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Northern Michigan FruitNet 2012 Weekly Update NW Michigan Horticultural Research Center

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May 1, 2012

GROWING DEGREE DAY ACCUMULATIONS through April 30st at the NWMHRC

Year	2012	2011	2010	2009	2008	2007	22 yr. Avg.
GDD42	422	123	373	185	227	252	215.8
GDD50	210	40	160	71	107	139	90.6

Growth Stages at NWMHRS (April 30, 4:45 p.m.)

Apple: Red Delicious – King bloom

Gala – King bloom

Yellow Delicious – King bloom

Pear: Bartlett: Late petal fall

Sweet Cherry: Hedelfingen: In shuck

Napoleon: In shuck

Gold: Late petal fall

Tart Cherry : Petal fall

Balaton: Late petal fall

Apricot: Shuck split

Grapes: Early bud swell

Weather Report

Weather during the past week remained cold, and we saw daytime temperatures hover in the high 40s and low 50s. Sunday, April 29 was the warmest day of the past week where the daytime temperature hit 64°F. The forecast called for nighttime temperatures into the 20s for Thursday, Friday, and Saturday. Thankfully, we had some cloud cover and warmer temperatures than predicted on Thursday and Friday, but unfortunately, Saturday night cleared off and temperatures dipped into the low 20s across the region. The region also received a little rainfall on Sunday night into Monday, but accumulations were below a ¼" of rain. So far this season, we have accumulated 422 GDD base 42 and 210 base 50.

Crop Report

Like many other regions of the state, the weather has taken its toll on the fruit crops in the north. Sweet cherries made it through many of the frosts, but were still damaged by the many events we have had this spring; pollination was also an issue in sweet cherries. At the Research Station, we have a hard time finding a cherry coming out of the shuck. Tart cherries were hit in March with a wind freeze, and the crop has continued to decline with each freeze event. The apple crop sustained some damage from earlier freezes, but still looked moderately good going into the weekend and the potential was there to set a decent crop. However, the low weekend temperatures hurt the apples as they were beginning to bloom across the region. We do not know the extent of the damage at this time, but those temperatures were a major blow to the apple crop.

Pest Report

Cherry

Regardless of the crop load, growers should plan to manage for **cherry leaf spot** and **powdery mildew** as green tissue emerges and becomes vulnerable to infection. CLS overwinters in fallen leaves on the orchard floor and produces ascospores (sexual spore) in the spring with dispersal occurring after a wetting event when temperatures are between 60-85°F. Despite the recent cool temperatures, the risk to emerging leaf tissue is a concern, particularly as things heat up and rainfall is forecasted to continue this week. When selecting a fungicide for CLS protection, keep in mind that CLS is resistant to the sterol inhibitor fungicides (Indar, Elite, Orbit) in all the major fruit producing areas of Michigan. Petal fall and shucksplit applications of chlorothalonil are recommended at this point in the season. Additionally, the Cherry Industry, Michigan State University, EPA, MDARD, and Syngenta have worked together to obtain a 24 (c) special local need registration (SLN) for use of Bravo Weather Stick (chlorothalonil) beyond shuck split. Traditional timing of chlorothalonil for cherry leaf spot has been prohibited past the shuck split timing prior to this newly registered use. With the 24 (c), growers must follow a series of restrictions in order to use this product legally throughout the growing season to ensure that post-

shuck split applications do not result in illegal residues.

The SLN No. MI-120001 allows for the post-shuck split application of Bravo Weather Stik to mechanically harvested tart cherries with the following restrictions:

The minimum preharvest interval is 21 days.

Cherries must be mechanically harvested.

Cherries must spend at least two hours on the cooling pad.

The initial flow rate on the cooling pad must be 8 to 10 gallons of water per minute (gpm). After this initial period, the flow rate may be reduced to 4 to 6 gpm.

Rinse water generated during the cooling process must not drain or channel toward aquatic areas.

Cherries cannot be used fresh. They must be processed by a commercial processor.

