

Northern Michigan FruitNet 2018
Northwest Michigan Horticultural Research Center

Weekly Update

FruitNet Report – May 29, 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?

- **Northwest Michigan Fruit Regional Report – May 29, 2018**
- **USING GIBBERELIC ACID**
- **Apogee Application Time**

New articles

Northwest Michigan Fruit Regional Report – May 29, 2018

Hot temperatures over the weekend accelerated tree and fruit development, and fire blight was the main concern for blooming apples

Emily Pochubay and Nikki Rothwell, MSU Extension

GROWING DEGREE DAY ACCUMULATIONS AS OF May 29, 2018 AT THE NWMHRC

Year	2018	2017	2016	2015	2014	2013	28 Yr. Avg.
GDD42	595	589	626	626	460	548	599.3
GDD50	340	276	325	333	217	303	299.6

Weather Report

Conditions have been extremely warm for this time of year. Daytime temperatures have felt more like July than May! Nighttime temperatures have also stayed quite warm—in the mid-60s. This warm weather has really pushed tree development along. We had a surprise rain event on Friday 25 May, but the event went through quickly and did not record on most Enviroweather stations. We did have a rain event over the weekend, and the NWMRHC Enviroweather station recorded 0.11” of rain. We also had a small amount of rain on Sunday, 27 May. These rain events did not provide much moisture for our dry conditions, but it was enough to cause problems with fire blight in blooming apples, particularly with the extremely warm temperatures and high epiphytic infection potential (EIP) values.

Crop Report

As mentioned above, cherries are sizing, and we have moved quickly through shuck split. Sweet cherries are so big that they are visible from the road. Apples are still at various stages of bloom throughout the region. We are past king bloom petal fall in most early varieties, and growers are applying Apogee at this time. We highly recommend Apogee this year with the tremendous amount of apple bloom and the high EIP values for fire blight. Growers are starting their thinning programs for the season, and we recommend making thinner applications before Apogee applications if growers are stretched for time.

The thinning window is likely to move very quickly with the warm temperatures, and growers should be diligent about thinning applications as the optimum window (8-10mm) will come and go fast. The Cornell model is predicting stress and calling for a decrease in thinning rates by 15-30% in the next two days (29-30 May) with stress in the -

34 to -49 range. By 31 May, we will have less stress, and growers should apply standard thinning rates. Friday, the model predicts no stress (+3.81), and we recommend increasing thinning rates by 15%.

Apple Carbohydrate Thinning Model for NWMHRC

Change green tip and/or bloom date and click "Calculate" to recalculate results.

Green tip date	Bloom date	Calculate
<input type="text" value="5/1/2018"/>	<input type="text" value="5/19/2018"/>	

Note from the model developer (March 22, 2018):

- The apple carbohydrate model simulates the response to weather of trees that are healthy with normal vigor and bloom, no significant water, nutrient or winter or spring freeze stress, and no significant carry-over stress from a previous year that will change tree responses. We are less confident in the model if temperatures are extremely cold or hot. Each orchard is unique, so use this tool, as any other, in the context of your own experience. For more information click on the "More Info" tab.

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	-

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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	-10.3	Apply standard chemical thinner rate
5/23	77	51	27.1	25.69	25.22	0.47	-21.39	Decrease chemical thinner rate by 15%
5/24	81	56	26.8	24.69	35.62	-10.94	-32.41	Decrease chemical thinner rate by 15%
5/25	87	66	25.1	17.90	55.78	-37.87	-42.59	Decrease chemical thinner rate by 30%
5/26	83	64	25.7	24.57	61.79	-37.22	-45.4	Decrease chemical thinner rate by 30%
5/27	85	63	27.1	28.90	72.52	-43.62	-54.06	Decrease chemical thinner rate by 30%
5/28	84	60	20.4	24.33	75.99	-51.65	-58.15	Decrease chemical thinner rate by 30%
5/29	85	58	21.8	30.05	79.16	-49.11	-49.89	Decrease chemical thinner rate by 30%
5/30	84	64	15.8	15.71	87.56	-71.85	-34.74	Decrease chemical thinner rate by 15%
5/31	77	63	14.1	16.97	76.95	-59.98	-14.97	Apply standard

