Northern Michigan FruitNet 2018
Northwest Michigan Horticultural Research Center

Weekly Update

FruitNet Report – May 25, 2018

CALENDAR OF EVENTS

5/8 – 6/27	**IPM Updates**
6/22	**Farmer Field Day - SOIL, STEWARDSHIP & FARM LONGEVITY** *RSVP here:* https://www.eventbrite.com/e/farmer-field-day-tickets-45485784205?aff=eac2

What's new?

- **IPM Update Announcement: Spray Drift and Right to Farm Discussion with MAEAP Technicians on May 29th and 30th**
- **Black Stem Borer Trap Update – May 25, 2018**
- **Disease Update – May 25, 2018**
- **Don't become another deadly statistic**
- **Understanding Thinning and the Carbohydrate Model**
- **PGR's and Thinning Strategies 2018 (link below)**

New articles

IPM Update Announcement:
Spray Drift and Right to Farm Discussion with MAEAP Technicians on May 29th and 30th

Growers have the right to farm, but modern agriculture has become more complex with increased regulations, particularly in our beautiful corner of northwest Michigan that we share with many locals and visitors throughout the growing season. We are pleased to host Lizzy Freed and Lauren Silver of the Michigan Agriculture Environmental Assurance Program (MAEAP) for a discussion on how growers can minimize spray drift, precautionary protocols that can help growers for the possible consequences resulting from drift as well as traffic laws and safety recommendations for driving farm equipment on roadways. This discussion will take place at next week's regular IPM Update meetings on May 29th in Leelanau and Grand Traverse County locations and on May 30th in Antrim and Benzie County locations. Please join us for IPM Update schedule below for times and locations. Please note that IPM updates are weekly at all four locations.

IPM Update Schedule
Leelanau County

Location: Jim and Jan Bardenhagen, 7881 Pertner Road, Suttons Bay
Dates: May ~~8, 15, 22,~~ 29; June 5, 12, 19, 26
Time: 12PM – 2PM

Grand Traverse County

Location: Wunsch Farms, Phelps Road Packing Shed, Old Mission
Dates: May ~~8, 15, 22,~~ 29; June 5, 12, 19, 26
Time: 3PM – 5PM

Antrim County

Location: Interwater Farms Inc (Jack White Farm), 10877 US-31, Williamsburg (south of Elk Rapids on the southeast side of US-31)
Dates: May ~~9, 16, 23,~~ 30; June 6, 13, 20, 27
Time: 10AM – 12PM

Benzie County

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

Dates: May ~~9, 16, 23~~, 30; June 6, 13, 20, 27
Time: 2PM – 4PM

Black Stem Borer Trap Update – May 25, 2018

Emily Pochubay and Nikki Rothwell, MSU Extension

We still have not confirmed black stem borer (*Xylosandrus germanus*) (BSB) in traps in the northwest region; however, we have found an uptick in the number of small black beetles in the trap. This pest has continued to be active in other regions of the state at consistent numbers to catches from last week (Table 1). As mentioned in previous FruitNets, we caution those who are monitoring for this pest because positive identification is difficult, and we encourage those needing help with ID to bring suspected BSB specimens to the NWMHRC (or call 231-946-1510) for ID assistance.

Table 1. Regional detections of black stem borer, 2018. Data provided by Mike Haas, MSU.

Date	Site	Total # Black Stem Borer
5/15/2018	Southwest 1	11
5/15/2018	Southwest 2	2
5/15/2018	Southwest 3	1
5/15/2018	Ridge 1	4
5/15/2018	Ridge 2	1
5/22/2018	**Southwest 1**	**13**
5/24/2018	**Southwest 2**	**4**
5/22/2018	**Southwest 3**	**0**
5/23/2018	**Ridge 1**	**6**
5/23/2018	**Ridge 2**	**0**

