

Northern Michigan FruitNet 2016 Northwest Michigan Horticultural Research Center

Weekly Update

FruitNet Report – June 7, 2016

CALENDAR OF EVENTS

6/10	IFTA Young Grower Scholarships Due
5/3 – 6/28	Leelanau County IPM Updates, 12PM – 2PM Jim and Jan Bardenhagen's Farm (details below)
5/3 – 6/28	Grand Traverse County IPM Updates, 3PM – 5PM Wunsch Farms (details below)
5/4 – 6/29	Antrim County IPM Updates, 10AM – 12PM Jack White Farms (details below)
5/4 – 6/29	Benzie County IPM Updates, 2PM – 4PM Blaine Christian Church (details below)
08/25	NWMHRC Open House

What's New?

- **Northwest Michigan Fruit Regional Report – June 7, 2016**
- **Materials for Cherry Leaf Spot and Powdery Mildew Control**
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Northwest Michigan Fruit Regional Report – June 7, 2016

Fruit are beginning to size, and at this time, the northwest region of Michigan has an excellent crop of sweet and tart cherries; the apple crop is also setting well.

Nikki Rothwell and Emily Pochubay

GROWING DEGREE DAY ACCUMULATIONS AS OF June 6, 2016 AT THE NWMHRC

Year	2016	2015	2014	2013	2012	2011	26 Yr. Avg.
GDD42	801	743	663	693	1048	672	746.6
GDD50	436	394	357	393	575	349	389.2

2016 Growth Stages as of 6/6/16

Bartlett Pear – 14 mm fruit

Potomac Pear – 16 mm fruit

Mac – 13 mm fruit

Gala – 12 mm fruit

Red Delicious – 14 mm fruit

HoneyCrisp – 14 mm fruit

Montmorency – 11 mm fruit

Balaton – 12 mm fruit

Hedlfingen – 13 mm fruit

Gold – 11 mm fruit

Napolean – 11 mm fruit

Riesling – 10" – 16" shoots

Weather Report

Weather was warm at the latter part of last week and into Saturday, 4 May, but Sunday's high reached only into the mid-60s. Cool temperatures are predicted with a high in the low 50s today: 6 June. Temperatures are supposed to warm slightly tomorrow and reach the high 70s by Friday and Saturday (10 and 11 June), which are

more normal temperatures for this time of year. We have accumulated 801GDD base 42 and 436GDD base 50.

Rainfall amounts vary dramatically across the northwest region. We calculated the following total rainfall amounts for each of the northwest Enviroweather stations for 1 May through 6 June: Bear Lake (1.28"); Benzonia (1.21"); East Leland (1.96"); Eastport (2.35"); Elk Rapids (1.06"); Kewadin (1.25"); Northport (0.98"); Old Mission Peninsula (2.38"); and NWMHRC (2.04"). These numbers are variable, and these differences may impact disease development, particularly apple scab. Calling the end to primary scab may be difficult in areas where there has been little total amounts of rainfall. The next rainfall is predicted for Saturday 11 June.

Crop Report

Fruit is sizing well, and all cherries in the 11-13mm across all varieties. The cherry crop varies across different orchards in the region, but overall, the sweet crop is looking excellent. As mentioned in last week's FruitNet, we are observing trees of the var. Ulster that are not setting fruit despite a good bloom. Most of these trees are on a variety of rootstocks: MxM60 and Mahaleb, and are in the 6-9 year old range. We are trying to better understand why these healthy trees are not bearing fruit. The tart cherry crop is also looking very good at this time. In general, younger trees tend to have a larger set than older trees. The estimate for northwest Michigan varies among growers, but the range of total crop has been 125-180 million pounds. The Michigan Guesstimate will take place on 22 June. The Balaton crop also looks good at this time.

We have great growth on all of our tree fruits. Growers are starting to make their Pro-Gibb applications in tart cherries. The timing for this application is five to seven terminal leaves; however, warm temperatures are need for a good response from plant growth regulators. As mentioned last week, we had some reports of Pro-Gibb applications that did not work well in last season's cool temperatures. We recommend that growers wait until it warms up again before making this application.

