

Northern Michigan FruitNet 2018

Northwest Michigan Horticultural Research Center

Weekly Update

FruitNet Report – June 20, 2018

CALENDAR OF EVENTS

5/8 – 6/27

IPM Updates

8/23

NWMHRC Open House

What's new?

- **SWD Update – June 22, 2018**
- **Final Week of IPM Updates with Special Guests in Antrim Co.**
- **Frequently Asked Questions: Crop Insurance for Cherry Growers Facing Limited Market Options**

New articles

SWD Update – June 22, 2018

Nikki Rothwell and Emily Pochubay, MSU Extension

We found five spotted wing drosophila (SWD) in our trap line this week. This number is slightly higher than the single flies we caught in the two previous weeks. This increase is an indicator that the SWD populations are on the rise, but fly numbers are much lower compared to 2017 catches. We hypothesize that the cold winter and the short warm up followed by another cold snap in April reduced the overwintering SWD populations. The smaller numbers of flies in our trap line is likely good news for controlling this pest this season as we are looking at a potentially long harvest timeframe. However, because SWD can regenerate so quickly, every seven days under optimal conditions, we should be cautiously optimistic about these low numbers.

In most standard IPM programs, growers make decisions based on thresholds. For instance, growers wait until they have caught five codling moths in a trap before employing control measures. In SWD, we do not have a threshold for flies in a trap, and we are often conservative in our management approach for this pest. Previous data have shown that cherries are susceptible to female SWD oviposition as soon as they lose green color, and both sweet and tart cherries are coloring at this time. Our 2017 no choice data showed that higher numbers of SWD larvae were found in fruit that was just starting to color rather than ripe or overly ripe fruit. These data are preliminary, but also can be used as a guide as to when growers should begin SWD programs.

Based on the numbers of flies we captured this week (ie. two at the NWMHRC, one south of Suttons Bay, and two in Benzie County), and the current stage of fruit ripeness, growers in these areas should consider adding an insecticide to the next cover spray. We recommend using something that would be effective against SWD as well as plum curculio. Plum curculio are likely close to the end of egg-laying, but because we have had bouts of very high temperatures coupled with cooler conditions, there may be females that are still ovipositing at this time. Pyrethroids, materials that are effective against SWD, will also knock down remaining plum curculio populations. These materials may be a good option now.

Our previous data have shown that growers that started management programs for SWD earlier in the season were more likely to have less infestation at harvest. Additionally, data suggest that the larger the SWD populations, the more difficult they are to control. These findings make sense, as 100 flies are easier to kill than 1,000,000. Hence, growers should begin SWD control with the idea to keep the population as small as possible for as long as possible. In theory, this strategy would delay the exponential population growth that is so evident in SWD life cycle/population trends in Michigan. Growers will also want to make sure they are using a material that is efficacious against SWD. Modeling work conducted by Oregon researchers has suggested that using the most effective insecticides early could help to delay the SWD population size. We hypothesize that using

an effective material now could also help Michigan growers minimize the potential for SWD infestation at harvest.

Our data have shown that imidacloprid is not among the excellent products recommended for SWD in cherries. This material is good against PC and excellent against cherry fruit fly but poor at controlling SWD. A better option for the next insecticide addition to the tank would be to add a material that is rated 'excellent' against SWD as well as the other pests. Growers should note that we have not caught a cherry fruit fly yet in our trapline.

We understand that we have a long season ahead of us, and we want to be sure to be proactive with SWD control. Hence, we encourage growers to try to delay that exponential population growth in orchards to help provide optimal control of SWD closer to harvest.

Final Week of IPM Updates with Special Guests in Antrim Co.

Emily Pochubay and Nikki Rothwell, MSU Extension

Please join us for the final week of our 2018 Tree Fruit IPM Update series that will be held in Leelanau and Grand Traverse Counties on Tuesday 26 June and in Antrim and Benzie Counties on Wednesday 27 June. Like previous meetings, we will provide current pest and disease activity information with special attention to spotted wing drosophila. As cherries are ripening and spotted wing drosophila are on the move in our region, these meetings will be good opportunities to discuss management strategies. Many thanks to Leelanau Fruit who will provide ice cream at the Leelanau IPM Update on Tuesday 26 June!