The general rule of thumb has been to begin BSB management when forsythia is in full bloom and we are past that time in the season in this region. Insecticide applications during bloom are not recommended for this pest and growers planning to take action could wait until after bloom if management is needed. The best opportunity to manage BSB is during this pest's early season emergence as later season emergence patterns are not distinct or consistent. Please review the article *Timing your black stem borer spray on tree fruits* http://msue.anr.msu.edu/news/timing_your_black_stem_borer_spray_on_tree_fruits for additional information

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Disease Update – May 25, 2018

Emily Pochubay and Nikki Rothwell, MSU Extension

Fire bight - A relatively quick rain shower swept through parts of the region this morning at a time when fire blight concerns are at a peak (see fire blight model output for NWMHRC below). This seemingly minor wetting event could have been significant concern for fire blight in orchards that are in bloom and that were not covered prior to the rain event. As a reminder, streptomycin can provide back action and this material should be applied within 12 hours of the rain event to maximize effectiveness; Kasumin should not be relied on to provide this similar back action activity. It will be critical for growers to protect newly open blossoms before Saturday's rain. Temperatures are predicted to be in the upper 80s with relatively warm overnight temperatures in the 60s and the fire blight bacteria will grow exponentially in these conditions. Keep in mind that good spray conditions are very important when making fire blight applications – the target for your spray material is very small (i.e. flower stigmas).

Traverse City (NWMHRS) Fire Blight Assist Chart(Report issued 5/25/2018 11:18)

Mobile version

Directions for assist chart:

Locate the Biofix Date (the date bloom opened or the date a spray was applied to control Fireblight) on the top row. Follow that column down to determine Epiphytic Infection Potential for that block on each date in the left column. If this number is greater than 100, and the average temperature is greater than or equal to 60°F, this area will be highlighted, and rain, or trauma (high winds or hail) is all that is needed for infection. Repeat for additional blocks that bloomed or were sprayed on a different date.

* Estimated temperatures indicated in BOLD.

2018		Temperature(F)			Rain		EIP for Biofix Date: (Bloom or spray date)											
Day	Date	Max	Min	Avg	in.	Chance of rain	5/19	5/20	5/21	5/22	5/23	5/24	5/25	5/26	5/27	5/28	5/29	5/30	5/31
Sunday	5/20	63.8	39.1	51.5	0	--	0	0											
Monday	5/21	68	42	55	0.03	--	1	1	1										
Tuesday	5/22	68.4	50.1	59.2	0	--	4	4	4	2									
Wednesday	5/23	79.9	50.3	65.1	0	--	48	48	48	47	44								
Thursday	5/24	82.5	55.5	69	0	--	**135**	**135**	**135**	**134**	**132**	87							
Today's data: Note: Last time reported by station is (10:55-11:00AM)																			
Friday	5/25	**Forecast: 87**	Actual (8:00-8:05AM): 63.5	**75.25**	0	37%	**255**	**255**	**255**	**255**	**255**	**210**	**123**						
Forecast Data																			
Saturday	5/26	**86**	**64**	**75**	--	69%	**334**	**334**	**334**	**334**	**334**	**334**	**246**	**123**					
Sunday	5/27	**86**	**63**	**74.5**	--	59%	**369**	**369**	**369**	**369**	**369**	**369**	**369**	**246**	**123**				
Monday	5/28	**89**	**62**	**75.5**	--	8%	**382**	**382**	**382**	**382**	**382**	**382**	**382**	**382**	**258**	**135**			
Tuesday	5/29	**85**	**61**	**73**	--	44%	**369**	**369**	**369**	**369**	**369**	**369**	**369**	**369**	**369**	**246**	**111**		
Wednesday	5/30	**85**	**62**	**73.5**	--	45%	**357**	**357**	**357**	**357**	**357**	**357**	**357**	**357**	**357**	**357**	**222**	**111**	
Thursday	5/31	**83**	**64**	**73.5**	--	55%	**332**	**332**	**332**	**332**	**332**	**332**	**332**	**332**	**332**	**332**	**332**	**222**	**111**

Apple scab and powdery mildew – This morning's brief rain shower dried quickly in today's windy and hot conditions and scab models did not report infection periods for

our region. Scattered wet weather over the coming days could result in a relatively extended wetting event/infection period and RIMpro is currently predicting the possibility of multiple spore release events. Scattered wetting events like those that are predicted for the weekend are challenging for growers to keep covered, especially when spray conditions are not optimal and multiple diseases are a concern.