Growers should be aware that cherries harvested 21 days after the last application of Bravo will have illegal residues, and to ensure the residues on the fruit are reduced to a legal level (less than 0.5 ppm), growers MUST carefully follow all label directions. The cooling pad procedures on the SLN label are key to reducing residues to a legal level. Illegal residues not only violate federal law, but they have serious consequences for growers, processors, and the Michigan tart cherry industry.

Although a more permanent solution is underway for the 2012 season, growers should obtain the Training Affidavit by going to MDARD's Cherry SLN webpage and complete Steps 2 and 3. MSU Extension will be available to help growers work through this educational step to be able to use chlorothalonil beyond shuck split by using the MDARD website. Growers with questions or those in need of assistance can call the Northwest Michigan Horticultural Research Center at 231-946-1510. Remember to alternate the use of fungicide classes during the season to manage against resistance development.

American plum borers (APB) flight came to an abrupt halt this week, likely due to the cool weather and winds last week. Based on historical pest data, peak adult emergence (which is also the recommended timing for trunk applications of Lorsban) has yet to occur. Growers should be looking for **oblique-banded leafroller** (OBLR) larvae as leaves expand. Overwintering OBLR larvae feed inside bud clusters prior to bloom, and begin feeding on fruit after petal fall. Targeting overwintering larvae is critical because they are small and easier to kill. At early petal fall, growers can scout their orchards by examining 20 clusters per tree in five trees per orchard for larvae or feeding sites. An insecticide should be applied if they observe more than two larvae or feeding sites per tree. The materials that target the larval stage of OBLR include Delegate, Belt, Altacor, Voliam flexi, Entrust and Bts. Growers in northwest Michigan should not expect organophosphates or pyrethroids to provide effective control because of insecticide resistance. The insect growth regulator Intrepid may also have some level of cross resistance.

Plum curculio activity should start picking up soon with adults migrating into orchards from overwintering sites. Plum curculio migrate from their overwintering sites to orchards in the spring when maximum temperatures are at least 75°F for 2-3 days or when mean daily temperatures are 55°-60°F for 3-6 days. Plum curculio is often found in the orchard before fruit is present. Spring migration lasts about six weeks. The MSU Tart Cherry Postponed Insecticide Treatment Strategy (P.I.T.S.) model for plum curculio is estimating the accumulation of just 10 degree day since tart cherry biofix (full bloom 4/20 at the NWMHRC), and control is not recommended until 375 GDD from the biofix date leaving plenty of time before treatment. The MSU P.I.T.S. model should only be used in carefully scouted orchards. Most other materials recommend earlier treatment timings that begin around petal fall.

Apple

Despite the rainfall in the last 24 hours, temperatures were cold enough that the **scab** model did not predict an infection period but trees should remain covered with a protectant scab spray strategy and high risk of economic loss should infection occur. Based on a 3/20 biofix (McIntosh green tip), it is estimated that only 26% of the primary scab spores have been discharged, but 73% are mature. EBDCs tank mixed with captan are the recommended protectant scab materials at this time in the season. EBDCs and Captan are both excellent scab protectants, and provide five to six days of protectant activity when used at full rates. Growers should remember that spray intervals should be tighter when relying on these materials. Growers should also keep in mind that strobilurin resistance has been confirmed in all major apple growing regions of the state and the mutation confers complete resistance—strobilurins will not work against apple scab and increasing the rate of a strobilurin is not an effective option. Regardless of crop load, growers should carefully consider their scab management program as inoculum can build quickly over a season and make control difficult in subsequent seasons.

