

# Northern Michigan FruitNet 2016

## Northwest Michigan Horticultural Research Center

### Weekly Update

FruitNet Report – June 28, 2016

#### CALENDAR OF EVENTS

- |                   |  |
|-------------------|--|
| <b>6/28</b>       | <b>CIAB Grower Meetings</b><br>Peninsula Township Hall, 9:00 – 11:00 AM<br>Milton Township Hall, 1:00 – 3:00 PM<br>NWMHRC, 7:00 – 9:00 PM            |
| <b>5/3 – 6/28</b> | <b>Leelanau County IPM Updates, 12PM – 2PM</b><br>Jim and Jan Bardenhagen’s Farm (details below)   |
| <b>5/3 – 6/28</b> | <b>Grand Traverse County IPM Updates, 3PM – 5PM</b><br>Wunsch Farms (details below)  |
| <b>5/4 – 6/29</b> | <b>Antrim County IPM Updates, 10AM – 12PM</b><br>Jack White Farms (details below)  |
| <b>5/4 – 6/29</b> | <b>Benzie County IPM Updates, 2PM – 4PM</b><br>Blaine Christian Church (details below)   |
| <b>7/1</b>        | <b>Natural enemies, new insecticide options, perimeter spray programs-- Rufus Isaacs, MSU</b><br>Hawthorne Vineyards on Old Mission Peninsula, 3-5PM |
| <b>7/13</b>       | <b>Income Taxes for Foreign Agricultural Workers (H-2A)</b><br>NWMHRC, 8AM – 4:30PM  |
| <b>8/25</b>       | <b>NWMHRC Open House</b>   |

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[What's New?](#)

- Northwest Michigan Fruit Regional Report – June 28, 2016
- SWD Trap Update – June 28, 2016
- Ethephon on Cherries
- Miticides options for controlling mites in cherry
- Peach and Plum Variety Showcase
- Monitoring for SWD Larvae in Cherries Before Fruit Enters the Processing Facility
- Monitoring for SWD Larvae in Cherries Before Fruit Enters the Processing Facility

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## Northwest Michigan Fruit Regional Report – June 28, 2016

*Spotted wing drosophila management is underway in susceptible fruit crops, and sweet cherry harvest will begin early next week.*

Emily Pochubay and Nikki Rothwell

### GROWING DEGREE DAY ACCUMULATIONS AS OF June 27, 2016 AT THE NWMHRC

Year	2016	2015	2014	2013	2012	2011	26 Yr. Avg.
<b>GDD42</b>	1297	1213	1145	1210	1631	1139	1259.8
<b>GDD50</b>	766	754	775	742	992	649	742.8

### 2016 Growth Stages as of 6/27/16

Bartlett Pear – 25 mm fruit

Potomac Pear – 26 mm fruit

Mac – 27 mm fruit

Gala – 29 mm fruit

Red Delicious – 37 mm fruit

HoneyCrisp – 34 mm fruit

Montmorency – 15 mm fruit

Balaton – 14 mm fruit

Hedlfingen – 21 mm fruit

Gold – 16 mm fruit

Napolean – 15 mm fruit

Riesling – Bloom

## **Weather Report**

We had very summer-like conditions over the weekend, and our growing degree accumulations are consistent with our 20+-year average: 1297GDD base 42 and 766GDD base 50. Our 2016 averages are as follows: 1260GDD base 42 and 743GDD base 50. Temperatures cooled down yesterday, 27 June, and today's daytime highs are only predicted to be in the high 60s with nighttime temperatures dropping down into the 40s. The temperatures will vary for the remainder of the week from mid-60s to 80 degrees F. Most Enviro-weather stations recorded some level of rainfall on Saturday night into Sunday (25 and 26 June) morning, and most stations received around  $\frac{1}{4}$ " of rain or less. Benzonia station received just under  $\frac{1}{2}$ " of rain. Rain is needed to size the crop, particularly in orchards that have a pretty heavy set. Some of the areas across the north are extremely dry, particularly just south of Elk Rapids, where these orchards have received very little rainfall for the season (<1.4" of rainfall for June).

## **Crop Report**

Both sweet and tart cherries are coloring up. The sweet cherry crop, particularly canners, looks a little lighter than we first observed. Brine cherries have a heavier set than dark sweets. Growers are considering ethephon applications, rates, and timings with the dry conditions and potentially high temperatures that are predicted for the latter part of the week. Tart cherries are quite variable in terms of ripening. It is not unusual to see green fruit on the same branch with red and straw colored fruit. Tart cherry harvest will begin in SW Michigan this week, and West Central anticipates to begin harvest around 6 July.

The Michigan Frozen Food Producers' Association's Guesstimate took place last week in Grand Rapids. The total estimates for sweet cherries in Michigan are 27,000 tons/54,000,000 pounds. When we break up the cherry estimates into different categories, the following numbers were presented last week: 1,500,555 pounds of fresh market sweets, 3,000,000 pounds of canned product, 16,500,000 pounds of frozen cherries, and 33,000,000 pounds of brine cherries. Most growers thought they had good bloom, but there might be some variable pollination depending on when the orchards bloomed. We had some cold weather in the middle of sweet cherry bloom, so

there may be some lighter than average crops. We have also been seeing considerable drop in sweet cherries. Overall, presenters at the Guesstimate estimated the sweet cherry crop across Michigan would be 90% of the 2014 crop.

