

Northern Michigan FruitNet 2015

Northwest Michigan Horticultural Research Center

April 28, 2015

CALENDAR OF EVENTS

2015

- 4/30** **Sweet Cherry Pruning Demonstration**
Various locations
- 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 April 27 AT THE NWMHRC

Year	2015	2014	2013	2012	2011	2010	25 Yr. Avg.
GDD42	143	81	71	407	110	339	190.4
GDD50	50	19	23	206	31	140	78.9

Growth Stages at NWMHRC (April 27, 2015, 2:30 p.m.)

Apple: Red Delicious – ¼" green
Gala – ¼" green
Yellow Delicious – ¼" green

Pear: Bartlett: Bud swell

Sweet Cherry: Hedelfingen: Green tip
Napoleon: Green tip
Gold: Green tip

Tart Cherry: Side green

Balaton: Green tip

Apricot: Red tip

Grapes: Chardonay – Scale crack

NORTHWEST MICHIGAN FRUIT REGIONAL REPORT – April 28, 2015

Emily Pochubay and Nikki Rothwell

Growers have kicked off their insect and disease management programs for this season and predicted warm temperatures will accelerate crop development this week.

Weather Report

The weather has remained cool over the past week, and trees have moved very little since we examined the growth stages last week. However, temperatures are predicted to rise toward the end of the week, and rain is in the forecast for next Monday. Growers will need to protect new tissue as these predicted warm temperatures would certainly accelerate growth. Degree-day accumulations have not changed much in the past week. We have accumulated 143GDD base 42 and 50GDD base 50; we are now slightly behind our 20+-year average. If temperatures do warm during the latter part of the week, we will catch back up and be on par with our past degree-day accumulations. Conditions have been dry across the region, and we have had little rainfall since 20 April. As mentioned above, the next chance for rain will be on Monday, 4 May.

We had some cold overnight temperatures across the region last week. Temperatures dipped into the mid-20s last Wednesday and Thursday (22 and 23 April). Friday (24 April) was the coldest night, and overnight temperatures dipped into the low to mid-20s at many of the NW Enviro-weather stations. We cut buds on Friday afternoon, and we had little to no damage in sweet cherries at the research station. In our tart cherries, we cut 100 buds, and 33 of them were damaged. However, the location from where we cut these buds was a lower site on the station. Most growers feel like they have come through these cold temperatures with little damage. Predicted overnight temperatures for the remainder of the week are expected to be in the upper 30s and low 40s, so the forecast looks favorable for minimal freeze events.

Crop Report

There has been little movement in crop development with the cool temperatures last week. However, with the predicted warm up in the forecast, many growers will be spraying this week and into next week. Conditions are also predicted to be warm and dry, which will be optimal for wrapping up sweet cherry pruning for the season. Tree planting continues, and sprayers are gearing up for the season.

Pest Report

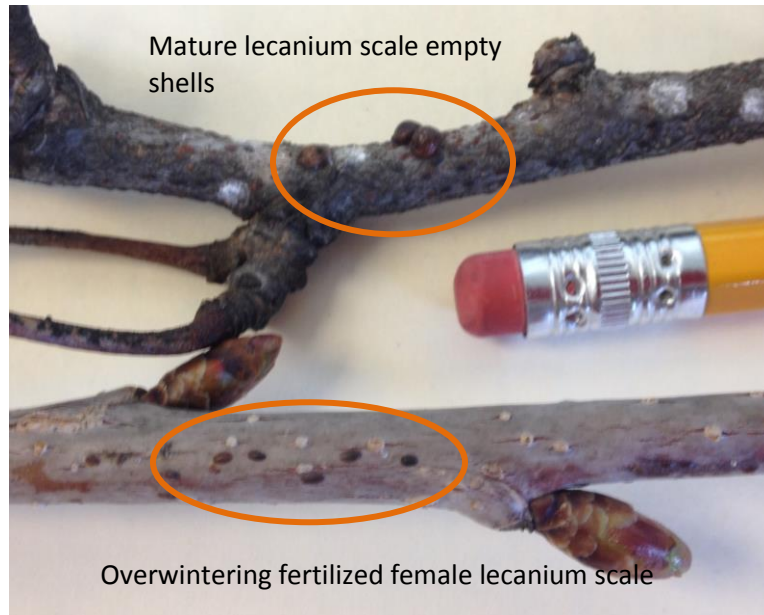
At the station, McIntosh, Gala, Red Delicious, and Golden Delicious are showing ¼ inch green tissue at the NWMHRC, and many growers in the region have begun their insect and disease spray programs. Some growers made copper applications last week to reduce fire blight inoculum. These copper sprays would have also provided protection from apple scab infection, particularly if green tissue was present on susceptible varieties during last week's potential infection periods. Chances for scab infection periods are low for the remainder of the week as conditions are predicted to be warm and dry. However, there is a 48% chance of rain on Monday (4 May), and new green tissue will be susceptible to scab ascospores and should be protected prior to this rain event.