Thinning apples has been challenging this season. When we had warm temperatures earlier last week, apples seemed to move from bloom to petal fall very quickly. Many growers that have used 'nibble' thinning in the past did not use this technique this season because tree development was so fast this season. Most growers began thinning last week when fruitlet size was already in the 8-10mm range. Thinners will not work well in the current cold temperatures, and some apples may be too big to thin by the time temperatures warm up again this weekend. At the NWMHRC, our apples are 12-14mm in size. According to the carbohydrate model (Figure 1), trees will not be under stress for the next three days. Growers will likely come in on the weekend when temperatures are predicted to warm. Thus far, thinning results have varied from farm to farm. At the NWMHRC, we had optimal thinning in the Honeycrisp block, but we

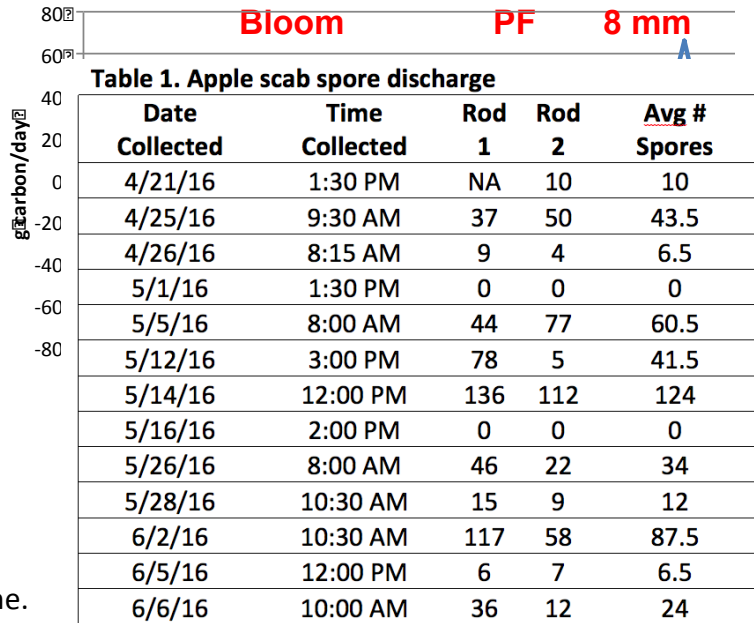
have seen Gingergolds and other Honeycrisp orchards with a lot of large fruit. Growers may need to hand thin a bit this year.

Pest Report

Rain on the evening of Saturday 4 June initiated infection periods across the region.

Adequate drying time did not occur between the several sporadic rain events over the weekend, and as a result, these infection periods were very long. Overall there was little rain accumulated for most areas; however, all of the NW MI weather stations reported heavy apple scab and high cherry leaf spot infection periods. Reapplication of spray materials may be necessary following recent wet weather, and currently, the predicted forecast shows a possible three-day window before the next rain event on 11 June.

NWHRSCarb 2016-3-16



According to the NWMHRC biofix (April 17th), 100% of scab spores are mature and 92% have discharged at this time. Some areas have been drier than the NWMHRC, and in dry areas, the primary phase of apple scab could last longer than at the NWMHRC as we have received just over 2" of rain in May and the early part of June. An afternoon rain on 2 June triggered a high spore release (average of 87.5 spores). We observed fewer discharged spores following evening rain events over the weekend (Table 1). We suggest that growers use full covers to achieve adequate coverage as we have had substantial growth with the recent heat and canopies are full.

Most orchards are past the timing for chlorothalonil use targeting cherry leaf spot unless applications are made under the special label for post-shuck split applications of Bravo WeatherStik; growers should check with processors before making post-shuck split applications. Many growers have made or will apply first cover sprays for cherry leaf spot and powdery mildew. The recent wet weather was conducive for leaf spot and powdery mildew infections. Unlike leaf spot, mildew spores do not require free moisture to germinate, and warm humid conditions are optimal for mycelia growth on leaves. Temperatures are predicted to cool down briefly, and we recommend copper use under these cooler conditions, but growers should remember that neither copper

nor Syllit are effective against powdery mildew. If these products are used against leaf spot, a fungicide targeting powdery mildew needs to be included in the tank. Cooler temperatures will slow disease development, but growers should consider including an efficacious material for powdery mildew, as we have no materials that will eradicate mildew once mycelia are visible. Captan alone will not provide activity against mildew; however, Captan demonstrated excellent efficacy for leaf spot in 2015 research trials and the 2015 season was optimal for cherry leaf spot infection. Most orchards remain free of disease symptoms at this time. The first symptoms of cherry leaf spot starting showing up last week, and we have received reports of isolated leaf spot lesions on tart cherries in the region; overall infections are low. Many orchards have the potential for a large cherry crop and preventing leaf spot infection and defoliation will be critical for ripening cherries this season.

Symptoms of European brown rot were visible last week in untreated orchards and in a Balaton orchard where the timings (popcorn and bloom) for European brown rot sprays were missed. There have been few reports of European brown rot symptoms thus far.