Estimates were also presented for the tart cherry crop across the U.S. The total Michigan crop is estimated to be 253 million pounds: 165 million pounds from NW Michigan, 68 million pounds from West Central, and 20 million pounds from SW Michigan. This is the largest crop since 2009. Again, SW Michigan will begin harvest around 29 and 30 June. New York had a frost on one half of the state, but the overall estimate will be 7 million pounds. Pennsylvania also had some cold spring temperatures, and there will only be 0.3 million pounds. Wisconsin is estimated to harvest 11 million pounds. Utah is estimated to harvest 50 million pounds, Washington 27 million pounds, and 3 million pounds in Oregon. Oregon and Washington are already in harvest. The total U.S. tart cherry crop is estimated to be 351.3 million pounds. In the restricted districts, the estimate that will be plugged into the Optimum Supply Formula is 348 million pounds and 3.3 million pounds are unrestricted. The free carry-in is 81.3 million pounds. The three-year free sales are 250 million pounds and the Board used a 25 million pound growth factor. Other factors the board considered are a carry-out of 57 million pounds, and they added another 22 million pounds in the 'other category'. The total demand is 303 million pounds, which puts the restricted percentage at 29% (restricted tonnage 101 million pounds).

This year's restriction is less than most growers have anticipated. In light of the challenges of SWD, a lesser restriction will help us better manage this pest, particularly if fruit is put on the ground. Additionally, the CIAB Board voted to temporarily suspend the zero tolerance policy for 2016 because of concerns about SWD. In 2015, some growers had cherries infested by SWD, and these infestations may have been the result of unforeseen situations. Additionally, tart cherry crop insurance covers SWD-infested fruit if the grower did all he/she could to prevent this infestation. In keeping with the crop insurance policy, the CIAB Board has temporarily suspended the zero tolerance policy, and fruit infested with SWD can be used for diversion. However, we highly recommend growers maintain good insecticide coverage to prevent SWD infestation. We remind growers that large SWD populations can overwhelm even the best spray programs. SWD-infested blocks can quickly escalate overall SWD populations, and these adult flies can move into blocks that are intended for harvest and compromise SWD control. Growers that intend to divert whole or partial blocks need to continue to control SWD to minimize impacts on adjacent blocks, neighbor's blocks, and SWD populations in subsequent years.

## **Pest Report**

Cherries are ripening across the northwest region, and spotted wing drosophila (SWD) has been the primary pest of concern in the last week. Thus far, the NWMHRC has found and/or confirmed a total of 24 SWD flies in NW MI; no SWD have been found at the

NWMHRC. The latest SWD catch numbers in our region are available in Table 1. Until yesterday (27 June), most of the SWD catches were on Old Mission Peninsula and growers in this area have begun protecting cherries from SWD. Traps in Benzie were checked yesterday; seven flies were found in tart cherry along the M-72 W corridor and two additional flies were found near Arcadia: one in tart cherry and one in gooseberry. Old Mission Peninsula, M-72 W corridors and growers in nearby locations where SWD have been detected should begin programs to prevent SWD egg laying into susceptible fruit if they have not done so already. Many orchards in NW MI are susceptible to SWD at this time and if SWD has been detected on-farm or in a nearby location, growers with orchards in these areas should begin management programs. On-farm monitoring is the best means of having a timely detection of SWD to indicate when to begin management. Through research projects and the SWD Trap Swap program, the NWMHRC has over 250 traps in NW MI, and we are working with local scouts and consultants to notify growers of SWD presence in more precise locations as this pest is detected.

Some growers are about a week away from early sweet cherry harvest and managing mixed variety blocks for SWD is a concern for meeting pre-harvest intervals while also ensuring that spray materials will continue to provide SWD control. The pyrethroid insecticide Danitol is a 3-d PHI material with good to excellent efficacy against SWD. As with most pyrethroids, Danitol is a relatively short-lived insecticide and will last 5-7 days in the field. Pounce is also a 3-d PHI material with the active ingredient permethrin, which has shown variable SWD efficacy in NWMHRC trials.

We remind growers that insecticides that have an efficacy rating in the 2016 Fruit Management Guide have been tested by MSU for SWD efficacy. There are generic insecticides with the same or similar active ingredient as the materials that have been tested, but growers need to be aware that MSU has not tested all generics to determine comparable efficacy. Hence, we cannot be confident that generic materials will provide adequate or comparable SWD efficacy. For example, the pyrethroid insecticide Baythroid XL with the active ingredient beta-cyfluthrin has been tested and rated 'good' for SWD efficacy; however, Tombstone is a generic with the similar active ingredient (cyfluthrin) and we cannot be certain that this material will provide comparable control at a similar rate because it has not been tested in MSU's trials. Furthermore, growers should be aware that spotted wing drosophila is not listed on the Tombstone label.

Interestingly, cherry fruit fly (CFF) has not been detected at the station yet this season, and we have not received reports of CFF activity in the region. We hypothesized that this pest would become active following rain last week, which was not the case. It is possible that SWD management programs have impacted CFF detections, particularly if pyrethroid or organophosphate insecticides have been used for SWD this season. We will continue to monitor for CFF, and we ask local scouts and consultants to please notify the NWMHRC when this pest is detected in the region.

Obliquebanded leafroller (OBLR) moth activity is ongoing and the NWMHRC's biofix (i.e. first date of sustained catch) for this pest was 17 June; some areas caught this pest earlier around 14 June. According to Enviro-weather, the NWMHRC has accumulated 309 GDD base 42, and egg hatch typically begins between ~400-450 GDD base 42 after biofix. OBLR trap numbers were down this week with an average 8 moths per trap with the highest catch at 22 moths per trap. Catches at ~20 moths per trap in an orchard indicates that treatment may be needed. Higher than usual OBLR catches have been reported in the region, and some growers are strategizing how to target both OBLR and SWD in their pre-harvest spray program. We remind growers that OBLR resistance to the organophosphate insecticides and cross-resistance to pyrethroid insecticides has been documented and as a result, these chemistries alone should not be expected to provide adequate OBLR control. Diamide (ex. Belt, Altacor) and spinosyn (ex. Delegate, Entrust) insecticides are better options for OBLR. Additionally, we remind growers that if a diamide was used earlier this season for OBLR, a different mode of action should be used for late season/pre-harvest larvae to prevent resistance development. Furthermore, we have not tested Belt or Altacor for efficacy against SWD so growers should not rely on these materials for SWD control; however, Delegate has provided 'excellent' OBLR and SWD efficacy in research trials.