Growers are also spraying oil targeting overwintering scales and mite eggs at this time. We would like to remind growers that oil can have phytotoxic effects on green tissue, buds, blossoms if it is applied in or around below freezing temperatures: oil should not be used 48 hr before or after a frost.

We have had reports that lecanium scale populations are high in some sweet cherry and peach orchards, and growers with high populations will make an application to control this species of scale. In the past, lecanium scale has been a concern in sweet cherries near wooded areas as this pest has a broad host range and feeds on forest trees such as maples and oaks. Mature lecanium scale is a larger scale species, 3-5 mm long, and dark brown in color. Mature scales are oval, evident raised bumps on branches. The shells of last year's lecanium scales are visible on trees at this time.

However, these large shells are empty and dead. The scales that are a concern this spring are the fertilized female scales that are overwintering on branches.

Overwintering scales are brown and oval but more flattened and not as large or obvious on branches. Lecanium scale is present and more susceptible to control earlier in the season than other scale pests, such as San Jose scale (SJS). A dormant oil will help control Lecanium scale, but if populations are high or if growers missed the opportunity for this early oil spray, we recommend other materials to minimize the populations. Very little work has been done on Lecanium scale, but both Centaur and Esteem have this pest on their labels. Esteem applied at delay-dormant could suppress egg hatch from treated adults. Unlike SJS, lecanium scale is not on the Movento label.



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SWEET CHERRY PRUNING DEMONSTRATION: April 30, 2015

Join Dr. Greg Lang for a pruning demonstration tour on April 30th. The tour will begin at King Orchards' new high-density sweet cherry block behind their farm market on US 31; they have many new varieties trained to a tall spindle axe (TSA). The group will have lunch at Pearl's New Orleans Kitchen in Elk Rapids. We will travel to Greg Williams' farm in Cedar where we will prune sweet cherries trained to upright fruiting offshoot (UFO) and TSA systems. The tour will end at the Northwest Michigan Hort. Research Center (NWMHRC) where Dr. Lang will introduce us to his new sweet cherry training manual (<http://www.hrt.msu.edu/greg-lang/pg3>). We wrap up the day with a review of these systems in the field. Please join us for a great day of pruning—we are sure to have great weather with Dr. Lang on hand. For additional information, please contact Nikki Rothwell or Emily Pochubay at 231-946-1510.

