

Northern Michigan FruitNet 2013

Northwest Michigan Horticultural Research Center

Weekly Update

May 7, 2013

GROWING DEGREE DAY ACCUMULATIONS AS OF May 6th AT THE NWMHRC

Year	2013	2012	2011	2010	2009	2008	23yr. Avg.
GDD42	225	503	156	468	258	285	285.7
GDD50	114	249	48	212	105	132	125.0

Growth Stages at NWMHRC (May 6, 4:00 p.m.)

Apple: Red Delicious – Early tight cluster

Gala – Tight cluster

Yellow Delicious – Early tight cluster

Pear: Bartlett: Green cluster

Sweet Cherry: Hedelfingen: White bud

Napoleon: White bud

Gold: Early white bud

Tart Cherry: Bud burst

Balaton: Late bud burst

Apricot: 90% bloom

Grapes: Early bud swell

NORTHWEST REGIONAL REPORT

N.L. Rothwell, NWMHRC

Warm and dry temperatures have accelerated tree growth across the north.

The region has had a string of warm and dry days that feel more summer-like than spring. These temperatures have been a welcome change after a long winter, but the pace of tree growth has changed dramatically over the past week. On 26 April, we were at silver tip in most varieties of apples at the NWMHRC, but just over a week later, we are in tight cluster – things are simply moving fast and growers are working hard to keep up with this pace.

We have also jumped in our degree day accumulations, particularly base 50 as daytime temperatures have hovered in the low to mid-70s. We have accumulated 114GDD base 50, which is just behind our 20+-year average of 125GDD base 50, which is a marked change from last week where we were over 1 to 2 weeks behind normal. Obviously, we have also accumulated GDD base 42, and over this past week we are at 225GDD base 42. We have not received much rain the past week, and we recorded .14" at the NWMHRC. Despite the good soil moisture to start the year, the first 4-5 inches of the soil are dry.

The trap line has been set at the NWMHRC this week, and we will be monitoring this line weekly or bi-weekly.

Apple. Growers are busy with spring tasks and sprayers have been out of the barn for over a week. Rain is in the forecast for Thursday of this week, and covering for scab is a priority. With all of the increased growth, keeping new tissue covered for scab is critical. Most growers will also add a

mildewcide for powdery mildew for the cover as recommended by MSUE. Rosy apple aphids are the main insect that will need to be controlled at the upcoming pink spray. Mating disruption should be put up in orchards prior to bloom.

Cherry. We have observed white bud in sweet cherries, and if temperatures remain warm, we could be into bloom by the weekend. American brown rot (ABR) is a concern at this time, and we recommend using Rovral for bloom sprays to save the SI's, primarily Indar for ABR control as we approach harvest. Retain, which is now labeled in cherry, should go on at early bloom to increase fruit set in shy bearing varieties or if we run into poor pollinating weather.

In tart cherries, European brown rot applications need to be applied beginning at popcorn and again a week later. This disease is more of a problem in cool and wet weather, which has not been typical this spring, but there are some orchards where this disease is an annual issue. Also, this disease is more problematic in Balatons than Montmorency, so if the weather changes or an orchard is in a prime EBR site, Indar is the material of choice, and should be applied at the above timings to control this disease.

Wine Grapes

Duke Elsner, Grand Traverse County MSUE

Recent warmer weather has brought many cultivars to the early bud swell stage. Bud development varies greatly from vine to vine and even within vines in the research vineyard. We would greatly appreciate your comments on bud development uniformity in commercial vineyards.

No significant insect activity has been seen to this point, and the only species to be on the lookout for now are climbing cutworm and grape flea beetle. Grape flea beetle can often be found on wild vines in our area, so there is a possibility for it to become a pest.

We are still in the time period for effective dormant applications against powdery mildew.

CONTROLLING ROSY APPLE APHIDS EARLY IN THE SEASON IS THE BEST STRATEGY

N.L. Rothwell, District Horticulturist, NWMHRC

Rosy apple aphids (RAA) are an introduced pest of apple that must be controlled early in the season. Once they begin feeding, the apple leaves curl and protect the aphids from insecticide applications. Hence, pre-pink to early pink is the optimal timing for controlling RAA.