Figure 1. Powdery mildew on tart cherry



Our region has been fortunate that cherry disease and virus incidence has been relatively low this season because good leaf retention will be necessary for ripening the large cherry crop. We observed some orchards with powdery mildew mycelia growing on leaves near the centers of trees (Figure 1); there are no fungicides that will effectively eradicate mildew once it is established. We have had a few isolated reports of possible Syllit + Captan phytotoxic symptoms following applications in hot conditions, but overall reports are low. The forecast is looking mostly dry for the coming week, and these conditions pose little threat for cherry leaf spot infection. Drier conditions are also less favorable for American brown rot development. However, growers will need to monitor the weather and the potential threat for diseases closely. Sugar content is

increasing in cherries and brown rot could take off quickly in ideal wet, humid, warm conditions.

New fire blight symptoms are still appearing, but overall symptoms are slowing down; growers with fire blight infected blocks are continuing copper programs to kill the bacteria at this time. Thus far, we have observed and collected fire blight samples in Grand Traverse (albeit not on Old Mission Peninsula), Antrim, Benzie, and Manistee

Figure 2. Fire blight infected terminal with



counties. We encourage growers to continue to monitor orchards for fire blight symptoms: flagging or 'Shepard's crook' terminals and ooze (Figure 2). We have found fire blight infected fruit that appear to have a darkened or rotten looking spot where small yellow to orange colored ooze droplets manifest (Figure 3). Keeping a low inoculum is the best means of preventing further spread of fire blight bacteria during windy, stormy weather that could lead to trauma blight.

Codling moth activity is ongoing and we found an average of 5 moths per trap. Moth catches have been higher in our high density Honeycrisp block compared with the mixed block of dessert and cider varieties. According to the Enviro-weather codling moth model, we have accumulated ~560 GDD base 50 degrees F since the NWMHRC's biofix (24 May) and codling moth are at peak egg hatch at this time.

The second generation of oriental fruit moth (OFM) are flying at the NWMHRC. OFM catches at the research station are often low and variable and this scenario continues to be the case this season. If second generation populations are high and management is needed, action should be taken ~200 GDD base 45 degrees F after biofix 2 (i.e. the first sustained catch of the second generation OFM) to target egg hatch.

The NWMHRC will deploy apple maggot traps next week; first emergence of apple maggot typically occurs at ~ 950 GDD base 50 degrees F.

## **Wine Grapes**

*Duke Elsner, MSU Extension*

Bloom has progressed nicely, with excellent weather for pollination and fruit set. The earliest blooming hybrid at the research center, Brianna, already has buckshot sized berries. Riesling was not quite at full bloom as of June 27.

We are still in the prime window for powdery mildew infections of berries. Blocks with a history of trouble with powdery mildew should be kept covered with protectant materials for the next couple of weeks. Rose chafer numbers have started to drop off at many sites.

A couple of unusual insect infestations have been found in area vineyards this year. Grape tumid galls, induced by the larvae of a tiny fly, are small swellings on the leaves that may be green or red in color. On certain occasions the galls may be formed on tendrils or flower clusters. The galls have a hollow center where the larva develops. It is unusual for this insect to be numerous enough to cause significant injury to a grapevine.

Grape cane girdler is a small weevil that lays eggs in succulent shoots, then "drills" a series of small holes around the perimeter of the shoot somewhere below that point.

Figure 3. Fire blight ooze on apple fruit.



The larva develops in the wilting shoot tip beyond the drilled holes. Infested shoot tips readily break off from wind or contact with equipment. So far, this insect has only been reported from a few hybrid varieties in northwest Michigan. It is not likely to occur at numbers that would cause significant injury.

**MSU Extension/Parallel 45 “First Friday” meeting —July 1, 3-5 pm at Hawthorne Vineyards**, 1000 Camino Maria Drive, Traverse City, on Old Mission Peninsula. Dr. Rufus Isaacs is scheduled to be our featured speaker, presenting information on perimeter spray programs, new insecticide options and natural enemies.

**Saskatoons**

*Duke Elsner, MSU Extension*

Berry samples from an untreated block indicate that egg laying by adult apple curculios has finally ended. Larvae of all sizes and some pupae can be found inside fruits at this time. All larval feeding by the saskatoon sawfly should be done by this time. Rust infections remain light in NW Michigan. Rose chafers continue to do a lot of foliar injury and some berry feeding has been seen. With harvest coming up very soon, it is important to pay close attention to the pre-harvest intervals for any pesticide applications that are being considered.