As most orchards are in some stage of bloom, **fire blight** is a concern and keeping an eye on the weather and the fire blight model remains important. When the epiphytic infection potential reaches 100 (or is forecast to do so) and the average temperature is greater than or equal to 60 °F, the Enviroweather model will show the corresponding boxes on the chart turning red, which indicates that if rain or trauma (high winds or hail) occur there is a high potential for infection. Based on the weather forecast, the EIP is predicted to climb well over 100 this week and may occur in concert with a rain event. At this time, streptomycin remains the bactericide of choice for controlling fire blight in the northwest. However, if you are located in Grand Traverse County and have streptomycin resistance, Kasumin may be applied during bloom. EPA has granted a Section 18 Specific Exemption for the use of Kasumin 2L (kasugamycin) for the control of the blossom blight phase of fire blight in 2012. This use is for orchards where streptomycin-resistant fire blight bacteria are present. The Section 18 is applicable to Berrien, Cass, Grand Traverse, Ionia, Kent, Montcalm, Newaygo, Oceana, Ottawa, and Van Buren counties.

This Section 18 exemption only applies to counties where we have detected streptomycin-resistant isolates of the fire blight pathogen *Erwinia amylovora*. Read Dr. Sundin's article, "[Kasumin has been granted a Section 18 Specific Exemption for fire blight control for 2012](#)" for more information.

The most important next fire blight control measure is to use Apogee (prohexadione calcium) for shoot blight management. Apogee is a growth inhibitor that provides excellent control of shoot blight. The first timing for an Apogee spray is at king bloom petal fall. Apogee is shoot specific, i.e. the effect is only observed if the shoot is covered; thus excellent coverage is essential. The "Apogee effect" on fire blight begins approximately 10 to 14 days after application.

Growers should be on the lookout for **obliquebanded leafroller** larvae feeding on blossom parts and can begin to gauge the potential for mites by scouting for eggs. **Mites** overwinter as eggs on rough bark and are most commonly found near buds, fruit spurs, and in the fork of two branches, they can be seen with the naked eye but are very small so a hand lens is recommended. The red eggs of **European red mite** are highly visible at this time. **Spotted tentiform leafminer** continue to

emerge in moderate numbers (4-54 per trap).

Grapes

Chardonnay and Riesling are showing signs of bud burst now, but rather unevenly across blocks- even on individual vines there is quite a lot of variability. The predicted temperatures in the 70's will really push things along over the next week.

Bud survival during the past week of freezing evenings appears to have been very good. A sample of Riesling and Chardonnay canes that was collected on April 30 revealed about 18% dead buds when dissected under a scope, and several of the dead buds were from old mechanical injury (wire rub, etc.) or at the tips of canes which simply did not lignify and acclimate to cold before the end of the 2011 growing season. Basically, very little damage thus far.

I have not seen any significant feeding injury from **grape flea beetle** or **climbing cutworms** to this point, but the warmer days ahead should step up their activity. The next week will be the big opportunity for them to feed on buds, so be on the lookout for them in sites where they have been an issue in the past. If growers have new vineyards with little track record to go on, scout areas nearest to woodlots, where flea beetles can often be found on wild grapes. Cutworms are not so predictable, but there are some references that state they are more numerous in sites with weedy growth under vines.

The window for dormant sprays for powdery mildew control will be ending soon.

Saskatoons

The small test planting at the Research Station has been stuck in the bloom stage for weeks due to cold temperatures. They are at about 50% petal fall now. We have little experience with the pests of saskatoons, but this is the time which we think the **sawfly** pest of the fruit is active and beginning to lay eggs. If you think you are seeing this insect, I would greatly appreciate hearing about it, and seeing it in person to collect specimens

FERTILIZING FROST-DAMAGED FRUIT CROPS

Should you adjust your fertilizer program to account for few fruit? Many Michigan fruit crop levels will be low this year due to frost injury and poor pollination. Consider this information if you haven't fertilized or applied only a portion of fertilizer.

Posted on **April 30, 2012 MSU-E News** by **Eric Hanson**, Michigan State University Extension, Department of Horticulture

A good estimate of the nutrient demand associated with fruiting is the nutrient content of fruit at maturity, calculated from reported nutrient concentrations and typical fruit yields. This is the same as nutrient removal. Nitrogen (N) and potassium (K) are present in relatively high levels in most fruits, so these are two nutrients most affected by cropping levels. Typical nutrient removal levels for Michigan fruit crops are summarized in the table below. The N content of the fruit ranges from 8 lbs. per acre (blueberries, cherries) to as high as 50 lbs. per acre (15 ton per acre peach crop). The K contents range from 8 to 80 lbs. per acre. A good rule of thumb for grapes is that 5 lbs. K are contained in each ton of fruit.