10:30-11:30 King Orchards
Creswell Road (behind King Orchards Farm Market on US 31)

11:30-12:15 Lunch at Pearl's New Orleans Kitchen
617 Ames Street, Elk Rapids, MI 49629

- | | |
|------------|---|
| 12:15-1:15 | Travel to Greg Williams Orchards |
| 1:15-2:15 | Greg Williams Orchards
<i>Novak Road, Cedar, MI</i> |
| 2:15-2:45 | Travel to NWMHRC |
| 2:45-4:00 | Overview of new sweet cherry training manual and in-field systems pruning
<i>6686 S. Center Highway, Traverse City, MI 49684</i> |

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: May: 5, 12, 19, 26; June: 2, 9, 16, 23, 30; July: 14
Time: 12PM – 2PM

Grand Traverse County

Location: Wunsch Farms, Phelps Road Packing Shed, Old Mission
Dates: May: 5, 12, 19, 26; 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*
May: 6, 20; June: 3, 17; July: 1, 15
Time: 10AM – 12PM

Benzie County

Location: Blaine Christian Church, 7018 Putney Rd, Arcadia, MI 49613
May: 6, 20; June: 3, 17; July: 1, 15

Time: 2PM – 4PM

WHAT IS THE DIFFERENCE BETWEEN A FROST AND A FREEZE?

The dew point and wind conditions impact how likely a freeze will be damaging. Cold, cloudy windy conditions can limit damage.

Posted on **April 21, 2015**, MSUE News, by [Mark Longstroth](#), Michigan State University Extension



Apple flowers killed by a freeze. Photo credit: Mark Longstroth

I am trying to train myself to stop saying frost when I mean freeze. They are not always the same thing. A frost is when we get a visible frost. A freeze is when the air temperature drops below freezing. Sometimes we get frost when the temperatures are above freezing and we often have a freeze without frost. It all has to do with the amount of water in the air.

There are two different ways to measure humidity, the amount of water vapor in the air. The one that most people use is the relative humidity. The relative humidity measures how much water is in the air compared to the maximum amount of vapor the air can hold. When the air cannot hold any more water it is saturated and the relative humidity is 100 percent. Warm air can hold more water than cooler air. So during the day and night the relative humidity changes as the temperature rises and falls. If the temperature falls far enough, the amount of water in the air is more than the air can hold at that temperature. The air is saturated and water vapor in the air condenses as water on surfaces such as our cars, the roofs of houses or on lawns as dew.

The dew point measures the absolute amount of water in the air. It is the temperature at which the air is saturated and the relative humidity is 100 percent. So for a given volume of air with a set amount of water vapor in it, the relative humidity varies with the temperature, but the dew point is always the same.

What does that have to do with frosts and freezes? It all has to do with the dew point. If the dew point is much above freezing a frost is unlikely. The higher the dew point is above freezing, then freezing temperatures are less likely. If the dew point is below freezing, then a frost becomes more likely. Dry air heats and cools much more quickly than humid air. Water vapor in the air acts as a heat reservoir absorbing heat.

If a dry air mass moves into the region, a freeze is likely. Dry air has a low dew point and a low relative humidity. The dry air warms quickly during the day but also cools quickly at night. If we have clear calm conditions the ground cools rapidly at night by radiating heat away to the open sky. As the ground cools, it cools the air next to it. If it is windy, then this cool air is mixed with warmer air above and the warmer air warms the ground. In calm conditions, the ground continues to cool. The ground becomes colder than the air. See [What are Radiation Freezes?](#)

At the dew point, water vapor in the air condenses on the ground and other surfaces as dew. If the dew point is below freezing, the water vapor condenses as ice, freezing as frost. So the air can be above freezing and the surface of your car (or the roof of your house) can be colder than the air and colder than freezing causing a frost even though the air temperature is above freezing. That is how we get a frost without a freeze. If the dew point is much below freezing then we can get freezing temperatures cold enough to freeze plants without any frost. This is also called a black frost, a freeze without a frost. When frozen plants thaw they have a water-soaked, black appearance as they die.

Sometimes we get a freeze under windy conditions. This is caused by the movement of a cold air mass into the area with subfreezing temperatures. These freezes are called **advective or wind freezes**.