We are also pleased to welcome MSU Extension farm business management educator, Dan Ochs, to our northwest Michigan team. Ochs is based out of Antrim County and he is looking forward to meeting fruit growers at our Antrim meeting on Wednesday. We hope to see you next week!

Frequently Asked Questions: Crop Insurance for Cherry Growers Facing Limited Market Options

Jun 21, 2018

Q: Is lack of a market for my brining cherries an insured cause for loss?

A: No. Crop insurance covers physical damage from an insurable cause of loss, such as adverse weather, but does not cover the inability to market cherries for any reason other than actual physical damage.

Q: I do not have a buyer for my cherries, so I am not going to harvest. Should I let my Agent know?

A: Yes. If production will not be harvested, whether there is a loss of production or not, growers should timely contact their crop insurance company to have their production appraised.

Q: Why is it important to get my unharvested production appraised?

A: Appraisals can be used in conjunction with the annual price to maintain the approved revenue history for your crop insurance policy in succeeding crop years.

For more information, please visit:

<https://www.rma.usda.gov/help/faq/cherrygrowers.html>

Articles featured in past FruitNet Reports

Non-bearing Ulster Sweet Cherries

Nikki Rothwell and Emily Pochubay, Northwest Michigan Horticultural Research Center, Michigan State University Extension and AgBioResearch

In the past two years, Michigan growers have had blocks of sweet cherries, var. Ulster that are not bearing, despite that they are of bearing age. We have looked at many orchards across northwest Michigan, and in all cases, the trees look healthy and grow vigorously. The non-bearing trees also look different than Ulsters that are bearing; the growth habit is much more upright than typical Ulster trees and the leaves are much more rounded rather than elongated as is typical of most sweet cherries. In some situations, the trees have extensive bloom while other trees bloom very little. Because the trees themselves appear healthy, growers have been hesitant to remove them in hopes that they will eventually bear fruit. We have looked into this issue for growers, but we have yet to find a solution or a reason why particular Ulster orchards are not bearing fruit.

The Michigan State University (MSU) horticulture team and colleagues have tried to find a common denominator among farms that have non-bearing Ulsters. However, similarities across farms have been limited. We ruled out obvious potential solutions, such as orchards were planted with pollinizer trees that do not pollinate Ulsters. We also eliminated the possibility of frost or other weather events because these orchards have not produced typical yields over multiple years. Pruning, training, fertilization regimes were examined, but we did not find any physiological reason that the trees do not bear fruit.

Originally, we hypothesized that the trees came from one nursery, but upon further examination, we discovered that the trees were purchased from six different nurseries (Table 1). The trees on various farms are also on a variety of different rootstocks: Mahaleb, Gisela 5, MxM60, MxM2, Mazzard, and Gisela 6. Most of the non-bearing Ulsters are located in northern Michigan, but there are Ulster trees on the Ridge that are not bearing. The only common factor is the age of the trees; all trees that are not bearing are 6-12 years old. Summit Tree Sales staff helped us communicate with all nurseries that sold Ulster trees that ultimately did not bear fruit. Nursery representatives confirmed that they had certified budwood and that budwood was not shared between nurseries.

In 2016, we sent samples to Dr. Amy Iezzoni to determine whether trees from five orchards have the *S*-allele genotype of 'Ulster'. Branches from trees from five orchards were shipped from northern Michigan. After receiving the branches, leaves were collected and dried using silica beads and DNA was isolated using the protocol by Edge-Garza *et al.* (2014). DNAs from five other cherry selections were used as controls as their *S*-allele genotypes are known: Chelan (*S3S9*), Gold (*S3S6*), Lapins (*S3S4*), Sam (*S2S4*), and Ulster (*S3S4*) (Iezzoni *et al.* 2005). Each selection was *S*-allele genotyped using the *S*-*RNase* consensus primer pair PruC2/PCE-R (Tao *et al.* 1999) followed by the use of *S3*-allele and *S4*-allele specific primer pairs for the stylar-*S*-*RNase* (Sonneveld *et al.* 2001).