Nitrogen and potassium removed from fruit plantings in harvested fruit (lb per acre).1

Crop	N	K
Apples	18-20	30-80
Blueberries	8-12	8-12
Cherries	8	16
Grapes	28	30-40
Peaches	50	80

1 Estimated from reported nutrient concentrations and typical Michigan yields.

Using these figures to adjust fertilizer rates is not straight-forward because plants obtain only part of their nutrient needs from current-season fertilizer (the rest from soil and tissue reserves). Generally, though, if the fruit of apples or grapes is lost to frost, N rates can be reduced by 50 percent (on lighter, sandier soils) to 100 percent (heavier, fertile soils) of typical applications. If the entire crop of cherries, peaches or blueberries were lost, N rates can safely be reduced be a third on sandier soils, to as much as a half on heavier soils. Reduce rates proportionately in the case of partial crop failures.

The effect of crop loss on K requirements is difficult to estimate. Fruit are strong sinks for K, so K demand is clearly reduced when no crop is produced. Frost-damaged plantings on heavier soils likely will not benefit from K additions this year. Plantings on sandy soils with a low K reserve or where tissue analysis has indicated a need for K may benefit from K, but will require lower rates, perhaps half of the typical application. Applications of K could be discontinued this year where K levels in the soil are moderate to high, and an annual maintenance application of K is typically applied.

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

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THE "APOGEE EFFECT" – EXAMINATION OF THE MODE OF ACTION OF PROHEXADION CALCIUM IN SHOOT BLOT CONTROL

Studies of the mechanism of action of Apogee reveal that this growth inhibition results in the production of a physical barrier (thickened cell walls) to infection by the fire blight pathogen.

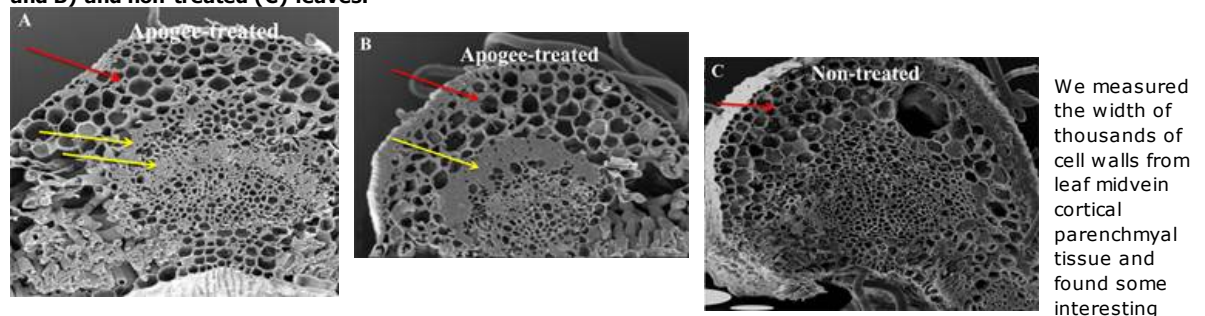
Posted on **April 26, 2012, MSU-E News** by **George W. Sundin**, Michigan State University Extension, Department of Plant Pathology

Apogee (prohexadione-calcium; BASF) is a growth inhibitor that we have known for years to provide excellent control of the shoot blight phase of fire blight. This article provides information on research results from my lab at [Michigan State University](#) aimed at determining the mechanism of action of Apogee in shoot blight control. For those mostly interested in suggestions for Apogee use for apple in 2012, see my accompanying article, "[Use of Apogee for shoot blight control in 2012.](#)"

My lab has worked on determining the mechanism of action of Apogee in shoot blight control for the last several years. First, we eliminated the possibility that Apogee induced the tree to produce compounds inhibitory to the fire blight pathogen. Ultimately, we began assessing the possibility that Apogee induces trees to produce a physical barrier to fire blight infection.