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	
								chemical thinner rate
6/1	66	54	15.1	34.23	52.85	-18.62	3.81	Increase chemical thinner rate by 15%
6/2	70	50	24.8	65.25	53.76	11.49		
6/3	72	52	23.1	65.62	58.38	7.24		
6/4	74	52	24.2	73.53	58.42	15.11		

Pest Report

In apples, although most of the region received some amount of rainfall over the weekend, the only Enviroweather station to report a scab infection was the NWMHRC. Wet conditions in other areas dried quicker than the NWMHRC, which had a 10 hr wetting period. According to Enviroweather and RIMpro, we are roughly halfway through primary apple scab at this time with the majority of scab spores predicted to reach maturity this week. Although many areas did not have scab infections, powdery mildew is a concern in these relatively dry conditions.

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

Fire blight was particularly concerning late last week, and over the weekend as many apple orchards were blooming during hot temperatures and multiple rain events. Many growers were concerned about fire blight following spotty rain on Friday 25 May because many blossoms were open and very little water is needed to stimulate infection. Most growers were protected for fire blight going into the weekend's rain and it was a tough decision to recover prior to rainfall on Saturday. However, if growers reapplied, this was likely a good strategy because temperatures were hot and new unprotected flowers

opened. The epiphytic infection potential (EIP) values remain high at this time, and although we have moved through apple bloom quickly, fire blight will continue to be a concern in the coming days. We caution growers to monitor orchards for tag bloom as these flowers can be problematic for late fire blight infection. Some growers applied Apogee at king bloom petal fall and subsequent applications should go on ~14 days after the previous.

We have observed an uptick in apple pest activity at the station. The weekend's warm evenings stimulated codling moth flight and the station's first codling moth was found yesterday 28 May. Codling moth biofix is the first date of sustained catch; hence, we will check traps at the end of the week to determine if 28 May is our biofix. Egg laying begins 100 GDD after biofix and the treatment threshold is a cumulative catch of five moths in a trap. Codling moth activity has also been reported in other areas.

San Jose scale males began flying over the weekend, and petal fall timing in apples is the suggested timing to apply some systemic materials to target crawlers. This timing allows the material to be taken up and distributed in the plant tissues before crawlers emerge and begin feeding. Spotted tentiform leafminer (32 per trap) activity is ongoing in low numbers.

We have received reports of brown marmorated stink bugs (BMSB) emerging in residential areas this season. BMSB emergence begins when day length reaches 13.5 hours – this timing corresponds with 16 April. According to degree-day accumulations since 16 April, BMSB egg laying should begin this week and scouting for eggs and nymphs in orchards should begin at this time. Although the population of this pest has been low in the northwest region in previous seasons, we suspect that some apple orchards may have had BMSB damage last season.

In cherries, Friday (25 May) morning's brief and spotty rain shower were not documented as cherry leaf spot infections in areas that recorded rainfall on Enviroweather; although there was enough rain accumulation to trigger the infection process, the moisture dried too quickly for an event to occur. Rainfall over the weekend resulted in leaf spot infections in many areas, but the periods of wet weather appear to have been too short for an infection in Northport, Kewadin, and Williamsburg. Growers have been preparing for rain in the forecast for Wednesday and Thursday. We remind growers that according to label, chlorothalonil should not be applied after shuck split and both sweet and tart cherries started coming out of the shuck over the weekend at the station. Additionally, temperatures are predicted to be in the 80s until Friday and some materials (ex. copper and Captan) can have phytotoxic effects in these hot conditions. Lastly, these relatively warm and dry conditions will be conducive for powdery mildew growth.

Cherry insect pests were very active in recent warm conditions. As anticipated, plum curculio adults were particularly active in the warm evenings over the weekend. We have observed PC distinctive crescent shaped oviposition scars on sweet cherries at the station and we have received reports of damage on commercial farms. Warm evenings are in the

forecast for today and tomorrow, and PC will likely continue laying eggs in these conditions. Some growers are also strategizing to target pestilent caterpillars (ex. obliquebanded leafrollers and green fruitworm) in conjunction with PC at this time. Determining how to manage these pests has been challenging as bloom happened quickly and many orchards still have bees present. We encourage growers to use materials with reduced risk to pollinators, particularly if bees are still in the orchard, and to use management practices that minimize harm to pollinators (ex. make applications when bees are not actively foraging).