Plum curculio activity is ongoing and cooler temperatures will slow plum curculio activity resulting in a prolonged egg laying period. Growers using Actara should be aware that there is a maximum of 11 fl oz per acre of Actara allowed per season (i.e. two applications at a rate of 5.5 fl oz).

The first spotted wing drosophila of the season were detected in northwest and southwest Michigan on Friday 3 June. Green cherries are not susceptible to spotted wing drosophila egg-laying; however, research has shown that cherry fruit are susceptible to oviposition at the straw-colored stage. Because this pest has been detected much earlier than in previous seasons, strawberry growers and consultants should consider monitoring for spotted wing drosophila and scouting for berries damaged by larvae. We will be placing SWD traps on strawberry farms this season.

The NWMHRC's biofix for codling moth is 26 May 2016. According to the Enviro-weather codling moth model, we have accumulated ~217 GDD base 50 degrees F since our biofix. Blocks with a cumulative codling moth trap catches of 5 or more moths may indicate the need for treatment. Codling moth eggs begin hatching at ~250 GDD base 50 degrees F after biofix, and this is the first opportunity for treatment of larvae if management is needed. If pest pressure is low, delayed treatment of codling moth larvae at 350 GDD base 50 degrees F is another strategy against CM; growers who applied an ovicide (Rimon at 100GDD) could use this delayed treatment for larvae at 350GDD base 50.

American plum and lesser peachtree borer activity is ongoing with a decrease in trap catches this week; we found an average of 5 American plum borer moths per trap and 15 lesser peachtree borer moths. are at peak flight this week; we found an average of 19 American plum borer moths per trap. Greater peachtree borer activity has not been

detected at the research station this season, but we have received reports of greater peachtree borer activity in the region.

Wine Grapes

Duke Elsner, Extension

Shoot growth looks very good in most NW Michigan vineyards. Vinifera are in 6-12 inch shoot stage and hybrids are close to 18 inches in some sites. I have seen some cases of poor bud break and survival where severely hail-injured canes were used for this year's fruiting wood. No symptoms of powdery mildew have been seen, but we likely had some infection periods during recent rains. A few adult potato leafhoppers have been reported, but overall there has been very little insect pest activity in vineyards thus far. I saw a single rose chafer on June 5, so it is time to be scouting to see if we are going to have a significant run of that insect this year.

Saskatoons

Duke Elsner, Extension

Berries are still in the small green fruit stage at sites visited this week. It appears that the egg laying activity of all the direct fruit pests has ended. At the small test planting at the Northwest Michigan Horticultural Research Center, we have a high level of injury this year from saskatoon sawfly and apple curculio. There is far more plum curculio activity than in previous years, but these do not compare in importance to the saskatoon sawfly and apple curculio. I have still not seen clear-cut symptoms of entomosporium leafspot, but the first rust symptoms on berries was discovered on June 6. Rust will be a serious threat for the next few weeks if we get into periods of rainy weather.

A saskatoon field day has been scheduled for morning of June 17; participants will visit saskatoon production sites in Leelanau and Grand Traverse Counties. For the full agenda or more information, contact me at elsner@msu.edu.

Materials for Cherry Leaf Spot and Powdery Mildew Control

Emily Pochubay and Nikki Rothwell, MSU Extension

Many cherry orchards are at first cover timing for disease management, and cherry leaf spot (CLS) and powdery mildew (PM) are the main diseases of concern at this time. With the dry conditions earlier this spring, most orchards are free of disease symptoms so far this season. However, there are some isolated orchards where we have detected CLS lesions on the first true leaves. Preventing the spread of secondary phase of this disease, the conidial stage, is critical for keeping this disease under control for the duration of

this season. PM can be a problem in tart cherry orchards, particularly in young orchards and infection tends to occur on the most actively growing tissue. Both CLS and PM can cause early defoliation if these diseases are not managed effectively, and with the potential for a large cherry crop, adequate leaf area will be necessary to ripen the crop and to have healthy trees as we head into next winter.

The biggest issue for PM control is the prevention of initial fungal infection. There are no fungicides that will eradicate powdery mildew, so growers need to control this disease before it appears on the leaves. PM control is achieved by using protectant fungicides ahead of the infection. By the time white mycelium is visible on leaves, it is too late for control.

The most important spray timing for PM control is the first cover timing, i.e. the first spray application after shuck split. *This spray is critically important.* Previous research has shown that if this timing is missed, the amount of PM-infected leaves can increase by at least threefold at harvest (data not shown). NWMHRC research has also found that if fungicides targeting PM are only applied closer to harvest, PM infection can reach epidemic levels by mid-August (~ 70% incidence of leaf infection). There are several materials that provide activity against CLS and PM; however, not all fungicides are active against both CLS and PM. Therefore, we remind growers to include materials that are effective for both diseases particularly at the first cover timing.