**SWD Trap Update – June 28, 2016**

Catch Date	Location	Crop	Total No. of SWD
5/31	Centerville Twshp.	Tart Cherry	1
6/16	S. of Suttons Bay	Tart Cherry	1
6/17	Old Mission	Woodlot	2
6/20	M-72 W corridor	Tart Cherry	2
6/21	Old Mission	Sweet and Tarts	3
6/21	Elk Lake Rd.	Wild Raspberry	1
6/22	N. of Suttons Bay	Tart Cherry	1
6/22	Eastport	Wild Cherry	1



6/24	Northport-Omena	Tart Cherry	3
6/27	M-72 W corridor	Tart Cherry	7
6/27	Benzie	Tart Cherry	1
6/27	Benzie	Gooseberry	1

Total catches per region:

Centerville Twshp. - 1  
 S. of Suttons Bay - 1  
 Old Mission - 5  
 M-72 W corridor - 9  
 Elk Lake Rd. – 1  
 N. of Suttons Bay – 1  
 Eastport - 1  
 Northport-Omena - 3  
 Benzie - 2

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## **Monitoring for SWD Larvae in Cherries Before Fruit Enters the Processing Facility**

Guidelines for inspectors to detect fruit infested with SWD larvae at the receiving station or prior to entering the processing facility

N. Rothwell and E. Pochubay, K. Powers, NWMHRC

Spotted wing Drosophila (SWD) is the primary pest of concern for the 2016 harvest season in cherry orchards. This pest has the reproductive capacity to build populations quickly in the field, and controlling large numbers of SWD is a challenge in commercial orchards. Most tart and sweet cherries are susceptible to SWD infestation at this time, and growers will need to maintain tight spray programs to control this pest to deliver SWD-free fruit to the processing facility. Furthermore, processors and receivers would prefer to detect SWD-infested fruit before it enters the processing facility. Below are some guidelines for setting up a procedure to inspect for SWD-infested fruit at a receiving station or prior to fruit entering the processor.

We recommend that a salt solution be used for rapid fruit sampling for SWD. Inspectors should collect subsamples of fruit from the harvested tanks of cherries. Fruit that is infested by SWD will have some distinctive characteristics, which may not be readily identified without practice; however, once inspectors have seen SWD-infested fruit, they develop a good eye for detecting them. For instance, cherries with SWD larvae will have oviposition scars – tiny circular puncture holes that grow as the cherry starts to break down (Figure 1). These puncture holes are distinct and unlike the crescent shaped oviposition scars caused by plum curculio. Often, especially when the SWD infested fruit are intact, the fruit have a leaky appearance around the oviposition scars, and droplets of cherry juice emerge from the scars when the fruit is slightly squeezed (Figure 2). SWD eggs are laid into fruit;

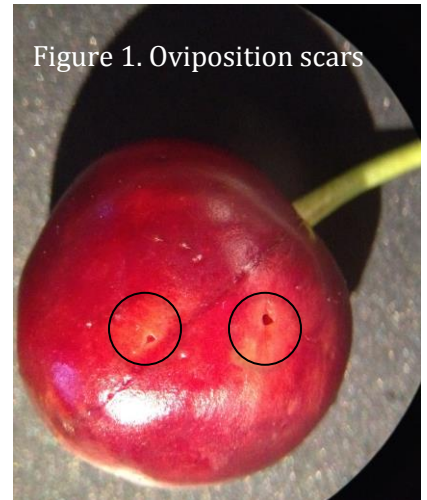


Figure 1. Oviposition scars

however, these eggs are quite distinctive and can be differentiated from other pest species eggs (ex. cherry fruit fly) as SWD eggs have two breathing tubes. These tubes are often visible with the naked eye, and these tubes can be observed sticking slightly out of the fruit (Figure 3).



Figure 3. SWD eggs

Additionally, fruit that has SWD larvae will also have a bruised appearance, and sometimes slightly sunken where the eggs were laid. Montmorency cherries have a darker color (less than bright red color) in the area when the females laid the egg in

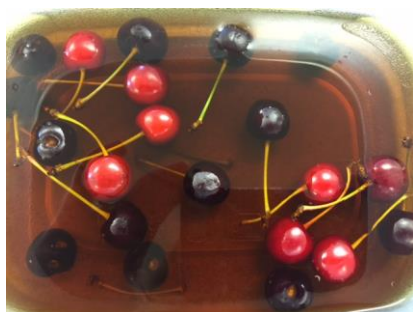


Figure 4. Salt solution bath

the fruit. Infested fruit often have a vinegary or overripe smell, which may not be detected unless the level of infestation is quite

high or when the fruit has not been placed in

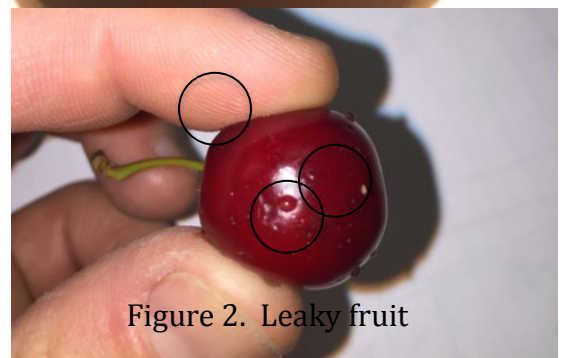


Figure 2. Leaky fruit

water. Once the inspector performs a quick visual inspection (as mentioned above), the subsample of fruit should be placed into a salt solution to test for live SWD larvae (Figure 4); larvae will wiggle out of the holes in the fruit or at the very least the larvae

will stick their posterior ends out of the fruit giving the cherry a 'whisker-like' appearance (Figure 5).