We began examining cell walls in leaves taken from shoot tips of 'Gala' trees either treated with or not treated with Apogee at a high rate (12 oz / 100 gallons). The "Apogee effect" on shoot blight control becomes apparent approximately 10 to 14 days after application. We analyzed leaf cross-sections using conventional microscopy and scanning electron microscopy (SEM). The SEM studies allowed us to obtain a close-up view of what was happening at the shoot tip. What we consistently observed were cortical parenchymal cells from Apogee-treated shoots with thickened cell walls compared to those from non-treated shoots (Figure 1). The red arrows in panels A and B (Apogee-treated) denote areas of cells with thickened cell walls, while the red arrow in panel C points to a comparable area from a non-treated leaf. In addition, most of the Apogee-treated leaves also contained additional areas or "layers" of material surrounding the vascular tissue (yellow arrows).

Figure 1. Cross-sections of 'Gala' leaf midveins enabling a visual examination of cell walls from Apogee-treated (A and B) and non-treated (C) leaves.



results (Table 1). Cell wall widths from the tips of the youngest leaf of the shoot averaged 1.17 μm compared to 2.36 μm from Apogee-treated leaves. For reference, 1.17 μm = 0.000117 cm = 0.000046 inches. Thus, Apogee treatment doubled the cell wall width! Granted, this doesn't sound like much, but from the perspective of the fire blight bacterium, it is huge.

Table 1. Effect of prohexadione-calcium (Apogee) on the width of cell walls of the midvein cortical parenchyma tissue of apple cv. 'Gala'. Cell wall widths greater than 2 μm are highlighted in bold.

		Midvein cell wall widths (μm) with standard error			
		Location of veinal section from leaf tip			
		0.5 cm		2 cm	
		Sampling date (days after treatment)			
Leafa	Treatment	7 d	13 d	7 d	13 d
1st	Non-trt	0.90 ± 0.10 cb	1.17 ± 0.11 c	1.64 ± 0.11 c	2.04 ± 0.16 c
	Apogee	1.67 ± 0.07 a	2.36 ± 0.07 a	2.26 ± 0.30 b	2.97 ± 0.18 a
2nd	Non-trt	0.97 ± 0.02 c	1.82 ± 0.12 c	1.65 ± 0.13 c	1.92 ± 0.03 c
	Apogee	1.85 ± 0.05 a	2.56 ± 0.08 b	1.91 ± 0.06 b	2.90 ± 0.06 a
7th	Non-trt	1.89 ± 0.03 a	2.04 ± 0.01 c	2.51 ± 0.05 a	2.22 ± 0.02 b
	Apogee	1.92 ± 0.08 a	2.49 ± 0.19 a	2.59 ± 0.06 a	2.82 ± 0.05 a

a The 1st, 2nd, and 7th youngest unfolded leaves were sampled from shoots.

b Differences among treatments/leaf/sampling date/location from leaf tip were determined using the Kruskal-Wallis test followed by the post-hoc Games-Howell multiple comparison test when $P \leq 0.05$. Different letters (for each treatment/leaf/sampling date/location) indicates significant differences ($P \leq 0.05$).

Bacterial pathogens such as the fire blight pathogen produce a needle-like apparatus that they use to cause disease. From other lab research that we've done, we know that the fire blight pathogen must infect living cells prior to gaining access to the plant xylem and moving systemically through the tree. The needle-like apparatus necessary for disease was examined by [Dr. Sheng Yang He's](#) group at MSU and found to be approximately 2 μm long. An examination of the data shown in Table 1 indicates that Apogee-treated cell walls all exceed 2 μm in width on average. This suggests that the bacterial needle is not long enough to cross the plant cell wall and allow infection to proceed. We believe that this cell wall physical barrier provides the mechanistic basis for shoot blight control.