SDHIs (Group 7, 11) – the best options for CLS and PM at the first cover timing

The SDHI fungicide class, Luna Sensation or Merivon, are excellent for CLS and PM control at the first cover timing. We recommend that this class of fungicide be tank mixed with Captan. The SDHIs are the best fungicides currently available for CLS, and they are recommended at the first cover timing to coincide with high CLS spore discharge; SDHIs are also rated excellent for PM control. Growers have been concerned that the SDHIs are expensive, but a well-timed first cover application of these newer materials will provide ideal control of CLS and PM (Figure 1). Additionally, because these materials are systemic, they are less likely to wash off during a rain event. However, there is high risk for the development of resistance to SDHI fungicides, which is why we recommend a protectant (i.e. Captan) be tank mixed with these materials. Using the highest label rate will aid in effectively killing the pathogen; killing the

Fungicide Timing Trial/Cherry at the NWMHRC

<u>Treatment</u>	<u>Timing</u>	<u>% leaves infected (29 June)</u>
Pristine 12oz	1,2,3,4,5,6	1.1d
Pristine 12oz	2,3,4,5,6 only	2.6d
Pristine 12oz	3,4,5,6 only	3.7cd
Pristine 12oz	4,5,6 only	7.1c
Pristine 12oz	5,6 only	19.5a
Pristine 12oz	6 only	15.2b
Gem 3.8oz	1,2,3,4,5,6	2.2d
Untreated		22.3a

Timings: 1=late bloom/petal fall, 2=shuck split
3=1st cover, 4=2nd cover, 5=3rd cover, 6=4th cover

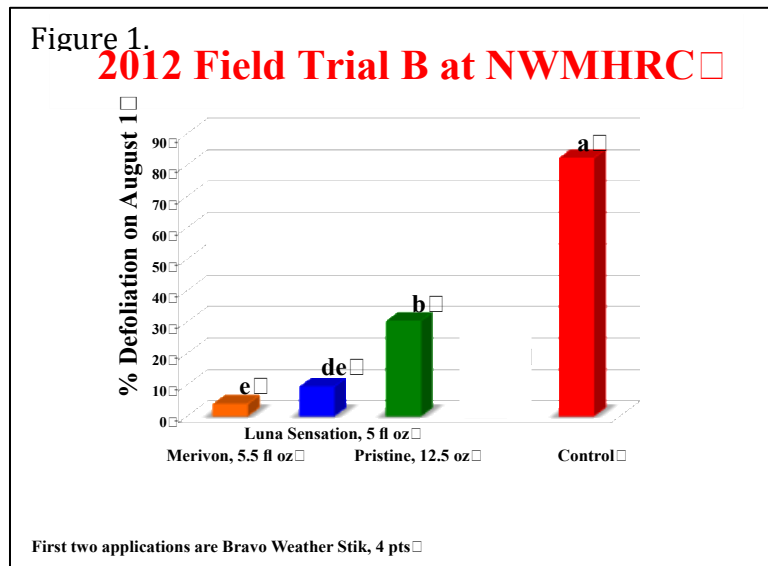
pathogen will delay the development of CLS resistance to SDHIs by reducing selection of fungi that are less sensitive to the SDHI class of fungicides. **Note:** According to the Luna Sensation and Merivon labels, it is not permitted to apply more than two sequential applications of a Group 7 or 11 fungicide before rotating with a fungicide from a non-Group 7 or 11.

Syllit (Group U12) + Captan (Group M) and Copper – Rated ‘excellent’ for CLS; no PM activity

Although Syllit is typically suggested as a second or third cover CLS material, some growers may consider using Syllit while the weather is cool; copper is also an option for CLS in cooler conditions. If Syllit or copper is used during first cover, an efficacious fungicide for PM should be included as these fungicides will not provide PM control. Syllit is an at-risk fungicide, and this material should be mixed with Captan for resistance management. Copper has provided excellent control of CLS, and many growers are tank-mixing copper with lime to minimize phytotoxicity. We used to recommend 6lbs of hydrated lime, but many growers are using a 1:1 ratio of copper to lime with good results. The cooler the temperatures, the less potential we have for copper-phytotoxicity.