Figure 5. Larvae emerging from cherry

#### Salt Solution Recipe and

#### Methodology

- Dissolve 1 tablespoon salt per 1 cup warm water. Warm water reduces the time it takes for the larvae to exit the fruit; cold water will reduce larval activity.
- Fruit should be slightly squeezed before placing it into the salt solution. SWD larvae do not like to be disturbed and will more readily exit the fruit when pressure is applied to them. Inspectors should not squeeze the fruit enough to break the skin of the cherry as the flesh of the Montmorency has whitish colored veins that can be mistaken as SWD larvae (Figure 6). Inspectors should only squeeze the cherries enough to disturb the internal larvae.
- Place fruit in a shallow pan, and cover with salt solution. Fruit will float at the surface, so the inspector should be sure to swirl the fruit every few minutes to make sure all fruit are exposed to the salt solution
- Fruit should remain in the salt solution for at least 10–15 minutes to observe larvae exiting the fruit.
- Inspectors should have a good hand lens (at least 15-20x, 30x is better; the higher the magnification, the better) and good lighting to see small larvae. Even the most seasoned entomologist will have difficulty detecting first instars as they are better observed under a microscope. However, if no microscope is available, second instars and older larvae are visible with the naked eye. If a quantitative sample is necessary, inspectors should count the larvae quickly while they are still alive and moving.

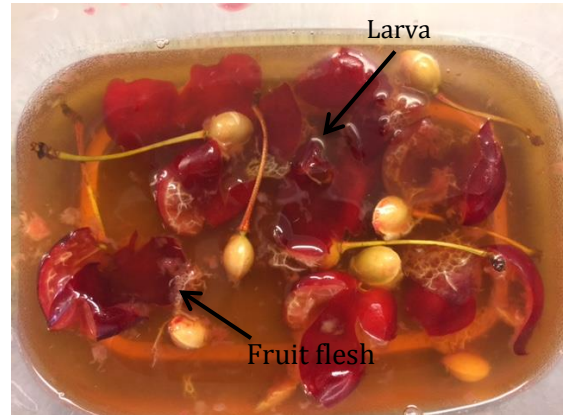


Figure 6. Montmorency and SWD larvae

The larval stage of SWD can be difficult to identify. The SWD larvae look like a maggot (Figure 7), which unfortunately look like cherry fruit fly larvae. However, if there is a relatively large infestation/multiple larvae, we can assume that all or most larvae found in a sample are SWD as past infestations have shown SWD can lay multiple eggs and multiple larvae can pupate inside a single fruit. The NWMHRC would be happy to assist in identification, so please do not hesitate to call (231-946-1510).



Figure 7. SWD larva on cherry

## **ETHEPHON ON CHERRIES**

N.L. Rothwell, District Horticulturist

J. Nugent, Retired District Horticulturist

E.A. Pochubay, NWMHRC Fruit IPM Educator

Ethephon is a plant growth regulator (PGR), and results from its use vary with chemical concentration and time of application. As with many PGRs, ethephon = has systemic properties which allows it to penetrate plant tissue and is eventually decomposed to produce ethylene. In cherry systems, ethephon is used to promote fruit loosening to assist with mechanical harvest of fruit. Ethephon, sold under the trade name Ethrel, is a standard management practice in both tart and sweet cherry harvest.

Ethephon releases ethylene, which penetrates plant cells and binds to receptors that affect expression of various genes. In the case of cherries, ethephon affects the gene that controls the synthesis/activation of cell wall loosening enzymes, thus dissolving the pectins between cells in the abscission layer. This chain-like reaction leads to cell separation in the developmentally-programmed abscission zone between pedicel and fruit or pedicel and spur. In short, ethephon loosens the cherries from the stem, which results in a gentler 'shaking' of the tree to remove the fruit.

In years past, we have observed ethephon-induced damage in hot and dry weather. Ethephon can have excessive activity under hot and dry conditions, which can result in tree injury. We remind growers that we have observed ethephon damage under hot and dry conditions in the past, especially in sweet cherries. Of sweet cherry varieties, Golds were observed to be the most sensitive. If temperatures are in the high 70s to mid- or upper 80s and sunny during the 72 hours following application, this weather could be conducive for causing Ethrel damage; the magnitude of ethephon response is increased at higher temperatures following application. Tree vigor also influences the degree of response achieved by an ethephon application. Trees low in vigor or under stress due to drought, cold damage, San Jose scale infestation, disease, virus, phytotoxic injury, etc. will respond to a greater extent, and gumming and leaf abscission may result. Hence, growers may choose to reduce rates in orchards that are stressed, particularly if temperatures will be higher with the potential to cause injury.

Crop load is also a factor when determining what rate to use. Heavy crop loads are typically more difficult to loosen compared with light crop loads. Many orchards have a heavy crop load this season, and these growers may need to use a higher rate or leave extra time to achieve optimal loosening. Again, an increased rate could cause injury if temperatures are high following the application. Furthermore, growers should be prepared that if an orchard is taking a longer time to loosen, then the orchard may need to be treated with an insecticide that is effective against spotted wing drosophila to prevent larvae in fruit. Please review the 2016 Fruit Management Guide, the Managing Spotted Wing Drosophila in Michigan Cherry bulletin, and insecticide labels for

additional information on efficacious insecticides and pre-harvest application intervals. Balancing SWD management and harvest will take increased consideration at the grower level and good communication between growers and processors.

The following recommendations should be used when applying ethephon to cherries:

1. **Rate:** Vary the rate depending on anticipated temperatures for 72 hours after application, days before harvest, tree stress and past experience. Lower rates decrease the likelihood of tree injury. *If temperatures 72 hours after application are predicted to be in the 80s, growers should reduce the Ethrel rates.*
  - A. **Light sweets** -- When applied concentrate (80 gal water/acre or less), 1 to 2 pt/acre applied 10-14 days before anticipated harvest should provide adequate loosening. Rates up to 2.5 pt/acre may be necessary for harvesting in less than 10 days. When applied dilute, use no more than  $\frac{3}{4}$  pt/100 gals or 3 pt/acre. Reducing rates in light sweet cherries, particularly Golds, is recommended if predicted temperatures are in the 80s after application.
  - B. **Dark sweets** -- When applied concentrate, use 1.5 to 2.5 pt/acre applied 10-14 days prior to anticipated harvest. Rates up to 3 pt/acre may be necessary for harvesting in less than 10 days. When applied dilute, use no more than 1 pt/100 gal or 4 pt/acre.
  - C. **Tart cherries** -- When applied concentrate, use 0.5 to 1 pt/acre applied 7 to 14 days prior to anticipated harvest. When applied dilute, apply no more than  $\frac{1}{3}$  pt/100 gal or 1 pt/acre.
2. **Time of Application:** Apply approximately 7 to 14 days before anticipated harvest. Do not harvest within 7 days of application (Ethrel has a 7-day PHI).
3. **Temperature:** Avoid application when high temperatures are expected to exceed 80° F or remain below 60° F for the 72 hour period after application. Growers should use lower than normal rates when highs are expected in the 80s.
4. **Tree stress:** Do not spray trees that are low in vigor or under stress conditions.
5. **Do not** spray trees that had serious gumming the previous year.
6. **Crop load:** Heavy crop loads (i.e. low leaf to fruit ratio) are more difficult to loosen than lighter crops. There is a heavy crop load in many orchards this season, and growers may need to use relatively higher rates or expect a longer time to achieve desired loosening. In trees with a light crop, reduced rates are recommended and rate reductions in light blocks will still achieve adequate loosening while minimizing the potential for injury in hot conditions this season.
7. **Concentrate spraying:** Applying ethephon with concentrate sprayers (i.e. 80 gallons of water/acre or less) achieves the same level of loosening at lower rates per acre than does dilute applications. Uniform coverage is important.
8. **Tree size:** Suggested rates/acre are based on full-sized trees. Adjust rates downward when treating blocks with smaller trees.

Growers should pay particular attention to the temperatures after the time of ethephon application. As evident from past experiences, hot temperatures can do damage to cherry trees. Growers that have had problems in the past years should reduce rates, especially if the trees showed serious gumming and leaf loss.

## Miticides options for controlling mites in cherry

Emily Pochubay and Nikki Rothwell, NWMRHC

Mite populations at the research station remain low at this time, but we have received reports that mite numbers are building in orchards in the region. With a relatively drier season, this year poses the potential for higher than normal pest mite densities. Furthermore, insecticides targeting the complex of late season pests, particularly pyrethroids for SWD control, could contribute to mite flaring; growers should be prepared for the possibility that orchards may need a miticide this season. Pyrethroid insecticides are toxic to mite predators, and their use can lead to a flare up of pest mites. Fortunately, there are several registered miticides available for use on cherry (Table 1). However, growers should check labels for pre-harvest intervals and registered uses if a miticide is applied before and/or after harvest. Please refer to the 2016 Fruit Management Guide for additional information on miticide efficacy.

Scouting for mites should be begin prior to harvest, with enough time to determine if a miticide will be needed prior to harvest. This pre-harvest monitoring period should begin early enough to consider that some miticides have a long PHI. One method of monitoring TSSM motile populations consists of sampling 25 intermediate-aged leaves at 3-5 sites within a block. Count the number of leaves that have two or more TSSM motiles from each sample, and follow the binomial charts to estimate the number of mites per leaf (Figure 1). Treatment thresholds for TSSM are 8-10 mites per leaf from July through post-harvest

Figure 1. Binomial Sampling Charts for TSSM and ERM

Twospotted Spider Mites			European Red Mites		
No. of leaves with 2 or more mites	% of leaves with 2 or more mites	Average No. mites per leaf	No. of leaves with 1 or more mites	% of leaves with 1 or more mites	Average No. mites per leaf
10	40	2.1	10	40	0.7
12	50	3.0	12	50	1.1
15	60	4.1	15	60	1.6
17	70	5.4	17	70	2.6
20	80	8.5	20	80	4.7
21	84	10.1	22	90	11.4
			24	95	15.3

Examine 25 leaves per site at each of 3 to 5 sites per block

Charts are adapted from "Orchard Pest Management" published by GOOD FRUIT GROWER, 1993

**Table 1. Miticides to use on cherry crops to target certain mite pests** (Table modified from *Miticides options for controlling mites in fruit* by John Wise, Rufus Isaacs, Larry Gut published on April 26, 2016).

Compound	PHI Cherry	Life stage target	Life stage target	Seasonal timing	Residual control
Savey	28	ERM	Egg/larvae	Early <sup>***</sup>	8-12 weeks
		TSSM	Egg/larvae	Mid (or threshold) <sup>**</sup>	6-8 weeks
Onager	28	TSSM	Egg/larvae	Mid (or threshold) <sup>**</sup>	6-8 weeks
Apollo	21	ERM	Egg/larvae	Early <sup>***</sup>	8-12 weeks
		TSSM	Egg/larvae	Mid (or threshold)	6-8 weeks
Agri-Mek	21	ERM, RM	Motiles*	Early <sup>****</sup>	8-12 weeks
		TSSM	Motiles*	Mid (or threshold)	6-8 weeks
Gladiator	21	ERM, RM	Motiles*	Early <sup>****</sup>	8-12 weeks
		TSSM	Motiles*	Mid (or threshold)	6-8 weeks
Vendex	14	ERM	Motiles*	Mid (or threshold) <sup>**</sup>	4-6 weeks
		TSSM	Motiles*	Mid (or threshold)	4-6 weeks
Zeal	7	ERM	Egg/larvae	Early (or threshold) <sup>**</sup>	8-10 weeks
		TSSM	Egg/larvae	Mid (or threshold) <sup>**</sup>	6-8 weeks
Envidor	7	TSSM	Egg, motiles*	Mid (or threshold)	6-8 weeks
Nexter	7	ERM, RM, TSSM	Motiles*	Mid (or threshold) <sup>**</sup>	6-8 weeks
Acramite	3	ERM	Motiles*	Mid (or threshold) <sup>**</sup>	6-8 weeks
		TSSM	Motiles*	Mid (or threshold)	6-8 weeks
Danitol	3	ERM	Motiles*	Mid (or threshold) <sup>**</sup>	4-6 weeks
		TSSM	Motiles*	Mid (or threshold)	4-6 weeks
Magister	3	TSSM	Eggs, motiles*	Mid (or threshold)	3-5 weeks

\* Motile forms include mite larvae, nymph and adult stages.

