

Northern Michigan FruitNet 2015

Northwest Michigan Horticultural Research Center

Weekly Update

FruitNet Report - June 2, 2015

CALENDAR OF EVENTS

2015

- 5/5-7/14 Leelanau County IPM Updates**
Bardenhagen Farm
- 5/5-7/14 Grand Traverse County IPM Updates**
Wunsch Farm
- 5/6-7/15 Antrim County IPM Updates**
Jack White Farms
- 5/6-7/15 Benzie County IPM Updates**
Blaine Christian Church

GROWING DEGREE DAY ACCUMULATIONS AS OF June 1, 2015 AT THE NWMHRC

Year	2015	2014	2013	2012	2011	2010	25 Yr. Avg.
GDD42	652	547	639	970	559	945	656.2
GDD50	341	280	396	534	273	522	336.0

Growth Stages at NWMHRC (June 1, 2015, 11 a.m.)

- Apple:** Red Delicious – 7 mm fruit
Gala – 6 mm fruit
Yellow Delicious – 6 mm fruit
- Pear:** Bartlett: 10 mm fruit
- Sweet Cherry:** Hedelfingen – 13 mm fruit
Napoleon – 11 mm fruit

Gold – 11 mm fruit
Tart Cherry: 9 mm fruit
Balaton: 10 mm fruit
Apricot: 23 mm fruit
Grapes: Chardonnay – 1” – 3” shoots

Northwest Michigan Fruit Regional Report – June 1, 2015

Northwest Michigan Fruit Regional Report – June 1, 2015

Growers are assessing the damage from the 20 May frost, for sweet cherries, tart cherries and apples at this time.

