pressed and soaked in a solution of 7 pounds of sugar per 5 gallons of warm water for 15 minutes. The solution was strained and all SWD larvae were counted under a dissecting microscope.

Spray records for all 10 sites were collected at the end of the growing season and the product selection, interval between sprays and success or failure of the program was recorded. Programs were determined to be successful if the two-week pre-harvest, one-week pre-harvest and harvest fruit tests did not contain SWD larvae. The post-harvest fruit tests were not factored in to the determination of program success or failure; however, these numbers do remind growers of the potential for SWD to quickly build populations, particularly when insecticide use ends.

Results and discussion

Adult SWD count results

The first catch in the region occurred May 22 and we caught adult SWD in all 10 sites by June 19. After initial catches, traps generally caught flies each week through the post-harvest timing. We collected flies at all 10 sites and sustained catches were evident at least one full month before harvest. This information is a reminder to be diligent about SWD control in west central Michigan. In past seasons, adult trap catch increased later in the season, most often post-harvest, but more recently the potential for an orchard to be infested prior to harvest is much higher.

Make management decisions for this pest based on regional trap counts. After this season, SWD appears to be well-established, and all fruit that is susceptible to SWD (fruit that has lost its green color) should be actively managed. Adult fly catch over time in west central Michigan can be seen in Figure 1.

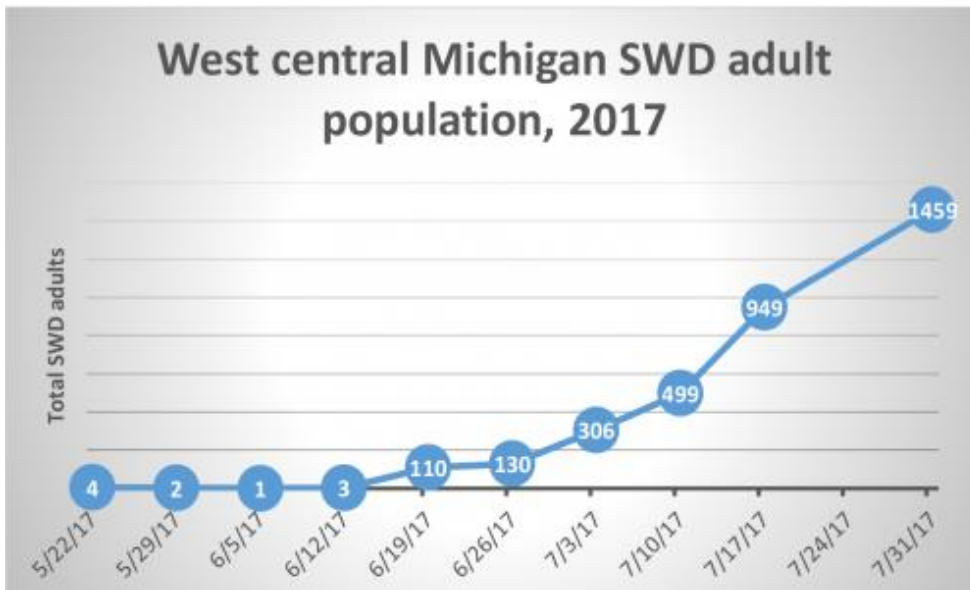


Figure 1. Sum of adult SWD caught at 10 tart cherry sites in west central Michigan, 2017.

Application interval and product efficacy results

Growers in west central Michigan who began applications for SWD control approximately three weeks before their predicted harvest dates and made an application of an “excellent” material at least every seven to eight days were successful in managing SWD in 2017. Several growers used the same number of applications or programs, but differences between success and failure were contingent on how far intervals were stretched and when the SWD program was initiated.