RIMpro-Venturia Outputs
Bear Lake (Biofix 1 May) - www.rimpro.eu/faces/venturia.xhtml?id=SBX4czs
Benzonia (Biofix 1 May) - www.rimpro.eu/faces/venturia.xhtml?id=W8AATqc
East Leland (Biofix 1 May) - www.rimpro.eu/faces/venturia.xhtml?id=bQVk0LY
Eastport (Biofix 2 May) - www.rimpro.eu/faces/venturia.xhtml?id=nK5Jcqr
Elk Rapids (Biofix 1 May) - www.rimpro.eu/faces/venturia.xhtml?id=hCoaC6M
Kewadin (Biofix 1 May) - www.rimpro.eu/faces/venturia.xhtml?id=Oa4COcX
Northport (Biofix 5 May) - www.rimpro.eu/faces/venturia.xhtml?id=Bsrm7WU
NWMHRC (Biofix 1 May) - www.rimpro.eu/faces/venturia.xhtml?id=HJzr7Kn
Old Mission (Biofix 1 May) - www.rimpro.eu/faces/venturia.xhtml?id=xPCzX8i
Williamsburg (Biofix 1 May) - www.rimpro.eu/faces/venturia.xhtml?id=wBe9zhP

Cherry leaf spot – Cherries have moved along quickly this season and very few petals are left on the trees at the station and this time. Most growers are covered going into this weekend's wet weather, and the next few days are likely the last chance for chlorothalonil use prior to shuck split unless growers have Bravo Weather Stik and plan to make applications under the Special Local Needs 24c label (see link below). To receive training and obtain the label, please visit: The coming days are predicted to be very hot, and we caution growers that some materials (ex. some copper products, Captan) can have phytotoxic effects particularly when temperatures reach into the upper 80s.

https://www.michigan.gov/mdard/0,4610,7-125-2390_45088-275564--,00.html

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Don't become another deadly statistic

Farm safety is even more critical when employee numbers are down and farmers are asking more of everyone, even their children.

Posted by **Phil Durst**, Michigan State University Extension, MSUE News

With the current financial squeeze in agriculture, many have reduced their labor force and, therefore, asked for more work from fewer people: themselves, employees and their own family members. They are putting in longer hours, working alone more, and maybe doing jobs for which they were not trained. But what are the real risks of this?

A farmer friend called me at the Michigan State University Extension office to talk the other day. He saw the problem immediately when he read an article about the risks to children working on farms and recognized the risks to his children who work on the farm.

The article contained an awful statistic from the National Children's Center for Rural and Agricultural Health and Safety, 33 children are injured every day on farms. If that wasn't bad enough, another statistic stated that a child dies in an agriculture-related accident approximately once every three days!

These terrible facts weigh heavy over the agricultural industry. For those who have been through the horror of a child's death on the farm, they are more than just statistics. In my career, this has happened on farms in my area more than once. It is time to re-examine safety, for our children, employees and even ourselves.

The reality is that accidents happen to many. The current situation has pushed people to the limits. On many farms, employees are working tired. People are over-stretched and that is when accidents are prone to happen. While current economics are bad, there are tremendous costs related to farm accidents: to lives, financially, to worker morale and in time and productivity. These costs are far greater than what you save by trying to operate with fewer employees.

But we can't hire our way out of this problem. It is not just about having another person to take the load off of others. Safety is an everyday issue and an every year issue. It is not just an issue when times are difficult. Is safety on your farm a core value or just a cost of doing business?