Rosy apple aphids spend their winter as eggs that hatch in early spring over a two week period. Nymphs begin feeding on apple buds, preferring fruit buds, until the leaves begin to unfold. Once the buds have opened, the aphids move down into the clusters and begin to suck sap from stems and newly formed fruits. Once they begin feeding on the leaves, the leaves start to curl and severe curling is a tell-tale sign of a RAA infestation. Because a single female can produce 185 offspring that tend to congregate together on infested leaves, they can quickly kill the leaf and move to another food source, such as newly expanding leaves or forming fruits. Big populations can also lead to black sooty mold, which grows on the excreted honeydew of the aphids; this mold can affect the finish of the fruit. Lastly, aphids' saliva has a toxin that can serve as a 'stop drop' of fruit at harvest.

Untrimmed trees are perfect hosts for RAA, and infestations on bigger trees that have not been pruned are much more difficult to control. Wet and cool conditions in the spring favor RAA development as these conditions are not conducive to RAA predators and parasites. With any luck, our warm and dry spell may naturally reduce the RAA populations in our apple blocks. However, growers should not take a chance and miss this early timing to control these pests. Growers should monitor susceptible varieties, such as Ida Red, Cortland, Rome, Rhode Island Greening, and Golden

Delicious, from tight cluster through petal fall. If a grower examines 100 fruit clusters in the center of a susceptible block, treatment is recommended if an average of one or more colony per tree is found.

The neonicotinoids are all rated excellent for RAA control, but there are few other insects active in the orchard at this timing to get dual control of RAA and another apple pest. Lorsban is often the material of choice as it is only labeled for use at pre-bloom in apple.

USING ReTAIN® TO IMPROVE FRUIT SET IN CHERRY

Data provided by J. Rosco and D.D. Miller, Ohio State University, and Valent®

ReTain is a plant growth regulator that has been shown to extend flower viability in cherry. With flowers that last longer, they have a higher likelihood for successful pollination and an opportunity for increased fruit set. They have found ReTain works best if used at early bloom before poor pollinating conditions (wet, cool, windy weather or low honeybee activity) or on varieties that tend to be shy-bearing, such as Cavalier or Regina. All of the work of ReTain in cherries has been conducted in sweet cherry, but ReTain may also be effective in Balaton.

Washington State University researchers showed that one pouch of ReTain in 100gal water per acre improved the number of fruits per trunk cross sectional area by 49% at harvest in var. Bing compared to the UTC. Rosco and Miller 2011 found that ReTain reduces ethylene evolution in cherry flowers and delays flower and stigmatic senescence. Due to this effect, cherry flowers have a better chance for pollination and fertilization under poor set conditions. They showed that ethylene production was delayed in var. Regina, and this delay resulted in extended flower viability.

The rate of ReTain is one pouch per acre (11.7oz/acre) applied at early bloom: popcorn to first bloom. The spray volume is recommended at 100 gal/acre through an orchard sprayer. Adjuvants are not recommended as some of these products may decrease fruit set. ReTain cannot be used after petal fall, and it is not recommended if rain is expected within 8 hours of application.

EUROPEAN BROWN ROT: A LESS LIKELY PROBLEM IN WARM AND DRY WEATHER

N.L. Rothwell, NWMHRC

European brown rot (EBR) (*Monilinia laxa*) is a problematic disease that impacts tart cherries when the weather conditions are cool and wet during bloom. We have not seen those optimal conditions so far this season, but this write up is a reminder to be diligent about controlling this disease if one or more of the following applies:

1. conditions change--temperatures drop and precipitation is forecasted
2. orchards that in locations that are perfect for EBR development, such as Northport where at the tip of Leelanau peninsula, they are often cooler and wetter than other areas in NW Michigan or orchards in areas without a lot of air movement, or lastly
3. the variety Balaton is much more susceptible than Montmorency, and even under non-perfect conditions, Balatons can be infected by the EBR pathogen.