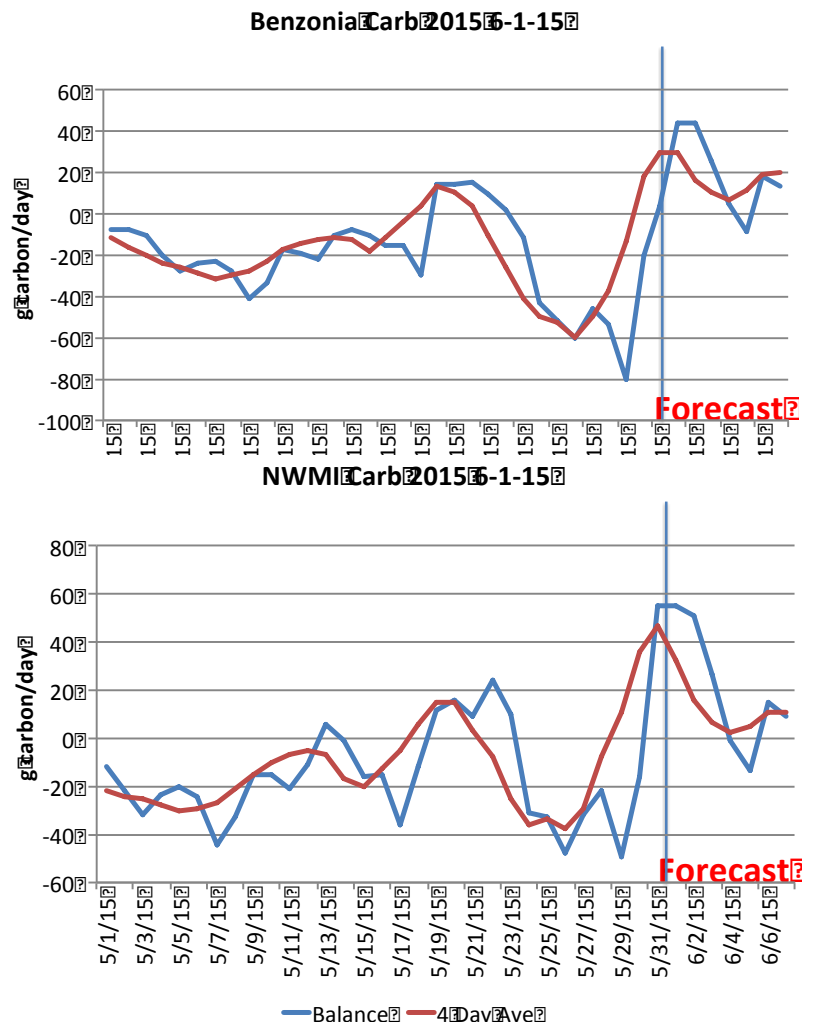
Nikki Rothwell and Emily Pochubay

Weather Report

The ups and downs of the 2015 weather continue. For the latter part of last week, our daytime temperatures were up in the high 70s and low 80s. On Friday evening and into Saturday (29 and 30 May), temperatures dropped, and Saturday was cold and rainy. Weather conditions are predicted to be seasonal for the remainder of the week. We have accumulated 652GDD base 42 and 341GDD base 50. Over Memorial Day weekend, we had substantial rainfall throughout the region, and the NWMHRC received 2” of rain. More rain came on Friday night into Saturday (30 May), and we received ~0.36” of rain at the NWMHRC.

Crop Report

Growers continue to assess the damage from the 20 May frost, and unfortunately, damage is not hard to find throughout the region. At this time, the Benzie-Manistee area seems to be hit a little harder because they were further along than other counties. However, the damage can be found throughout many blocks in all counties in sweet cherries, tart cherries, and apples. There is tremendous variability between orchards: some orchards have a good crop while other orchards have no fruit. The current tart cherry estimate for northwest Michigan is between 80-88 million pounds. The apple crop is also variable, where some growers are reporting a decent set in later varieties while early blooming varieties have more damage. We are recommending growers wait until the fruitlets are at 10mm before making



thinning decisions. There will be no stress predicted for thinning this week, so once growers have assessed their crop, thinners should be applied at normal rates. Carbohydrate models for Benzonia and the NWMHRC are below and show there is no stress in the coming week. Growers should remember than frosted fruits will thin easier.

Pest Report

Last week's warm and wet conditions moved along the development of cherry and apple diseases. Very low incidences of cherry leaf spot lesions were visible toward the end of last week on the oldest true leaves. Cherry leaf spot lesions typically appear within 5 to 15 days after infection, hence these lesions could be the result of infection periods that occurred as early as 12 May. Lesions that are present on the oldest leaves and not on newer leaves indicates that this infection occurred during an early season infection period. Likely as newer leaves emerged, they were either better protected or infection periods were less severe when these leaves were exposed and as a result, these younger leaves do not have lesions. Since the 10-12 May 33 hr wetting event/infection period, there have been four infection periods recorded on the CLS model on Enviro-weather. The most recent infection period occurred over the weekend 29-30 May, and currently, no rain is predicted until this coming Saturday 6 June. Many tart cherries in the region are past shuck-split and we would like to remind growers that chlorothalonil use is not permitted post-shuck split. A Special Local Needs 24c label that permits the use of Bravo Weather Stik post-shuck split is available for tart cherry. For additional information on requirements for this 24c label please visit (http://www.michigan.gov/mdard/0,4610,7-125-2390_45088-275564--,00.html) and www.farmassist.com, and please read the article, "*Where can growers find the special 24c label for using Bravo Weather Stik past shuck-split,*" below or online at http://msue.anr.msu.edu/news/where_can_growers_find_the_special_24_c_label_for_using_bravo_weatherstik_p.

American brown rot was observed sporulating on overwintering mummies in sweet cherry blocks. We also observed shoot decline on tart cherries as a result of European brown rot (EBR) infection. At the NWMHRC, Montmorency trees that had old EBR strikes (and likely high inoculum levels) and had not been treated for EBR in the past two seasons currently have a moderate to high level of EBR infection at the NWMHRC. Balatons in our EBR efficacy trial have few strikes. Additionally, we have been relatively hard-pressed to find EBR infection in trees where fungicides had been applied.