Do you involve your employees and family in developing a farm culture of safety? Do your employees and family have a voice in safety? Do you walk around the farm with them and identify work operations or areas that could cause injury or illness if safe procedures are not followed. Do you have safe procedures written down? Are you accessible if workers or your family members have a question relating to how to safely perform a task? Here are some things to consider in developing a farm culture of safety.

Train more. Safety training should be a regular part of your employee development program. Involve employees in a discussion about the safety risks involved with a certain task and ways to reduce that risk for everyone.

Take time to talk with employees about safety around cattle. Teach them how to handle cattle well and how to avoid being kicked, run over or pressed up against an immovable surface.

Train them in equipment operation and remind them about safe work practices, such as bucket riders, that are not allowed. The evidence of bent gates tells me that greater care is needed with equipment operation. Teach them about PTO shafts and the importance of PTO shields. Train them to shut everything off before doing anything on equipment. The time saved by not doing that will come back to haunt you.

Talk with employees about the dangers of silage piles and the potential for partial collapse. Remind them about safety around manure pits and with chemicals. Provide the tools and the personal protective equipment (PPE) they need to do things safely, from a distance and without endangering their hands or feet. Make sure they use the tools and select and wear PPE properly.

Pay special attention to children. Most farm kids have grown up operating equipment while they are young. Yet, in spite of their experience, they are often not fully capable of good decision-making or responding appropriately or quickly enough in an emergency. We need to rethink when our children are old enough to bear great responsibility. A newly revised guide for age and farm tasks can be found at cultivatesafety.org.

Training should be repeated. In regard to youth, cultivatesafety.org says correct procedures should be demonstrated four to five times. However, as important as it is, training is only one aspect of developing a culture of safety on the farm. Schedule breaks for employees who have been working non-stop. The time they rest will more than be paid back by greater productivity and safety afterwards.

As you walk the farm and talk with employees, gauge how alert they are and whether they are fully engaged in their work. Look for signs that indicate they need help or relief or even when they should be sent home. Reinforce the rules against drug and alcohol use that would impair their performance in any way. The risks to life are too high.

Safety needs to start at the top, with the owners. You need to consciously build a culture of safety and practice it yourself. The day after the call from my friend, he called back.

This time, he had just left the hospital ER because he had been injured. As he related how it happened, I understood that it could have easily happened elsewhere to farmers, employees or even their children. It is time to be more proactive about safety for everyone.

Understanding Thinning and the Carbohydrate Model

Fruitlets need energy to grow, survive, and set. The carbohydrate model predicts the grams of carbon/tree unit that are available to the tree for fruitlets and vegetative growth. A deficit of energy (carbohydrates) causes stress in the tree. When apple trees are under stress they are more sensitive to naturally drop fruitlets. In the same sense, stressed trees also respond more to chemical thinning applications. We have been using the carbohydrate model as a thinning guide for many years in Michigan with good success. The model is now on Enviroweather. Growers should click on the Apple Section of Enviroweather and go to the Apple Carbohydrate Thinning tab. The user will be directed to the Cornell site that houses the model (http://newa.cornell.edu/index.php?page=apple-thin). Growers should select Michigan and the Enviroweather station closest to them, then click continue. Next, enter the green tip and bloom dates and click on 'calculate.' The results will be presented in chart and graph form and will provide thinning recommendations. We have also included Phil Schwallier's 2018 thinning recommendations in this FruitNet.

At the time of thinning, which with precision thinning can begin as soon as bloom, we like to see 2-3 days in a row that have stress to optimize thinner applications. A single day of deficit is not important as the trees can probably buffer that deficit. We need 2 or 3 days of deficits of carbohydrates to obtain the stress effects, and thinners will work when we have a deficit of carbohydrates, which is -10 to -40g carbon/day. The more of a deficit in carbohydrates, the more thinning activity growers will obtain from their thinning applications. A surplus of energy (carbohydrates) will strengthen fruitlets, and they will resist thinning. Traditionally, our region has hard-to-thin situations in most years because we have cold, sunny conditions, which creates a surplus of energy, and the trees resist thinning.