\*\* Optimally used petal fall through August when mites reach threshold.

\*\*\* Optimally used pre-bloom through first cover.

\*\*\*\* Optimally used petal fall through second cover.

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**New resource for apple growers - OMAFRA**

OMAFRA has released a new resource for apple orchard spraying.

Some of you have heard me speak about crop-adapted spraying, and after four years of research we have developed an app for Apple and Android systems that prescribes a sprayer set up for most orchard applications. Drenches and plant growth modifiers aren't included.

The app is free and I took pains to ensure it works in both Metric and US Imperial so it will be of use to everyone.

I invite you to check out the article on Sprayers101 and read about what it does, and doesn't, do.

That article also links back to the article on Crop-Adapted Spraying, so you can get a little foundational refresher if you choose.

I hope to speak on the subject at our meeting this year, but I'm certainly happy to speak with anyone that has questions at any time.

If you'd rather respond to me directly rather than fill everyone's inboxes, please feel free.

Here's the link:

<http://sprayers101.com/orchardmax>

The link to the Apple store works right now, and the Google Play link should work before Monday.

Thanks for your interest and if you choose to share this information with your growers, I hope it helps them as much as it's helping Ontario's orchardists.

Jason Deveau  
OMAFRA

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## **Peach and Plum Variety Showcase**

Date: August 23, 2016

Time: 4:00 p.m. - 7:00 p.m.

Location: SW Michigan Research & Extension Ctr, 1791 Hillandale Rd., Benton Harbor, MI 49022



Contact: MSU Extension Tree Fruit Specialist Bill Shane: (269) 208-1652 or shane@msu.edu

You are invited to see and taste the newest, traditional, and unusual peach and plum varieties and experimental selections.

This extensive stone fruit display will be assembled from samples contributed by commercial growers, nurseries, and university breeding programs across Michigan and elsewhere. Fruit on display will include yellow and white fleshed peaches and nectarines, donut, aprium, and plumcot types. Attendees will see new varieties and experimental selections from the Stellar, Flamin' Fury, Rutgers University, University of Wisconsin, Cornell University, and Michigan State University breeding programs. Breeders, commercial nursery, growers, and university researchers will share their experiences and recommendations with these new varieties.

This showcase will take place in Berrien County at the SW Michigan Research & Extension Center, 1791 Hillandale Rd., Benton Harbor, MI 49022 from 4:00 PM to 7:00 PM. The schedule is: 4:00 PM Fruit variety displays open for viewing and tasting; 4:30 PM Fruit variety discussions; 6:00 PM Supper. There is no charge. Supper provided courtesy of International Plant Management and Summit Sales, Lawrence, MI.



Directions to SWMREC: Travel on I-94 to Exit 30, which is Napier Avenue. Turn east on Napier Avenue and go 2 1/2 miles to Hillandale Road. Turn south (right) and travel to the entrance of SWMREC (about one-quarter mile on the east (left) side of Hillandale Road).

You are welcome to bring samples of new, unusual, and experimental peaches and plums varieties to add to the display. The SW Research and Extension Center will be open for self-guided tours to see over 60 projects on fruit and vegetables including high tunnel production, grapes, hops, peach training systems, variety trials, and peach breeding.

*This showcase is organized by the Michigan Peach Sponsors, Summit Sales, International Plant Management, and Michigan State University Extension.*

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## CIAB Grower Meetings

The CIAB meets June 23, 2016 at 8:00 AM, at the Amway Grand Plaza, in Grand Rapids, MI to discuss the Optimum Supply Formula and to set restriction percentages, if any. The CIAB will hold grower meetings to discuss the outcomes with growers and the prospects for this harvest.

The meetings will be at the following locations and times. Please attend the one that is more convenient for you.

Friday, June 24	4:30 – 6:30 PM	Southwest Michigan Research and Extension Center 1791 Hillandale, Benton Harbor, MI
Monday, June 27	8:30 – 10:00 PM	Oceana Intermediate School District 844 Griswold Street Hart, MI
Tuesday, June 28	9:00 – 11:00 AM	Peninsula Township Hall 13235 Center Rd. Traverse City, MI
Tuesday, June 28	1:00 – 3:00 PM	Milton Township Hall Kewadin, MI
Tuesday, June 28	7:00 – 9:00 PM	NWMHRC 6686 S. Center Highway Traverse City, MI

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## Income Taxes for Foreign Agricultural Workers (H-2A) – Meeting

### Meeting Dates and Times:

**Tuesday, July 12, 2016**

**Ottawa County Fillmore Complex Main Conference Room 12220 Fillmore Street West Olive, MI 49460**

**Wednesday, July 13, 2016**

**MSU Northwest Michigan Horticultural Research Center 6686 S. Center Highway Traverse City, MI 49684**

Michigan's agricultural industry has been seeing a decline in recent years of the traditional labor resources that have been used in the past. The use of the H-2A Guest Worker Program has seen a significant increase in use recently with continued significant growth in coming years. With this increase there is a need for legal and tax professionals to have an understanding on how to prepare taxes for H-2A guest workers, common pit-falls and challenges.