Apple scab lesions were visible last week in very low levels. Primary apple scab is ongoing, and we have collected very few spores (<10) on spore rods, which is consistent with our low catches throughout the season. Due to these low discharges at the monitoring site, we cannot be certain that these spore numbers are representative of other apple orchards throughout the region. However, the end of primary is in sight for northwest Michigan. According to the apple scab model on Enviro-weather, 100% of spores are mature at this time and rain in the last week helped more the spore discharge percentage to 81%. A few more good rain showers should push the last of the spores to end primary scab. However, there is only a slight chance of rain in the forecast toward the end of the week. Pending rain, growers should continue their primary scab programs to protect developing fruit and leaves from possible infection and prevent the potential for secondary scab infections later this season.

Larvae of green fruitworm and obliquebanded leafroller are active, and we have observed some hotspots of these pests at the station. We expect that adult moths of these pests will begin flying in a couple of weeks when degree-day accumulations reach ~500 GDD base 50. American plum borer (APB) and lesser peach tree borer (LPTB) moths activity is ongoing, and there was an increase in the number of APB and LPTB in traps this week (7 APB/trap and 13 LPTB/trap). We have not detected greater

peachtree borer activity at the station at this time. Some growers are planning trunk sprays for borers this season, and if temperatures remain warm in the coming week, a spray targeting both APB and LPTB would be well timed. Plum curculio are active throughout the region, and stings have been observed on fruit. Although we have not observed codling moth at the station, we have received reports of codling moth activity in the region.

Grapes

We are now seeing a few signs of recovery from the winter cold and May 20 freeze event. The majority of vinifera vineyards still look miserable, but there are a few sites where there is shoot growth from buds on the fruiting wire in at least part of the vineyard. Some of our severely injured vinifera varieties at the research center are pushing out a few shoots from buds very low on the vine. Rootstocks are also producing a number of shoots, so it will be necessary to verify where your live shoots are coming from.

Except for a few sites that appear to be O.K., the goal for vinifera blocks this year will be like last year--keep as many live shoots as possible, keep them growing upright to keep them out of the way of tractors and machinery, and work toward a better year to come.

Some of the hybrid varieties are looking better now, with good shoot growth and nice flower clusters showing. Secondary buds have pushed at some nodes where the shoots from primary buds have been killed.

I'd like to hear from growers about which hybrids have come through well and which ones were hurt this year. At the research center variety trial, Chambourcin and NY 81.0315.17 are clearly the worst of the hybrids.

Adult potato leafhoppers have arrived in Grand Traverse region vineyards.

Saskatoons

Fruit development has progressed to the small green berry stage. Poorly pollinated berries are still falling off but the crop looks good. Insect activity really picked up during the last week. Curculio adults are now laying eggs, producing very characteristically shaped scars on the fruit. There has also been some foliar and fruit injury from oblique-banded leafroller larvae at some sites. Woolly aphid colonies are curling leaves. I have now seen the first symptoms of rust infection on berries.



Injuries left to right, leaf-roller curculio feeding, egg laying-curculio feeding .



Curculio feeding and egg laying scars.

Codling moth back to normal in 2015

Current pheromone trapline data suggests codling moth populations and pest pressure will be normal this summer.

Posted on **May 28, 2015** by MSUE News, [John Wise](#), and Larry Gut, Michigan State University Extension, Department of Entomology

The catastrophic freeze of 2012 resulted in a near collapse of codling moth populations in most regions of Michigan. Codling moth (CM) populations remained suppressed through much of the 2013 growing season. Based on 2014 showing recovering codling moth populations and the current 2015 pheromone trapline data, we expect normal codling moth populations and “pest pressure” this summer.

At the [Michigan State University Trevor Nichols Research Center](#) in Fennville, Michigan, we set CM biofix on May 16, thus we can expect continued emergence of codling moth adults and widespread oviposition (egg laying), with first egg hatch (CM bio + 250 growing degree days base 50) predicted for the first week of June. To get the most benefit from a CM control measure, growers should treat a block after moth captures have been recorded and the accumulation of growing degree days (GDD) required for a particular action, as indicated in Table 1, has taken place.