San Jose scale males took flight in sweet cherries over the weekend. We are monitoring in a commercial sweet cherry orchard and a block at the station with SJS infestation; we found males in traps at both locations. Cherry foliage has developed very quickly in hot conditions and there is now substantial green tissue present that is needed for the uptake of systemic insecticides applied for scale control. Lastly, there was a flush of lesser peachtree borers (four moths per trap) that emerged over the weekend and American plum borer numbers (seven per trap) have also increased since last week. We have not detected greater peachtree borers at the station at this time.

USING GIBBERELIC ACID

Gibberellic acid (GA) is a plant hormone that promotes growth and elongation of cells. In tart and sweet cherries, GA has been used successfully to reduce flowering during the early years of an orchard's life. The reduced flowering and subsequent reduced fruiting helps young trees increase vegetative growth. In addition, minimizing flowering in early years slows the transmission of pollen-borne viruses in young trees. We have also shown that GA used in mature tart cherry orchards can increase fruiting capacity by stimulating the formation of lateral shoots and spurs.

When GA is applied to cherry trees in late spring, a percentage of the flower buds forming for the following season will be converted to vegetative buds. Therefore, GA application in 2017 influences flowering in 2018. The effectiveness of GA is dependent on rate, timing and temperature. Surfactants have also been shown to influence GA applications. As a rule of thumb, high GA rates are required to prevent young trees from fruiting, whereas much lower rates are used to keep bearing trees in a good balance between vegetative and fruit production. GA applications should be made when daily high temperatures are expected to be above 70° F for two to three days, if possible. We have observed poor results when applications are made when daily high temperatures are below 60° F as is the case with most growth regulators. Warm temperatures this week should support good conditions for GA applications. Temperature is more important than timing, although we do recommend making the application when 5-7 leaves are visible on the trees. Applying GA in warm temperatures is recommended.

Conditions for GA applications should be excellent with the continued warm temperatures in the forecast.

In recent years, we have regularly observed that GA applications on small trees to be ineffective and these trees set large crops. Large crops reduce tree growth and lots of fruit are excellent hosts for spotted wing drosophila (SWD). If GA applications do not work, growers are forced to manage SWD in orchards that would typically be non-bearing so that these young orchards do not impact adjacent bearing orchards.

Non-bearing trees

GA is typically applied to non-bearing cherries with a hand gun, so rates are applied on a dilute basis. The best results are generally achieved with two applications of 50 ppm (20 fl oz of 4% formulated product per 100 gallons of water). The first application typically occurs 3 to 3 ½ weeks after full bloom, followed by a second application 2 ½ to 3 weeks later. An alternative method, though slightly less effective, is to apply a single treatment of 100 ppm (40 fl oz per 100 gal) at about 3 to 4 weeks after bloom. GA should not be applied to trees during the year of planting, due to possible phytotoxicity.

Vigorously growing trees in their second leaf do not need GA, as these trees naturally produce little fruit the following year. GA application often starts in year three, but may be desirable in year two if trees start off poorly. These high rates should continue until the year prior to first harvest/year of production.

Early bearing trees

To bring young cherries into bearing following GA treatments with high rates, growers should phase down GA rates rather than discontinuing GA use all at once. A sudden drop of GA from high rates to nothing will result in oversetting of fruit and potential tree stunting. Trees that have been kept vegetative with GA use have a tremendous capacity to set (overset) fruit. The year prior to when growers first desire fruiting, they should apply GA at 30 to 40 ppm if spraying dilute (12-16 fl oz/100 gal) or 20-24 fl oz/acre if applied at a concentrated rate. This rate per acre for concentrate spraying already takes into account the average tree size of this age tree, therefore do not reduce the rate further based on tree row volume. The next year, decrease this rate to 15 to 20 ppm applied dilute (6-8 fl oz/100 gal) or 10-12 fl oz/acre concentrate. The following year, 10 ppm is optional but often not required. In orchards where growth is weak, growers should continue annual GA applications at 10-15 ppm as described for bearing trees.

Bearing trees

Growers should apply GA 3 to 4 weeks after bloom or when trees have 5 to 7 leaves (3 to 5 fully expanded) on terminal growth. GA should be used at rates of 10 to 20 ppm or 4 to 8 oz/100 gallons of ProGibb 4% (or equivalent) when applied dilute. For concentrate application to full-sized tart cherries, use 6 oz/acre of product to achieve a 10 ppm response or 12 oz/acre for a 20 ppm response. Lower rates are typically used on more vigorous orchards or those with previous successful use of GA. Adding surfactants has caused varied responses—everything from increased phytotoxicity to no GA-related

effects. Therefore, adding a surfactant is not suggested unless a grower has enough experience with a product to have confidence in the response.