The Honeycrisp is at full bloom at the NWMHRC today, 25 May. If we were to apply thinner now, we have a -30 level of stress, and we would have moderate thinning. However, bloom time is not the optimum time for thinning apples. If we were at a more sensitive thinning window, 8-10mm fruit, thinners should work well during this time but because the trees are in a deficit, the thinners will probably work too well and we would recommend reducing the rates of the thinners by 15% according to the model. Since we are at bloom, the thinners will have a mild affect on thinning fruit (see bottom chart for a guide to thinning at different times in apple tree phenology), but many growers are starting to take advantage of the 'nibble' approach to thinning and are starting their

thinning programs earlier than in the past. Starting to thin at bloom or petal fall increases both fruit size and return bloom.

Apple Carbohydrate Thinning Model Results

Date	Max Temp (°F)	Min Temp (°F)	Solar Rad (MJ/m2)	Tree Carbohydrate Status (g/day)				Thinning Recommendation
				Production	Demand	Balance	4-Day Ave Balance	
5/1	79	62	21.8	0.00	18.37	-18.37	-14.8	-
5/2	70	49	13.6	0.00	15.62	-15.62	-15.49	-
5/3	59	44	18.4	0.00	11.91	-11.91	-15.84	-
5/4	62	42	14.6	0.00	13.28	-13.28	-16.33	-
5/5	70	50	24.0	0.32	21.48	-21.16	-21.06	-
5/6	63	47	20.6	1.36	18.38	-17.02	-22.02	-
5/7	70	37	26.8	3.49	17.34	-13.85	-19.05	-
5/8	82	55	24.9	1.33	33.53	-32.20	-16.48	-
5/9	73	47	7.5	0.00	25.00	-25.00	-10.3	-
5/10	56	38	22.8	7.23	12.39	-5.16	-6.68	-
5/11	50	34	13.0	4.77	8.33	-3.56	-10.55	-
5/12	62	40	24.2	8.73	16.22	-7.49	-12.47	-
5/13	67	44	26.7	10.24	20.73	-10.49	-13.38	-
5/14	74	51	19.6	6.94	27.62	-20.68	-11.08	-
5/15	68	52	26.2	12.56	23.77	-11.21	-6.68	-
5/16	78	48	27.3	14.51	25.64	-11.13	-6.92	-
5/17	68	47	26.4	17.64	18.95	-1.31	-0.71	-
5/18	75	49	27.1	18.51	21.59	-3.08	-0.43	-
5/19	63	48	7.5	2.88	15.03	-12.15	2.13	-
5/20	62	39	26.1	24.60	10.93	13.68	5.28	-
5/21	67	43	14.2	13.34	13.52	-0.17	-0.87	-
5/22	67	51	25.7	24.42	17.27	7.15	-10.73	Apply standard chemical thinner rate
5/23	77	51	27.1	25.69	25.22	0.47	-20.63	Decrease chemical thinner rate by 15%
5/24	81	56	26.8	24.69	35.62	-10.94	-27.43	Decrease chemical thinner rate by 15%
5/25	82	66	18.3	12.18	51.79	-39.60	-30.75	Decrease chemical thinner rate by 15%
5/26	77	61	19.5	20.28	52.75	-32.47	-26.45	Decrease chemical thinner rate by 15%
5/27	75	57	21.1	27.64	54.37	-26.73	-25.99	Decrease chemical thinner rate by 15%
5/28	75	55	23.3	34.70	58.92	-24.22	-	-
5/29	75	54	24.3	39.65	62.05	-22.40		
5/30	79	56	24.3	39.94	70.55	-30.61		
5/31	-	-	-	-	-	-		

This model can help us understand what will happen if we have 2-3 day deficit and the different timings when thinners are applied. We need to be careful at 10 to 15mm when a deficit of -60 or lower occurs. Our choices are to back off rates or delay thinning. However, if a -80 g carbon/day occurs at petal fall and you thin, you may get the job done perfectly.