Although the current weather conditions are warm and dry, we could cool down over the weekend with some rain in the forecast. If we do get conditions that are conducive to EBR development, we recommend two fungicide sprays should be applied: the first spray is at the popcorn stage, followed by a second spray seven days later. Growers that have Balaton should be particularly careful as this pathogen has the potential to reach epidemic levels in this cultivar, particularly if we do have cooler and wetter conditions. Regions of orchards in low spots or along hedgerows can also be problematic, so growers should keep an eye on locations that do not dry off quickly.

Indar is the best control option for EBR. Two applications should be applied at the above timings at a rate of 6 oz/acre. Vanguard has also shown some efficacy against the EBR pathogen under non-optimal conditions.

KEEPING UP WITH APPLE SCAB SPRAYS

N.L. Rothwell, NWMHRC

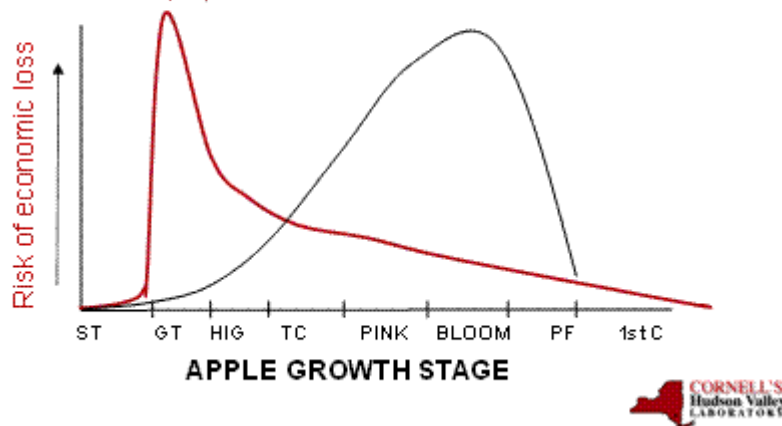
G.W. Sundin, Dept of Plant Pathology, MSU

Although the season is still early and we have had warm and dry weather, we want to remind growers to make sure to protect apples against scab. The once cool weather has suddenly been displaced by summer temperatures, which has resulted in accelerated apple tree growth. On 26 April, we observed all apple varieties here at the NWMHRC to be at silver tip, and a little over one week later, we are at tight cluster—in short, trees are growing fast! According to the forecast, there is a 50% chance of rain this Thursday, and if temperatures remain high for the next few days, we will have a lot of new (and unprotected) tissue out there if the rains do come.

Early season apple scab control is absolutely critical. Although the amount of tissue available for infection is small and the scab spore load is typically small early in the season, any infection that occurs early will result in severe consequences later in the primary scab season. This is because lesions initiated at green tip or tight cluster will be producing secondary spores (conidia) at a timing between pink and petal fall that coincides with what is typically the period of highest primary spore concentration from overwintering leaves. Thus, early infections can be devastating because they compound the spore load in an orchard. Although there is not a lot of green tissue present in orchards early in the season, but apple scab spores can find that tissue—for any spores released at this timing, their primary function is to land on that susceptible tissue and infect (Figure 1. Apple scab infection risk early in the growing season. Courtesy of D. Rosenberger, Cornell University).

Apple Scab Infection Risk

Risk of economic loss: Infections incurred soon after budbreak pose the greatest risks in sprayed orchards.



The forthcoming stages, pink to petal fall, often have the highest inoculum in the orchard, and a time with more spores, warming temperatures, increased green tissue, fast tree growth between fungicide applications, and an increased potential for fruit infection. Hence, scab control is critical in the coming week, particularly if the rains come on Thursday. The EBDCs are good fungicides for this pre-bloom time as they have a 77 day PHI, so they are limited to early season scab control. Captan is also another good scab material for early in the season. EBDCs and captan are referred to as “contact” or protectant fungicides as they provide a surface barrier on leaves and fruit that kills scab spores and germinating spores. These scab protectants typically provide five to six days of protectant activity when used at full rates. Combinations of Mancozeb fungicides (Dithane, Penncozeb, Manzate) with Captan are especially effective because they combine the excellent retention properties of Mancozeb with the better redistribution properties of Captan. Redistribution is critical when we experience periods of warmer weather leading to rapid leaf expansion between spray applications. These fungicides are also good to use in a resistance management strategy.