- Growers who stretched insecticide intervals to nine to 10 days, particularly within two weeks of harvest, had problems with larval contamination.
- Growers that stretched excellent products seven to eight days did not have contamination this season.
- No grower had contamination at harvest when insecticides were applied every eight days or less, if the product choice was excellent.
- Products outside of the excellent rating that were stretched seven or more days resulted in contaminated fruit.
- Growers in west central Michigan had more success with starting their SWD sprays about three weeks before predicted harvest and keeping tight intervals (six to eight days) than growers who began programs four weeks from harvest and trying to stretch the same number of sprays further to keep costs down.

An example of an unsuccessful program is shown in Figure 2. This table indicates all sprays made within five weeks of harvest, which is shown at the bottom right corner of both tables. The error made in this program was not product selection, but the timing of product. The 10 days on either side of the final application of Imidan was stretched too far, and fruits were contaminated one week before harvest. This result was typical when

growers stretched insecticide intervals to nine to 10 days, especially within two weeks of harvest.



Figure 2. Unsuccessful spray program used in west central Michigan, 2017.

Figure 3 shows an example of a successful program that used the same number of sprays as the unsuccessful program (Fig. 2), but applications were not stretched and keeping tight intervals resulted in controlling SWD more effectively (Fig. 3). Three weeks prior to harvest, this grower used products rated excellent every six to eight days and had no contamination at harvest. This successful result using tight intervals was typical in the sites surveyed in west central Michigan this season.



Figure 3. Successful spray program used in west central Michigan, 2017.

Larvae were detected in the fruits in the one-week post-harvest check at all but one site. Growers did not manage SWD after harvest. MSU Extension is currently recommending no post-harvest sprays for SWD as this pest has many wild hosts in the environment and applying chemicals after harvest in commercial blocks would not reduce overall populations. Additionally, fewer insecticide applications minimize the potential for SWD to develop resistance to the classes of chemicals labeled for this pest.

Product diversity results

West central Michigan tart cherry growers used pyrethroids and organophosphates to control SWD. We found only three sprays of the 10 farms and total number of SWD applications were products containing modes of action outside of the pyrethroid (Mustang Maxx, Warrior II, Perm-up) or organophosphate (Imidan) classes of insecticides. Delegate was downgraded from excellent to “good” following the 2016 growing season, and as a result, this product was not used in 2017. Likely based on economics, Exirel (diamide) was not used by west central Michigan tart cherry growers. Because the number of insecticide applications for SWD control have increased, costs to managing tart cherries have also gone up. As a result, growers are trying to mitigate costs by using cheaper insecticides, such as the pyrethroids. However, lack of diversity in the chemical classes of insecticides for SWD control increases the potential for the development of SWD resistance. Ninety-five percent of SWD sprays used at these 10 west central Michigan sites were in two classes of insecticides: pyrethroids and organophosphates.