Here is a rule of thumb guide based on Phil Schwallier's work with the carbohydrate model:

If we have 3 days of stress, then the following natural drop may happen at the 10-15 mm stage:

Stress Level	Amt. of Thinning
-20	2%
-40	15%
-60	25%
-80	40%
-100	80%

Guide for time of thinning application of aggressive combinations (i.e. Sevin+NAA or Sevin+MaxCel): Thinning Percent at Different Time During Season and Stress Levels:

	0	-20	-40	-60	-80	-100
Petal Fall	0%	10%	15%	25%	35%	50%
6 mm	5%	20%	30%	40%	50%	60%
10mm	15%	30%	40%	50%	60%	80%
15 mm	15%	30%	40%	50%	60%	80%
20 mm	10%	20%	30%	40%	45%	50%
25 mm	3%	10%	15%	20%	30%	35%
30 mm	0%	0%	2%	5%	10%	15%

MaluSim Carb Model Thinning Decision Guide.

Stress Level	4 Day Ave Carb Balance	Thinning Rate Recommendation	Example for Gala
No	> 0	Increase Rate by 30%	S+M 150 ppm
Slight	-20 to 0	Use Standard Rate	S+M 100 ppm
Mild	-40 to -20	Reduce Rate by 15%	S+M 100 ppm
Moderate	-60 to -40	Reduce Rate by 30%	S+M 50 ppm
Severe	-80 to -60	Reduce Rate by 50%	S or M 150 ppm
Extreme	<-80	Do not thin, many fruits will fall off	

To conclude, this model is a tool that can help guide thinning strategies and thinner applications. Based on the upcoming forecasts, the weather looks like it will be excellent for thinning with the warm temperatures. We encourage growers to be diligent about thinning this season as the Michigan apple crop looks sizable and there is an abundance of bloom on apple trees this year.

PGR's and Thinning Strategies 2018

Here is a link to the article:

https://www.dropbox.com/s/b6piqdomcj36glr/PGR%27s%20and%20Thinning%20Strategies%202018.pdf?dl=0

Articles featured in past FruitNet Reports

Farmer Field Day - SOIL, STEWARDSHIP & FARM LONGEVITY

Learn About:
Soil Fertility, Nutrient Utilization, and Conservation Tools

Qualifies for a MAEAP phase 1 credit

Date: June 22, 2018

Time: 8:45AM - 4PM

Location: MAPLE BAY FARM **10875 US-31, Williamsburg MI**

Reception & bluegrass performance to follow featuring **CARTER CREEK**

FREE OF CHARGE

A locally-sourced lunch is included with pre-registration

TO REGISTER:
Contact the *Grand Traverse Conservation District* via phone or email: **231.941.0960 ext. 22 // lfreed@gtcd.org**

https://www.eventbrite.com/e/farmer-field-day-tickets-45485784205?aff=eac2

2018 IPM Update Schedule

Please join us for 2018 season Tree Fruit IPM Updates beginning the second week of May. These meetings highlight timely discussions of pest challenges and management options 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. Additionally, we will host invited speakers from local organizations and MSU at this year's meetings. Workshops will be held weekly in Leelanau, Grand Traverse, Antrim, and Benzie counties. Tree fruit growers and consultants 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. Restricted use pesticide applicator recertification credits (2 credits per meeting) and Certified Crop Advisor credits will be available. We are looking forward to seeing you in a few weeks! 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 8, 15, 22, 29; June 5, 12, 19, 26
Time: 12PM – 2PM

Grand Traverse County

Location: Wunsch Farms, Phelps Road Packing Shed, Old Mission
Dates: May 8, 15, 22, 29; June 5, 12, 19, 26
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 9, 16, 23, 30; June 6, 13, 20, 27
Time: 10AM – 12PM

Benzie County

Location: Blaine Christian Church, 7018 Putney Rd, Arcadia, MI 49613
Dates: May 9, 16, 23, 30; June 6, 13, 20, 27
Time: 2PM – 4PM

Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities.

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