However, the EBDCs and captan are not effective against powdery mildew (PM), and early season PM control is also important. We do not have eradicants or materials that will work once a PM infection has taken hold in an orchard. Therefore, growers want to be sure to start their PM programs before the next rain. A strobilurin or SI fungicide in the tank with the EBDC and captan will protect leaves from PM.

BUD SWELL IS TIME TO MONITOR VINEYARDS FOR CUTWORMS AND FLEA BEETLES

Time spent monitoring vineyards for cutworms and flea beetles during the bud swell growth stage can avoid costly pest damage this 2013 season.

Posted on **April 30, 2013, MSUE News**, by **Rufus Isaacs**, Michigan State University Extension, Department of Entomology

With warm weather returning to the region, the early growth of vines will start and we will move into the bud swell growth stage. This is a time when growers should monitor for cutworms and flea beetles, two early season pests that can feed on buds and limit crop yield. It is interesting to note that

in 2012 I was writing a similar article at the end of March, having seen the first grape flea beetle (steely beetle) on March 19. This is a different spring, but the later vine growth is expected to line up with later insect development so that we should still expect these pests during bud swell. There are good rules of thumb for deciding whether damage from these insects warrants control, and information on scouting and other management components developed by [Michigan State University Extension](#) is provided below.

Cutworms

The term [cutworm](#) covers many species in the moth family Noctuidae, and as their name suggests, these insects are nocturnal. Vineyards on light-textured soils are often the most heavily infested. Both the adults and the larvae are only active at night, and the larvae can climb up onto vines during very cool nighttime conditions. During the day, cutworms hide in the soil or leaf litter and can be found in the top layer of soil.

Many of these insects feed on weeds, but some climb the stems of plants to feed on buds and other young foliage. These climbing cutworms are the ones causing damage to grapevines. Direct observation of feeding by the larvae requires a late-night trip to the vineyard, but their damage is quite easy to see. In Michigan vineyards, the spotted cutworm, *Amathes c-nigrum*, is our main pest species, and the larvae feed on buds and may also feed on leaves until the shoots are 10 to 15 cm long. However, it is the feeding on small buds that has the greatest potential for economic damage.

Cutworm feeding on a bud can reduce the crop by one to two clusters, so the high potential for rapid damage by cutworms requires growers make good management decisions. Even 2 percent percent bud injury is an action threshold for an insecticide treatment to prevent further damage, so vineyards should be scouted during the period of bud swell to identify regions with cutworm pressure (see below).

Flea beetle (Steely beetle)

The [flea beetle](#) attacks buds of both wild and cultivated grapes and is another early season grape pest. The adult insects move to the vines at bud swell and usually are localized within the vineyard. Sites near overwintering habitats such as woods or abandoned vineyards are especially at risk. Beetles are most easily seen during warm sunny weather when they tend to be on the top of vines, usually mating or feeding on canes and buds.



Grape flea beetle adult. Photo credit: Steven VanTimmeren, MSU



Close-up of flea beetle adults. Photo credit: Steven VanTimmeren, MSU

Adults are shiny blue, about 4 to 5 mm long and have strong hind legs that enable them to jump if disturbed (hence the name). The overwintering adults cause the greatest damage by boring into the developing bud and hollowing out the inside, while the larvae and summer adults feed on leaf tissues. Bud feeding is similar to that caused by cutworms, with similar effects to the vine (see above cutworm description).



Grape flea beetle feeding damage. Photo credit: Steven VanTimmeren, MSU

Wherever possible, cleaning up overwintering sites, wasteland and woodland, near to vineyards can help combat grape flea beetle.

Scouting for bud damage

Growers should watch for damage by cutworms and flea beetles, especially if the vines remain in the susceptible bud swell stage for a while with cooler weather. Cutworms tend to be more of a problem in sandy sites, so these should be prioritized for scouting. Both cutworms and steely beetles can cause damage quickly if the temperatures warm up, and since they are difficult to catch “in the act,” regular scouting for the first signs of damage is essential to prevent significant bud loss.