GA Use on Balaton

Balaton appears to have less need for GA during non-bearing years to maintain good tree growth, but as it matures, the variety produces a lot of blind wood. Therefore, using GA is strongly encouraged on bearing Balaton trees. At the NWMHRC, we have found that GA is successful in increasing lateral shoots and spurs in a Balaton orchard at the NWMHRC.

Apogee Application Time

Nikki Rothwell, NWMHRC

Phil Schwallier, MSUE

Apogee® is a plant growth regulator composed of prohexadione-calcium that can be used in apples with significant advantages to the grower. Prohexidione-calcium reduces terminal growth by inhibiting important enzymes that help form growth-specific gibberellins. In laymen's terms, Apogee helps control tree vigor. Controlling vigor can reduce the amount/intensity of pruning, decrease internal shading--a major proponent to properly color apples, and reduce canopy density for thorough pesticide coverage. This product has also been a reliable tool for minimizing impacts of shoot blight caused by the fire blight pathogen, *Erwinia amylovora*. Shoots that have less growth are not as susceptible to fire blight, and Dr. George Sundin's work has shown that Apogee greatly reduces the potential for shoot blight. When applying Apogee to apples, growers should consider the following: timing, rate per acre, and compatibility with other chemistries in the tank.

Timing

Apogee should be applied when vegetative shoot growth is less than three inches. To best time the application, there is a 7 to 10-day window beginning at king bloom petal fall. In recent years, we are recommending that growers apply slightly earlier than petal fall as most growers miss that king bloom petal fall timing and if there is more than three inches of growth, Apogee will not work as well. Growers should try and time these applications for less than 3" of shoot growth, which in many years coincides with king bloom petal fall. This timing applies to most varieties in most years. Two more applications should be made at two-week intervals following the bloom application. Sometimes a fourth application is needed when excessive rainfall or light crops increase vegetative growth.

Rate

The rate per acre is usually calculated on a tree row volume basis and can be adjusted to two-thirds of the full-rate. This suggested two-thirds rate per acre is a season-long rate. For example, if trees are at 75% tree row volume, then 24 ounces per acre is the seasonal

rate ($48 * 0.75 * 2/3$). Best results are achieved when the seasonal rate is split into three or four sprays. For example, Apogee applications should be applied at 8 + 8 + 8oz per acre for a total of 24oz per acre per season. When the fire blight risk is high, the first application of Apogee at or prior to king bloom petal fall timing should be increased to as much as 150 percent of the split rate. For example, the rate should be increased from 8oz per acre to 12oz per acre. If the first spray rate is increased, subsequent sprays (second and third sprays) should be reduced. The seasonal application would be 12 + 6 + 6 = 24 ounces per season instead of 8+8+8=24oz. If temperatures continue to remain high with the potential of rainfall for many days this coming week, a higher rate of Apogee is recommended as the EIP for fire blight is high at all sites across NW Michigan.

Compatibility

Apogee is not compatible with calcium or boron in the tank. We also recommend that Apogee be applied after the thinner application. If the two-week timing interval is also the ideal time to thin, make the thinning application first and follow with Apogee a few days later. Growers should read the Apogee label carefully. Apogee must be used with an organosilicone surfactant, and an equal weight of spray grade ammonium sulfate should be applied. Do not use Apogee on 'Empire,' 'Stayman,' or 'Winesap' because of the potential for fruit cracking.

To conclude, Apogee is an excellent tool to help control vegetative growth, which decreases the need for summer pruning and can suppress the spread of fire blight among shoots and within shoots. The above recommendations are the best way to maximize the use of Apogee.

Articles featured in past FruitNet Reports

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

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.

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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	-
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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	-
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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>

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

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WEB SITES OF INTEREST:

Farmer to Farmer – Connecting farmers, cultivating community

<http://www.f2fmi.com>

Insect and disease predictive information is available at:

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

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

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

60-Hour Forecast:

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

Information on cherries:

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

Information on apples:

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

Information on grapes:

<http://grapes.msu.edu>