GDD base 50 (post-biofix)	Event	Action
Pink bud	Development of overwintering larvae	Set traps
0 GDD = Biofix (~200 GDD after Jan. 1)	First sustained moth captures	Set GDD = 0
100 GDD	First generation egg laying (oviposition)	Timing for ovicide materials
250 GDD	Start of first generation egg hatch	Timing for larvicide

		materials
350 GDD	First generation egg laying and hatch	Delayed timing if pest pressure is low, or for 2nd treatment if an ovicide was applied at 100 GDD
500-650 GDD	Peak of first generation egg hatch	Timing for additional larvicide if monitoring of codling moth activity indicates a treatment is needed
1000 GDD	Expected end of 1st generation activity	

Egg control

Although several insecticides have limited ovicidal activity, only Rimon is considered a strong ovicide material, thus CM egg laying is the optimal timing for this material (Table 2). Rimon applied at CM biofix plus 100 GDD also provides excellent control of obliquebanded leafroller (OBLR) and suppression of plum curculio (sublethal effects on subsequent generation).

Larval control

The vast majority of insecticides used for CM control are aimed at killing larvae, and thus are typically applied beginning at 250 GDD post-biofix (Table 2). Pyrethroid insecticides provide moderate control of codling moth and have a broad activity spectrum, but are generally avoided because their use at this stage that can result in outbreaks of phytophagous mites. Apple growers should be aware that resistance to the organophosphate (OP) compounds has been detected in Michigan orchards throughout the state, such that reliance on OP for CM control is not likely to provide sufficient control. In addition, populations resistant to OP compounds may also be resistant to pyrethroids.

Table 2. Chemical class, activity and timing of insecticides used for CM control.

Compound trade name	Chemical class	Life-stage activity	Optimal spray timing for cm	Mite flaring potential
Imidan	Organophosphates	Eggs, larvae, adults	Biofix + 250 GDD	L - M
Asana, Warrior, Danitol, Decis, Baythroid XL	Pyrethroids	Eggs, larvae, adults	Biofix + 250 GDD	H
Rimon	IGR (chitin inhibitor)	Eggs, larvae	Biofix + 100 GDD Residue under eggs	M*
Delegate	Spinosyn	Larvae	Biofix + 250 GDD	M
Altacor, Belt, Exirel	Diamide	Eggs, larvae	Biofix + 200-250 GDD	L
Assail, Calypso, Belay	Neonicotinoid	Larvae, Eggs & Adults (limited)	Biofix + 200-250 GDD Residue over eggs	M*
Proclaim	Avermectin	Larvae	Biofix + 200-250 GDD	L
Granulovirus	Biopesticide	Eggs, larvae	Biofix + 250 GDD Residue over eggs	L
Voliam flexi	Diamide + Neonic.	Eggs, larvae	Biofix + 200-250 GDD Residue over eggs	L-M*

Tourismo	Diamide + IGR	Eggs, larvae	Biofix + 200-250 GDD	L
Leverage	Pyrethroid + Neonic.	Eggs, larvae, adults	Biofix + 200-250 GDD	H

* May cause mite flaring in combination with carbaryl or pyrethroids that kill predacious mites.

Delegate (spinetoram) is in the Spinosyn class of insecticides and provides excellent control of both first and second generation CM. It kills larvae as they hatch and begin feeding, thus should be applied at the larvicidal timings indicated in Table 1. Delegate has very good activity against OBLR, suppression activity on apple maggots (AM), and limited lethal action on plum curculio (PC) when ingested (Table 3).

Exirel (cyazypyr), Altacor (rynaxypyr) and Belt (flubendiamide) belong to the Diamide class of insecticides that work on the insect by activating ryanodine receptors, thus depleting internal calcium and preventing muscle contraction. They provide excellent control of both first and second generation CM, as well as OBLR. Exirel and Altacor also provide suppression activity on AM, Exirel better than Altacor (Table 3).