An action threshold of 2 percent damaged buds is recommended in juice grapes, and this can be determined by sampling 10 buds on each of 10 vines spread through the vineyard. Thresholds in winegrapes may be lower due to the higher value of the crop, but there has been little formal research on this topic. Still, it is clear that the potential damage justifies scouting and management if cutworm damage is detected.

As mentioned above, once the shoots get past bud burst and into the 1- to 3-inch range, the danger from flea beetles and cutworms is diminished significantly.

Cultural control

Vineyards that are weedy tend to have more cutworm problems, presumably because the larvae have more places to hide and conditions are better for them. Weedy vineyards also provide more places for the cutworms to hide from sprays applied for their control, so improving weed control is one component of an IPM program to reduce cutworm damage.

Leaving some extra buds is a potential strategy for hedging your risk against cutworms (and frost) injury. Scouting is still required, though, to make sure the damage doesn’t exceed the number of extra buds left behind.

Chemical control

An appropriate insecticide application should be considered if scouting shows significant damage is occurring, and assessments of damage should include wooded borders where flea beetle pressure may be higher and areas where cutworms have been a recurring problem.

Lorsban Advanced is labeled for cutworm at 1 quart per acre in at least 50 gallons of water per acre. Delegate is a reduced risk option registered for cutworm control (3 to 5 oz/acre). There are also a number of pyrethroid insecticides registered for use against cutworms including Mustang Max (2 to 4oz/acre), Danitol (10.6oz/acre) and Brigade (3.2 to 6.4oz/acre) that provide excellent control of cutworms and flea beetle. Sevin is also registered for use against flea beetles and has performed very well in observations of treated vineyards at 2 qts/acre.

Recent research in Washington State vineyards has shown excellent protection against cutworms using only trunk sprays of a pyrethroid. This approach targets the spray to the trunk surface, and larvae have to climb up through the residue to reach the buds. This significantly reduces the cost of application, but it is important to realize that this will not protect the upper canopy from flea beetle feeding.

Dr. Isaacs' work is funded in part by [MSU's AgBioResearch](#).

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AVOIDING SALT INJURY FROM NITROGEN FERTILIZERS IN ORCHARDS

Nitrogen fertilizers can injure fruit trees if used incorrectly. Here are a few tips to consider in preventing salt injury from N fertilizers.

Posted on **April 30, 2013, MSUE News**, by **Eric Hanson**, Michigan State University Extension, Department of Horticulture

Conventional nitrogen (N) fertilizers are salts that can injure trees if used improperly. Fertilizers can increase the salt levels of the soil solution. High soil salt levels can prevent roots from absorbing adequate water so trees grow poorly or are sometimes killed. There are a few rules of thumb about salt injury from N fertilizers:

Fertilizers vary in their effect on soil salts, as measured by the salt index (SI). Materials with high SI's increase soil salts the most. The SI for fertilizers is usually based on a unit of fertilizer (Table 1). Per unit of fertilizer, ammonium nitrate has the highest SI value, and calcium nitrate has a low value. However, based on the amount of N, calcium nitrate is one of the highest and urea and ammonium nitrate are relatively low. This is important to know because fertilizer rates are given in units of N. A typical rate for new trees is 0.5 to 1 oz N per tree. This would require 4 to 8 oz calcium nitrate, but just 1 to 2 oz urea.

Table 1. Salt index* values for some common N fertilizers

Fertilizer	% N	Salt index per unit fertilizer	Salt index per unit N
Ammonium nitrate	33	105	300
Ammonium sulfate	21	69	328
Calcium nitrate	12	53	442
Di-ammonium phosphate	18	29	161
Mono-ammonium phosphate	11	27	245
Natural organic	13	3.5	70
Urea	46	75	162

* Salt index is the increase in osmotic pressure resulting from addition of fertilizer to a solution, relative to effect of the same amount of NaNO₃ (SI = 100)

Young or small trees with limited root systems are at greatest risk. A common mistake is fertilizing newly planted trees before the soil has settled around the roots. If dry fertilizer is placed beneath trees before rain has settled the soil, the next heavy rain can move the fertilizer directly into the root zone and damage trees. It is best to wait until new trees have leafed out and soils have settled before fertilizing new trees. Older, larger trees have more widespread roots and are more tolerant of salts.