Note a few other points from the data presented in Table 1. Cell walls are, on average, thicker in older leaves, even in the second leaf at the shoot tip. Cell walls are also thicker 2 cm (0.8 inch) from the tip of a leaf compared to 0.5 cm (0.2 inch). Even the cell walls of non-treated leaves have widths greater than 2 μm in the seventh leaf from the shoot tip. This correlates well with our physical barrier hypothesis as these older leaves on shoots are seldom infected by the fire blight

pathogen. Finally, the width of cell walls is not quite thick enough at seven days following Apogee treatment. This also correlates with our knowledge that it takes approximately 10-14 days after application for the "Apogee effect" to become apparent.

In particular with highly-susceptible cultivars, Apogee remains our best option for fire blight shoot blight management and has many times helped avoid epidemic outbreaks. Furthermore, it should be remembered that Apogee treatment controls both streptomycin-resistant and streptomycin-sensitive strains of the fire blight pathogen.

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

USE OF APOGEE FOR SHOOT BLIGHT CONTROL FOR 2012

***Although the risk of blossom blight has been low in 2012 due to cool conditions, temperatures will eventually warm and the risk of shoot blight will rise. Apogee is the best material currently available for shoot blight control.**

Posted on **April 26, 2012, MSU-E News** by **George W. Sundin**, Michigan State University Extension, Department of Plant Pathology

As the insane year of 2012 continues, one positive aspect in terms of disease has been the relatively cool, recent conditions during apple bloom. Temperatures in the 50s are not conducive to fire blight. The bacterium needs warmer temperatures to grow and build up large populations on apple stigmas prior to infection of flowers. Thus, MaryBlyt EIP values (available on [Enviro-weather](#)) have been low to zero for the last few weeks. However, even trees and orchards not showing blossom blight symptoms can still suffer significant shoot blight infection. We saw this situation as recently as 2010. There is still fire blight inoculum around, temperatures will eventually rise, and actively-growing shoots will be present and at risk of infection. On highly-susceptible cultivars (Gala, Jonathan, etc.), shoot infection rapidly results in bacterial ooze production and further pathogen spread even before the symptoms are readily present (Photo 1). Furthermore, on younger trees (about less than 8 years old) on fire blight-susceptible rootstocks, the pathogen can quickly move systemically downward through the tree and cause rootstock blight, killing the tree.



Photo 1. Early shoot blight symptoms on a 'Jonathan' apple shoot. Red arrows point to ooze containing pathogen cells that is already present even though shoot blight symptoms are not fully developed.

Apogee is a growth inhibitor that provides excellent control of shoot blight. The first timing for an Apogee spray is at king bloom petal fall. This timing coincides with the beginning period of rapid shoot growth of the tree. The "Apogee effect" takes about 10-14 days to become established. See my accompanying article, "[The 'Apogee effect' – examination of the mode of action prohexadione calcium in shoot blight control](#)," discussing our research on determining the mechanism of action of Apogee.

Most growers prefer to space Apogee applications out using two, three, or four applications (once every two weeks) to take advantage of disease control as well as horticultural benefits of Apogee use. This strategy is effective for shoot

growth control and fire blight management under low and moderate disease pressure. See the "[2012 Michigan Fruit Management Guide](#)" (pgs. 94 and 229) for more specific information on Apogee use rates.

Currently, 2012 is shaping up as a year of low to moderate disease pressure for fire blight. However, without Apogee use, early shoot infections can lead to significant fire blight infection and risk for epidemics if fire blight-conducive weather becomes prominent or if trauma situations occur in specific blocks.

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.

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

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Kasumin has been granted a Section 18 Specific Exemption for fire blight control for 2012

This Section 18 exemption applies only to counties where streptomycin-resistant isolates of the fire blight pathogen have been detected.

Posted on **March 30, 2012, MSU-E News** by **George W. Sundin**, Michigan State University Extension, Department of Plant Pathology

[EPA](#) has granted a **Section 18 Specific Exemption** for the use of Kasumin 2L (kasugamycin) for the control of the blossom blight phase of fire blight in 2012. This use is for orchards where streptomycin-resistant fire blight bacteria are present. The Section 18 is applicable to Berrien, Cass, Grand Traverse, Ionia, Kent, Montcalm, Newaygo, Oceana, Ottawa, and Van Buren counties.