The first PCR analysis using the *S*-*RNase* consensus primer pair amplified fragments from the trees that had the sizes expected for the *S3* and *S4* alleles. To further confirm these alleles, primer pairs specific for *S3* and *S4* were used and the analyses confirmed that the trees have the *S3* and *S4* alleles. We found that trees from four of the five orchards match the control Ulster's alleles. Trees from fifth orchard were unable to be confirmed due to poor quality DNA. This information confirms that four of the five samples have alleles that are those of Ulsters, but it does not prove that the trees are indeed Ulsters.

To further investigate possible causes of these non-bearing Ulster orchards, we sent six samples to Washington State University virus testing. They used enzyme-linked immunosorbent assay (ELISA) to test for cherry leaf roll virus, prunus necrotic ringspot virus, and prune dwarf virus. All of the samples came back negative for all three viruses.

Earlier this week, we contacted Phytelligence, Inc., a company that specializes in genotyping. They can use genetics to determine if these non-bearing trees are Ulsters. We are currently working with Phytelligence scientists to collect and send in samples from of bearing and non-bearing Ulsters from the region. We anticipate that samples will be collected early next week.

Unfortunately, at this time, we have no further evidence as to why these trees are not bearing, but we are committed to working toward identifying solutions.

Table 1. Collection of orchard information for non-bearing Ulsters

Orchard	Nursery	Tree Age	Other Varieties in Block	Rootstock(s)	Location
A	Willow Drive	9 years old (2011)		mxm60, mahaleb	Traverse City, MI
B	C&O	8 years old (2009)		mxm60	Suttons Bay, MI

C	Vanwell , C&O	7-9 yr range		mxm60, mxm2, mahaleb	Old Mission peninsula
D	Vanwell	2 groups, 6 years (2012) 10 years (2008)	black york, black gold, idlefingins	mazzard	Very good location, Old Mission peninsula
E	C&O, Hilltop	7-8 years old (2010 - 2011)		mxm60	N. overlook between Northport/Omen a
F	C&O	7-9 year (mahaleb) (mxm60)	Golds, SAMs in 2 blocks and SAMs and BlackGolds in 2 blocks	mxm60	
G	Willow Drive	9 years old (2009)	Older Ulsters, Cavalier, a few others	gisela 5	Old Mission peninsula
H	Stark Bros	12 years old (2006)		mazzard	Section 3, Peninsula Township
I	C&O	10 years old (2008)	Regina/GI6, Rainier/GI6, and Blackgold	Gisela 6	Green Tree Orchards, on the ridge
J	Adams County	9 years old (2009)	Hudson, Gold, and a few Emperor Francis as pollinizers.	Mahaleb	Kent City, MI

Literature cited

- Edge-Garza D, Rowland T, Haendiges S, Peace, C. 2014. A high-throughput and cost-efficient DNA extraction protocol for the tree fruit crops apple, sweet cherry, and peach relying on silica beads during tissue sampling. *Molecular Breeding* 34:2225-2228.
- Iezzoni, A.F., R.L. Andersen, H. Schmidt, R. Tao, K.R. Tobutt, and P.A. Wiersma. 2005. Proceedings of the S-allele workshop at the 2001 international cherry symposium. *Acta Hort* No. 667: 25-35.
- Ikeda K, Ushijima K, Yamane H, Tao R, Hauck NR, Sebolt AM and AF Iezzoni. 2005. Linkage and physical distances between the S-haplotype *S-RNase* and *SFB* genes in sweet cherry. *Sexual Plant Reproduction* 17: 289-296.
- Sonneveld, T., T.P. Robbins, R. Bošković, R. and K.R. Tobutt. 2001. Cloning of six cherry self-incompatibility alleles and development of allele-specific PCR detection. *Theor. Appl. Genet.* 102:1046-1055.
- Tao, R., H. Yamane, A. Sugiura, H. Murayama, H. Sassa, and H. Mori. 1999. Molecular typing of S-alleles through identification, characterization and cDNA cloning for S-RNases in sweet cherry. *J. Amer. Soc. Hort Sci.* 124: 224-233.

New 24 © for Mustang Max in Cherries

Label attached to this email or available here for download:

<https://www.dropbox.com/s/073x6bb99f5qewe/2018-06-06%20Mustang%20Maxx%20SLN%20-%20MI%20-%20final%20label.pdf?dl=0>

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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>