Most of the freezes that cause problems in the spring in Michigan are **radiation** freezes. These freezes occur after the passage of a cold front, which precedes a mass of cool dry air. Usually there is a stormy period as the cold front moves through followed by clearing and light winds. During the night the ground cools and chills the air above it. This layer of cold air becomes thicker and thicker so that cold air is close to the ground with warmer air above it. Normally warmer air is located close to the ground and the air temperature falls as you rise upward in the atmosphere. In a radiation freeze this is reversed and cold air is located close to the ground with a warm layer above it. This warm layer is called an inversion. Wind machines are used to protect plantings by mixing the warm air above with the cool air close to the ground. The effectiveness of the wind machine depends on whether the warm air layer is close enough to the ground for the machine to reach. Often you will hear that the inversion is high or low describing the relative height of the inversion.

Types of Freezes

Radiation freeze	Advective freeze
Winds less than 5 MPH	Winds higher than 5 MPH
Clear sky	May be cloudy
Cold air mass 30 to 200 feet thick	Cold air mass 450 to 3,000 feet thick
Inversion develops	No Inversion
Cold air in the low spots	
White or black frost damage	
Easier to protect	Difficult to protect

Long ago when fuel was cheap, orchard heaters were used to heat fruit plantings. These were very effective when the inversion was low. Fuel prices are now prohibitive for heaters but wind machines remain effective and work best when the inversion is low.

Another effective way to add heat to a planting is to use sprinklers to either cover the plant in ice, keeping the ice wet and maintaining the temperature of the plant inside right at freezing and preventing injury. Sprinklers are also used in orchards under the trees or under wind machines to release heat as the water freezes warming the orchard air. These freeze control measures can work well under the calm conditions of a radiation freeze.

Related articles

- [What are Radiation Freezes?](#)
- [Analyzing and improving your farm's air drainage](#)
- [Air moving fans for improved air drainage](#)
- [Moist, weed-free soil retains more heat](#)
- [Using sprinklers to protect plants from spring freezes](#)
- [Protect blueberries from spring freezes by using sprinklers](#)
- [Freeze damage depends on tree fruit stage of development](#)
- [2013 bloom dates for southwest Michigan tree fruit crops](#)
- [Using Enviro-weather's regional overnight temperature report during cold events](#)
- [Probability of a hard frost or freeze in the spring for some southwest Michigan fruit sites.](#)

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TRY THESE TOOLS TO TAKE THE WORRY OUT OF APPLE THINNING

Posted on **April 21, 2015**, MSUE News, by [Philip Schwallier](#), and Amy Irish-Brown, Michigan State University Extension

Chemical thinning is the most difficult annual grower practice, yet the most important. Too little thinning will produce a crop of small fruit and poor return bloom. Over-thinning will produce a crop of large apples with quality issues. [Michigan State University Extension](#) recommends Precision Cropload Management as a strategy to use all available techniques and information to thin to a precise target crop load. Thinning early and using crop load tools will make thinning easier, more successful, and precise, and also get best fruit quality with good return bloom.

The first step is to evaluate your block and set a target crop load. We use the target crop load to dormant prune to a 2x target bud load. If your target crop load is 100 apples on a tall spindle tree, then the dormant fruit bud load would be 200 per tree. Trees often have five times this target bud load before pruning. If still in the dormant season, prune each tree to 2x of the bud load. Then plan on using the Predicting Fruitset Model and the Carbohydrate Model to help fine tune thinning activities and rates. Plan on thinning early, starting at full bloom or at least at petal fall. Early applications of thinners will help get the thinning started. Usually thinning at full bloom or petal fall will thin at mild levels (0 to 15% thinning). In 2013 and 2014, aggressive thinning occurred at these timings because there was significant tree stress as predicted by the carbohydrate model and the predictions were correct.