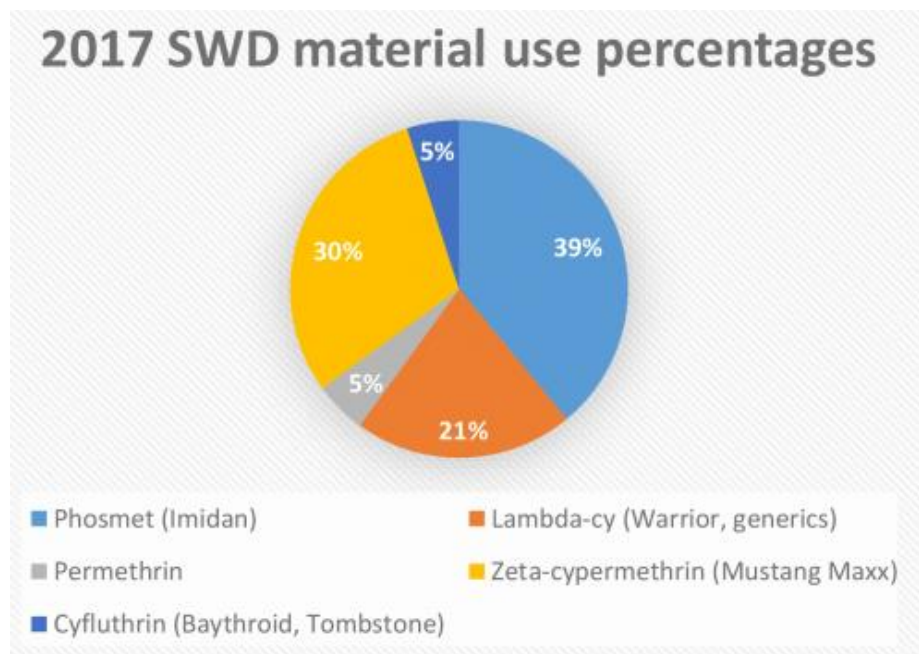


Figure 4. 2017 SWD material use percentages.

Comparison of number of SWD applications to growers in Northwest Michigan

Growers in west central Michigan added an average of 3.6 sprays to their programs to combat SWD in 2017. This difference is almost one full cover less than the northwest Michigan average of 4.38. This highlights the challenge that growers further north face due to a later harvest.

In spite of the fact growers in northwest Michigan are spraying slightly more, they were not achieving the same outcome as compared with west central Michigan in 2017. Just three of 10 (30 percent) management programs in west central Michigan were unsuccessful in west central Michigan during the 2017 growing season as compared to

eight of 10 (80 percent) unsuccessful programs in northwest Michigan.

Management applications

Our consistent early trapping of this pest this season in west central Michigan demonstrates that trap catch data, while useful to observe populations, should not be used to determine whether or not a spray in a block “worth it” once fruits are yellow. After this season, we think SWD is well-established in west central Michigan by the time tart cherries are physiologically susceptible and applications should be made based on regional trap catch data.

Growers should consider adding an application a product outside of the pyrethroid or organophosphate class of insecticides each year. Preventing resistance to the pyrethroid and organophosphate classes of insecticides is critical to sustaining the tart cherry industry in the future.

Growers in west central Michigan should not stretch any product, even those rated excellent, nine or more days, even if they started a program early to “get a jump” on the pest. This practice consistently resulted in larval contamination of fruit, particularly within two weeks of harvest.

In 2017, growers in west central Michigan had more success with starting their SWD sprays about three weeks before predicted harvest and keeping tight intervals (six to eight days) than they did with starting four weeks from harvest and trying to stretch the same number of sprays.

Additional data from MSU Extension from 2017 has shed light on additional important practices, such as row mowing and reducing canopy density that also significantly reduce risk of SWD infestation. The way forward for growers is going to transition into a systems approach that includes applying “excellent” products every seven to eight days while maintaining mowed row middles and actively pruning tart cherry trees with large canopies.

Good coverage is particularly important with this pest due to population size and density in fields. Growers should be re-calibrating spray equipment annually and making sure to slow down on sprays. Older air-blast sprayers should be recently calibrated.

Acknowledgements

This work was funded by the Michigan Cherry Committee and [MSU Project GREEN](#), and was done in close cooperation with the teams at the Northwest Michigan Horticultural Research Center and the [Southwest Michigan Research and Extension Center](#). A special thanks also goes out to all ten farmers in Oceana and Mason Counties who participated in this work, and to my research technician, Sarah Springer.

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WEB SITES OF INTEREST:

Farmer to Farmer - Connecting Farmers, Cultivating Community

<http://www.f2fmi.com>

Insect and disease predictive information is available at:

<http://enviroweather.msu.edu/homeMap.php>

This issue and past issues of the weekly FruitNet report are posted on our website:

http://www.canr.msu.edu/nwmihort/nwmihort_northern_michigan_fruit_net

60-Hour Forecast:

<http://www.agweather.geo.msu.edu/agwx/forecasts/fcst.asp?fileid=fous46ktvc>

Information on cherries:

<http://www.cherries.msu.edu/>

Information on apples:

<http://apples.msu.edu/>

Information on grapes:

<http://grapes.msu.edu>