The neonicotinoids Assail and Calypso (being phased out of market by 2016) will provide very good control of CM with a residual action of 10-14 days. These compounds are primarily larvicidal, but also have some ovicidal activity when applied over the top of the egg. Field trials have indicated that use of Assail in combination with pyrethroids or carbaryl can result in outbreaks of phytophagous mites. Assail and Calypso are fairly broad-spectrum materials. In contrast to the insect growth regulators and Diamides, the major secondary targets of these neonicotinoids are the sucking insects, specifically aphids (green apple aphid and rosy apple aphids) and leafhoppers (Table 3). The initial application of Assail or Calypso targeting first generation CM will also provide control of plum curculio (PC), oriental fruit moth (OFM) and spotted tentiform leafminer (STLM), and they will control AM.

Belay, another neonicotinoid registered for use in pome fruits, is a broad-spectrum material targeting CM as well as aphids, leafhoppers, PC, STLM, OFM and pear psylla. Research trials have indicated that Belay is not as effective as Assail or Calypso for second generation CM.

Proclaim is a CM control material in the Avermectin class of insecticides. It has provided good control of first generation CM in trials at the Trevor Nichols Research Center and in on-farm demonstration trials. Proclaim also has very good activity against OBLR.

There are several new pre-mix insecticides labeled for codling moth control, including Voliam flexi (thiamethoxam + chlorantraniliprole), Turismo (flubendiamide/buprofezin) and Leverage (imidacloprid + cyfluthrin) that combine two active ingredients as pre-mix formulated compounds. When these are used for codling moth control, care must be taken **not** to use a product in the following generation that is in the same insecticide class as either of the pre-mix active ingredients.

Codling moth granulosis virus

Growers should not overlook including granulosis virus in their CM management program. This is a naturally occurring virus that goes by the scientific name *Cydia pomonella* granulovirus (CpGV). Both of the two commercially available products, Cyd-X and Carpovirusine, are effective. Optimal use of the virus is against young larvae before they penetrate the fruit. The best way to target young larvae is to have the virus present on the surface of the eggs when they begin to hatch. Hatching CM larvae will ingest the virus as they consume their eggshells.

There are many options for incorporating virus into your codling moth management program. Deciding how much, when and how often to apply product can be quite confusing. Keep in mind the following

factors when trying to sort things out:

- CpGV must be ingested by the codling moth larva and may not kill it immediately.
- The virus breaks down in the environment, thus a spray may only be effective for a week or so.
- The virus is highly lethal, a few OB's are all that are required to cause death.

Our overall experience is that frequent application of a low rate of product is the best approach for using this biopesticide.

Growers can opt to use the virus as part of a multi-tactic CM control program. Rotating it with chemical insecticides is a good means of combating resistance. [Michigan State University Extension](#) suggests the following approaches to incorporating CM virus into a management program. If you want to restrict your use to a single generation, target the first generation. Some virus-infected larvae will not die immediately, allowing them to cause fruit damage and even complete larval development. Fortunately, stings or deeper entries in small fruits attacked by first generation larvae often fall off the tree or are removed by thinning. Additionally, research conducted in 2003 revealed that less than 4 percent of the individuals that managed to complete larval development survived to pupate and emerge as summer generation adults. Thus, applications against the first generation can greatly reduce the size of the summer generation that will need to be controlled.

Regardless of the generation targeted, it is best to make at least two applications. If you want to rotate a CpGV product with other controls, try applying a chemical insecticide as the first spray at the start of egg hatch (250 GDD) and the virus as the second spray. This is because more eggs will be present and covered by the virus spray at the later timing. The insecticide and virus could then be rotated again, or the virus could be applied weekly at a low rate for the remainder of the egg hatch period.