Spread fertilizer over the rooting area to disperse the salts. Trees can be injured if fertilizer is piled in a small area close to the trunk because subsequent rains may move high amounts of salt directly into a small region of the soil. If you are fertilizing new trees, spread the material loosely in a 2- to 3-foot wide circle around each tree or place it in a 3- to 4-foot wide band down the row.

Consider split applications. Applying half the amount in two applications several weeks apart is particularly beneficial on sandier, leachable soils. This approach tends to maintain needed amounts of N in the root zone for a longer time and usually increases the amount used by the trees. Split applications also disperse salts over time and reduce the risk of salt injury.

Dr. Hanson's work is funded in part by [MSU's AgBioResearch](#).

This article was published by [Michigan State University Extension](#). For more information, visit <http://www.msue.msu.edu>. To contact an expert in your area, visit <http://expert.msue.msu.edu>, or call 888-MSUE4MI (888-678-3464).

FOLLOW THE NW STATION ON TWITTER (@NWMHRS)

N.L. Rothwell, District Horticulturist, NWMHRC

This new technology can benefit growers as they can receive the most up-to-date information during the busy growing season.

The Northwest Michigan Horticultural Research Station has set up a Twitter account for the region's growers. Twitter is an online networking service that enables users to send and read text-based messages of up to 140 characters known as 'tweets'. We think that Twitter will be a valuable way of communicating important and up-to-date information about events in the orchards and vineyards; these events can be communicated immediately, and growers can receive the information directly on his or her phone, even while in the field. Tweets can be received by growers with smart phones by downloading the Twitter app or as text messages for more traditional cell phones. If growers do not have a cell phone, they can still receive the information online by going to the Twitter website.

For those interested in 'following' (receiving information) from the NW Station via Twitter, they need to sign up for Twitter online (<https://twitter.com/>). The steps to sign up are fairly simple to follow: just create a username and click on create account. The next page in the set up process will show you what a 'tweet' is--a short message that contains up to 140 characters. Following people or organizations is the next step, and the Northwest Station's user name is **NWMHRS**. Once this initial information has been entered, followers will have to log into the account, which is the main page where growers can compose a tweet or read tweets, change account settings and information, and choose to follow or un-follow people or organizations. For growers with cell phones, he or she can download the Twitter app to work with a smart phone or activate Twitter text messaging by entering a cell phone number. Once this information has been entered, growers can receive 'tweets' of important and relevant information as we go through the growing season.

The NW Station will continue to produce traditional email information, through FruitNet, multiple times per week, and MSU E News will also provide timely information during the growing season. We thought this new technology might be another way to communicate with growers, especially when they are on the go during a busy field season. We hope that growers will find this new technology beneficial.

NEW 2013 LEELANAU COUNTY PLAT BOOKS NOW AVAILABLE

The Leelanau County 4-H Youth Association announces the arrival of the 2013 Leelanau County Plat Book. The county plat book is a handy publication used by recreation enthusiasts, sportsmen, business people, those interested in real estate and the general public. The 2013 edition, produced locally by the Land Information Access Association (LIAA), includes county road maps, landowner information, village street maps, public parks and lake accesses, and inland lake bottom topography. Revenue from the plat book helps hundreds of local youth attend citizenship and leadership events, participate in 4-H summer camps and train volunteers to work effectively with children.

The 2013 Leelanau County Plat Book sells for \$35 is available at the MSU Extension/4-H office in the Leelanau County Government Center at 8527 E Government Center Drive or by mail order online at www.msue.msu.edu/leelanau. There is also a USB memory stick with a pdf version of the plat book available for \$45. For more information, contact the MSU Extension office at 231-256-9888.

WEBSITES OF INTEREST

Insect and disease predictive information is available at:

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

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/>

Fruit CAT Alert Reports have moved to MSU News

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