At pink, set up the Predicting Fruitset model by marking 15 blossom clusters on 5 trees per block. These marked clusters will be used at the 6 mm stage to make set measurements and ultimately predict fruitlet abscission. The next step will be to spray a thinner at full bloom. I

believe your three choices are ATS, NAA or MaxCel. One of these thinners should be used to get some thinning started. At full bloom, the set is unknown but apple trees usually will set 200 percent of a crop and perhaps more, if bud load was not reduced during the dormant season. At full bloom you will have some of the information to help predict fruitset, which is spring weather conditions and forecasts as well as flower health, potential bee activity, potential pollination and potential fertilization. If conditions appear to be good and the forecast is good, then fruitset should be good. Thinning at full bloom is a positive action. If conditions are poor, then wait until petal fall to thin. Before applying a full bloom thinner, use the predictions of the Carbohydrate Model. Throughout the chemical thinning window, the Carbohydrate Model can be used to adjust thinning rates up or down depending on the amount of stress predicted. If predictions are for no stress, then apply normal thinning rate or higher rates. If high stress is predicted, reduce rates or do no thinning. The same is true at other thinning times.

Next is the petal fall to 6-mm spray. Once again fruitset is unknown, but more actual bloom and bee information has occurred. Consult the Carbohydrate Model for stress prediction and adjust rates accordingly. Apply thinners when weather is favorable. Now at 6-mm stage, measure the blossom clusters marked at pink. This will give a baseline measurement to base fruitlet growth in the next measurement (about 5 to 7 days later). The difference between these two measurements will be used by the Predicting Fruitset Model to predict percent set and thus, determine if the target crop load is close. If not, thin again and measure again, but use the Carbohydrate Model to adjust this next thinning treatment.

Repeating fruit measurements; add this data to the Predicting Fruitset model; check the Carbohydrate Model; and re-thin. This routine will be continued until the thinning is correct or the fruits are too big to chemically thin. This leaves only hand-thinning to correct the crop load.

Using these tools and information will first get some thinning done early and the models will help adjust rates and repeat applications. By performing these Precision Cropload Management activities, early, successful, target thinning can be accomplished and growers will gain great experience and confidence in their thinning program while reducing the personal stress that so often makes thinning a difficult activity. For more information and to get a copy of the Predicting Fruitset Model, visit www.apples.msu.edu.

This article was published by [Michigan State University Extension](http://www.msue.msu.edu). For more information, visit <http://www.msue.msu.edu>. To have a digest of information delivered straight to your email inbox, visit <http://bit.ly/MSUENews>. To contact an expert in your area, visit <http://expert.msue.msu.edu>, or call 888-MSUE4MI (888-678-3464).

REQUEST FOR APPLE GROWER COOPERATORS

Emily Pochubay, MSU Extension

The NWMHRC is looking for apple grower cooperators for three projects (see below) in the coming season. Please see additional information on each of the projects below. If you are interested in participating in any of these projects or if you would like more information, please contact Emily Pochubay (pochubay@msu.edu), 231-945-1510. Thank you for your continued support!

1. Apple scab spore monitoring

The NWMHRC is hoping to monitor for apple scab spore release during primary infection this spring to assist the Enviro-weather apple scab model and local apple growers with identifying the end of primary infection for apple scab. For this project, we need an apple

block <10 miles of the research station (6686 S. Center HWY) that had some degree of apple scab infected tissue last season and can be easily accessed after each rain event to collect spore collecting rods.

2. San Jose scale monitoring

Apple blocks with known San Jose scale populations are needed to monitor for male emergence/flight as well as crawler activity. Apple orchards in Leelanau county, Old Mission/Grand Traverse, and Antrim county would be preferable for this project as we would like to observe the relationship of San Jose scale behavior in sweet cherries and apples; we are currently scouting in sweet cherries in those three aforementioned regions of NW Michigan.

3. Apple maggot monitoring

In 2014, the NWMHRC observed detections of cherry fruit fly using different commercially available sticky traps and found that trap type influences first detections and the number of cherry fruit flies captured. In 2015, we would like to observe this possible effect on apple maggot catches. To test this hypothesis, we are looking for five apple blocks in northwest MI counties (Leelanau, Old Mission/Grand Traverse, Antrim, Benzie, Manistee).

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 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>