This Continuing Education Program will provide a four hour presentation with three hours of hands-on workshop to help tax professionals understand how tax law impacts foreign agricultural workers and their employers and give them a better understanding of the challenges faced by tax professionals, employers and the workers themselves as they strive to comply with federal and state tax laws.

The information included also applies to all taxpayers who use ITINs when filing tax returns and/or have spouses and/or dependents living outside the United States.

This program will use IRS Publications 519 and 51 and others as a guide throughout this training. Participants will gain an understanding of tax preparation for H-2A Guest Workers, the appropriate method to fill-out an ITIN documentation/application, how to appropriately calculate the time a guest worker has been "in country" over the past 3-years to determine the correct tax documentation needed to be filed in the present tax year. Participants will also receive an overview of the tax deductions, credits available and not available to H-2A Guest Workers.

This program will also discuss payroll and tax withholding issues and responsibilities of an Employer and H-2A Laborer that all tax and legal professionals should be aware of when working with their clients.

Registration fee is \$125.00 per person which includes lunch, refreshments, handouts and materials. **Register online** by July 8, 2016 at <http://events.anr.msu.edu/H2ATaxPrepWorkshop/>. Online registration offers payment by credit card or check. Or to register by mail, mail completed registration form at right with check payment no later than July 5. Please indicate the location you would like to attend.

More information can be found in the attached PDF flyer.

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**Attend the 2016 spotted wing Drosophila berry grower training on June 30**

**Take the guesswork out of your spotted wing *Drosophila* (SWD) control program. Learn how to use a systems approach to control SWD.**

Posted by [Carlos García-Salazar](#), Michigan State University Extension, MSUE News



Blueberry growers learning to use Enviro-weather for SWD management.

[Spotted wing \*Drosophila\*](#) (SWD) have been trapped for several weeks, and this pest is ready to attack Michigan berry fields. It is time to prepare your control strategy to stop SWD. Early detection and action is critical for successful SWD management. To help berry growers control this pest, [Michigan State University Extension](#) has developed an intensive [2016 Spotted Wing \*Drosophila\* Workshop](#) using information on SWD biology, insecticides, weather conditions and other tools. Integrating information and tools from different sources to create a robust system is called a systems approach and is a highly effect way to handle any problem.

This workshop will be on Friday, June 30, 2016, from 9 a.m. to 4 p.m. at the Ottawa County Fillmore Complex Boardroom, [12220 Fillmore Street, West Olive, MI 49460](#). There is a \$30 registration fee for this workshop, which includes materials and refreshments. [Pre-registration](#) is required. Four RUP credits will be available for certified pesticide applicators. For a complete description of the program and to register, go to: [2016 Spotted Wing \*Drosophila\* Workshop](#).

This workshop is designed for berry growers, field managers, pest consultants and anyone involved in insect pest management in berry crops. Its goal is to teach growers to manage SWD using a systems approach. Participants will learn SWD biology and behavior, recommended insecticides and their strengths and weaknesses, how weather conditions impact insecticide performance and how to use the [MSU Enviro-weather](#) website's weather information and tools to develop a successful integrated pest management (IPM) program to control SWD.

Even if you have attended SWD trainings in the past, this training will provide new information, helping you upgrade your IPM skills. You will be able to effectively manage SWD at your fields during the 2016 season.

For more information, contact Mary Frein at the [Ottawa County MSU Extension office](#) at 616-994-4540 or [frein@anr.msu.edu](mailto:frein@anr.msu.edu).

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## **2016 IPM Update Schedule**

**Emily Pochubay and Nikki Rothwell**  
**Michigan State University Extension**

Tree Fruit IPM Updates beginning the first week of May through mid-July (as needed) will highlight management of the seasons current potential pest challenges dictated by weather and pest biology. Attendees are encouraged to bring examples of pests and damage found on the farm to these workshops for identification and discussion. Workshops will be held weekly in Leelanau and Grand Traverse counties and bi-weekly in Antrim and Benzie counties in May. Beginning in mid-June, we will hold weekly meetings in all four locations. Tree fruit growers are welcome to attend meetings at any of the locations and times that are most convenient (see below). These workshops are free and do not require registration. For more information, please contact Emily Pochubay ([pochubay@msu.edu](mailto:pochubay@msu.edu)), 231-946-1510.

### **Leelanau County**

**Location:** Jim and Jan Bardenhagen, 7881 Pertner Road, Suttons Bay

**Dates:** May 3, 10, 17, 24, 31; June 7, 14, 21, 28

**Time:** 12PM – 2PM

### **Grand Traverse County**

**Location:** Wunsch Farms, Phelps Road Packing Shed, Old Mission

**Dates:** May 3, 10, 17, 24, 31; June 7, 14, 21, 28

**Time:** 3PM – 5PM

### **Antrim County**

**Location:** Jack White Farms, 10877 US-31, Williamsburg (south of Elk Rapids on the southeast side of US-31)

**Dates:** May 4, 18; June 1, 15, 22, 29

**Time:** 10AM – 12PM

## **Benzie County**

**Location:** Blaine Christian Church, 7018 Putney Rd, Arcadia, MI 49613

**Dates:** May 4, 18; June 1, 15, 22, 29

**Time:** 2PM – 4PM

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*MSU Extension programs and material are open to all without regard to race, color, national origin, gender, gender identity, religion, age, height, weight, disability, political beliefs, sexual orientation, marital status, family status, or veteran status. Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities.*

### **WEB SITES OF INTEREST:**

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://agbioresearch.msu.edu/nwmihort/faxnet.htm>

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>

Fruit CAT Alert Reports:

<http://news.msue.msu.edu>