Pristine (Group 7,11) – Not recommended for CLS; rated ‘excellent’ for PM

Pristine was first registered in 2004 and is a pre-mix fungicide containing boscalid (SDHI) and pyraclostrobin (stobilurin). Previous research at the NWMHRC, has shown that the CLS pathogen has reduced sensitivity and/or resistance to Pristine, specifically the boscalid component of this material, which had been the workhorse of Pristine for CLS prior to the development of reduced sensitivity to the fungicide. In NWMHRC research trials, there was a significantly higher percentage of defoliation in trees treated with Pristine compared with an SDHI fungicide (Figure 1). Therefore, Michigan State University Extension is not recommending Pristine for CLS management. In the Michigan Fruit Management Guide 2014, the fungicide Pristine is rated ‘fair/good’ for CLS control and ‘excellent’ for PM.



Gem (Group 11) – Rated ‘good/excellent’ for cherry leaf spot and ‘excellent’ for powdery mildew

Although not as effective as the SDHIs, Gem is rated ‘good’ to ‘excellent’ for CLS and ‘excellent’ for PM and is not the recommended material to prevent these diseases at the first cover timing. The label rate for Gem is 1.9 – 3.8 fl oz per acre, however, a higher rate (3.0-3.8 fl oz per acre) and including a protectant fungicide is recommended for effective CLS control and resistance management. We recommend that Gem be tank mixed with Captan as data from the 2015 efficacy trial showed that a season-long Captan program effectively managed CLS. Gem is a strobilurin fungicide, which is a site-specific or single-site fungicide meaning that only one mutation of the pathogen’s target site is needed for development of resistant strains of the CLS fungus. In apples, field resistance occurred quickly, and increasing the rate of Gem will not provide improved control. Therefore, if CLS isolates are resistance to Gem, the Captan component of a Gem + Captan mix should provide CLS control. Hence, Gem must be tank mixed with Captan. Captan alone will not provide activity against PM. **Note:** Gem is a Group 11 fungicide so use caution if using both Gem and SDHI products in an orchard’s spray program.

Table 1. Cherry leaf spot and powdery mildew fungicide efficacy results, 2015

Treatment	Timing	% Infection	% Defoliation 20 July 2015	% Defoliation 9 Sept 2015	% Mildew Infection 20 July 2015
1. Bravo Weather Stik 4 pt Luna Sensation 5 fl. oz. + R56 0.125%	AB CDEF	62.1 bc	7.3 b	82.2 bc	0.8 c
2. Bravo Weather Stik 4 pt Luna Sensation 5 fl. oz. + R56 0.125% + Captan 80 WDG 2.5 lb	AB CDEF	42.5 d	5.2 b	66.8 cd	1.0 c
3. Bravo Weather Stik 4 pt	AB	53.6 bcd	11.3 b	63.4 d	0.0 c

Merivon 5.5 fl oz + Sylgard (0.03%)	CDEF				
4. Bravo Weather Stik 4 pt Captan 80 WDG 2.5 lb	AB CDEF	45.2 cd	3.5 b	53.0 d	9.7 ab
Untreated Control		95.5 a	31.2 a	99.7 a	23.9 a

No Fruit in Bearing-Age Ulster Sweet Cherry Trees

We have recently heard of Ulster sweet cherries that do not have fruit even though these trees are at an age when they should be bearing: 6-8 years old. We are trying to better understand what is happening in these situations. If growers have this situation on the farm, please drop Nikki an email (rothwel3@msu.edu) or give her a call (231-946-1510). We want to see if we might be able to determine a cause as to why these trees are not bearing fruit.

Young Professional Application for Educational Scholarship to attend the 2016 IFTA Educational Events (conferences and/or study tours)

Scholarship is open to members in any country. The application can be found at:

<http://www.ifruittree.org/Portals/46/2016%20Study%20Tour/2016YoungProfessionalScholarshipApplication%20form.pdf?ver=2016-05-25-175833-450>

2016 Study Tour Info

Make plans now to attend the IFTA New York State Study Tour, July 19-21. Plan to fly into Rochester on Monday, July 18, as the tour will start bright and early on Tuesday, July 19 (hotel Monday night is included in the registration cost).

The first day of tours will be throughout Orleans County and will cover a variety of topics from tall spindle systems, to pruning, to fireblight management, and even a discussion on hard cider.

The second day will be a full day at the Cornell Fruit Field Day hosted at the Cornell Agricultural Research Station.

The final day of tours will be in and around Geneva, and topics will include employee training, grafting, wild bees, and orchard equipment just to name a few.

This tour will be packed full of practical tools and ideas to take back to your business. Space is limited and is expected to sell out, [click here to register today!](#)

Young Professionals - apply for a scholarship from IFTA to help defray the cost of attending the 2016 Study Tour. Applications are due June 10!

Your orchard/organization must be a 2016 IFTA member to register for the Study Tour.

Application deadline for New York Study Tour is June 10, 2016

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), 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

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>