Table 3. Relative activity spectrum of compounds against spring and early summer apple pests

Insecticide	Primary pests					Secondary pests				
	CM	OFM	OBLR	PC	AM	STLM	GAA	RAA	LH	SJS
Delegate	***	***	***	*	**	**				*
Rimon	***	***	***	*		**				
Exirel	***	***	***	*	**	**			*	
Altacor	***	***	***		*	**			*	
Belt	***	***	***			**				
Proclaim	**	**	***			***				
Beleaf	*	*					***	***		
Actara	*	*		***	***	***	***	***	** *	**
Calypso Assail	***	***		***	***	***	***	***	** *	**
Clutch	**	**		***	**	***	***	***	** *	
Guthion Imidan	***	***		***	***	*				
Pyrethroids	**	**	**	**	**	**	*	*	*	**

CM-codling moth, OFM-oriental fruit moth, OBLR-obliquebanded leafroller, PC-Plum curculio, STLM-spotted tentiform leafminer, GAA/RAA-green/rosy apple aphid, WALH-white apple and potato leafhoppers, SJS-San Jose scale, TPB-tarnished plant bug

* some activity, ** better activity, *** best activity relative to other insecticides

Drs. Wise and Gut's work is funded in part by [MSU's AgBioResearch](#).

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Relief may be available for fruit, nut and ornamental growers with winter injury

Growers who are experiencing higher than typical levels of perennial mortality in the field are encouraged to contact the Farm Service Agency.

Posted on **May 29, 2015** by MSUE News, [Erin Lizotte](#), Michigan State University Extension



Christmas tree plantation with severe winter injury. Photo credit: Erin Lizotte, MSU Extension

Harsh winter conditions have caused injury in a number of perennial cropping systems in Michigan. According to [Michigan State University Extension](#), the Agricultural Act of 2014 (the [2014 Farm Bill](#)) authorized the [Tree Assistance Program](#) (TAP) to provide financial assistance to orchardists and nursery tree growers to replant or rehabilitate eligible trees, bushes and vines damaged by natural disasters. TAP is administered by the [Farm Service Agency](#) (FSA), a division of the [U.S. Department of Agriculture](#).

According to the [TAP fact sheet](#), eligible trees, bushes and vines are those from which an annual crop is produced for commercial purposes. Nursery trees include ornamental, fruit, nut and Christmas trees produced for commercial sale. Trees used for pulp or timber are ineligible. To be considered an eligible loss:

- The plants must have been lost or damaged as a result of natural disaster.
- The stand must have sustained a mortality loss or damage loss in excess of 15 percent, not including normal mortality or damage.
- The loss could not have been prevented through reasonable and available measures.
- Damage or loss must be visible and obvious. If the damage is no longer visible, FSA may accept other loss evidence that the agency determines is reasonable.

If you have eligible tree, shrub or vine losses or expect you might, you should contact your [local FSA office](#) to report it now so it is documented. Reports must be filed within three months of observing the damage. For more information, producers are encouraged to review the [2014 Farm Bill fact sheet](#) and the [TAP fact sheet](#), or contact a [local FSA county office](#) or [USDA Service Center](#).

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2015 Tree Fruit IPM Update Series

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 season's 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. 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. Certified crop advisor continued education credits (two per meeting) and pesticide recertification credits (two per meeting) 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.

IPM Update Dates, Times, and Locations

Leelanau County

Location: Jim and Jan Bardenhagen, 7881 Pertner Rd, Suttons Bay

Dates: June: 2, 9, 16, 23, 30; July: 14

Time: 12PM – 2PM

Grand Traverse County

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

Dates: June: 2, 9, 16, 23, 30; July: 14

Time: 3PM – 5PM

Antrim County

Location: Jack White Farms, 10877 US-31, Williamsburg (is not correct in Google Maps) *North of Camelot Inn and South of Elk Rapids on the southeast side of US-31*

Dates: June: 3, 17; July: 1, 15

Time: 10AM – 12PM

Benzie County

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

Date: June: 3, 17; July: 1, 15

Time: 2PM – 4PM

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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 is available at the new cherry website:

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

Information on apples:

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

Fruit CAT Alert Reports has moved to MSU News

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