This Section 18 exemption **only applies** to counties where we have detected streptomycin-resistant isolates of the fire blight pathogen *Erwinia amylovora*. We currently have not yet detected any streptomycin resistance in Antrim or Leelanau counties or in eastern Michigan.

Kasumin 2L should be available in each region this year in time for bloom sprays. Make sure you have the Section 18 label in hand when you are applying Kasumin 2L. Do not apply Kasumin through any irrigation system.

The conditions and restrictions of the Section 18 Specific Exemption are as follows:

1. Apply Kasumin only when the pathogen is resistant to streptomycin. We have documented streptomycin resistance in all of the counties listed in the first paragraph above.
2. Kasumin 2L may only be applied when the following condition is met: only when the disease forecasting model or fire blight state expert determine that the weather conditions favor a disease epidemic.

This condition is similar to last year. We have typically utilized the MaryBlyt fire blight prediction model, and have called for Kasumin applications when the Epiphytic Infection Potential (EIP) number from the MaryBlyt model **reaches or exceeds 100**. This model is available on the [Enviro-weather website](#); use the weather station closest to your orchard location to get local conditions. Make sure to document the MaryBlyt EIP prediction (by printout or screen capture) to include in your spray records. Also, make sure that you document the EIP number when you make the decision to spray – since this number is predicted for the next few days out, the number can change as current conditions and predictions change.

In summary, the use of Kasumin 2L is limited to epidemic conditions; if these conditions are not present this year, other fire blight control materials such as oxytetracycline should be used.

3. A maximum of **two sequential applications** of Kasumin can be made at a rate of 2 quarts (64 fl. oz.)/acre. Applications are restricted to ground equipment and cannot be made through any type of irrigation system.
4. A maximum of **three applications** of Kasumin can be used (64 fl. oz. per acre), if authorized. Treatments can be made no later than petal fall.
5. **Alternate row applications are not allowed.** This is a new requirement of the Section 18 exemption for resistance management.
5. Do not apply Kasumin as the first spray of the season. It should be applied only after the first spray of registered alternatives.
6. Do not use in orchards in which the soil has been fertilized with animal manure. This restriction addresses concerns that kasugamycin resistance could be transferred to *E. coli* bacteria present in animal manure.
7. Upon expiration of the exemption on May 31, 2012, all unopened and unused product must be returned to the dealer where purchased or to the manufacturer or disposed of in accordance with [Resource Conservation and Recovery Act](#) regulations following the expiration of the Section 18 exemption.

Kasumin 2L (kasugamycin), from Arysta, is an alternative antibiotic for fire blight management. Kasumin 2L will work equally on streptomycin-resistant and streptomycin-sensitive strains. The label rate is 2 quarts/acre.

Please note that my lab will also be conducting resistance monitoring in selected orchards this year that use Kasumin. This is to satisfy an EPA directive that we monitor for the occurrence of kasugamycin resistance, and also the potential for resistance to other related antibiotics. We will be taking leaf and soil samples from approximately 10 orchards throughout the state. These monitoring experiments will be conducted after petal fall.

As always, I want to thank Brian Verhougstraete, Pesticide Registration Manager of the [Michigan Department of Agriculture and Rural Development](#) for his support of this Section 18 request. Brian submits our request each year and serves as our liaison to EPA.

This article was published by [MSU 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).

MAY 4 NW MICHIGAN VINEYARD SPRAYER WORKSHOP CANCELLED!!

Regrettably we have made the tough decision to cancel the Traverse City vineyard sprayer workshop scheduled for this coming *Friday, May 4th*, due to very low pre-registration numbers.

In this era of tight budgets and increased travel costs, we have to be more conscious of the “bottom line” for our programs. We apologize for any inconvenience this may cause to those who wanted to participate.

The remainder of the programs scheduled for this growing season are still a “go” at this time, but please, if you are interested in these programs, pre-register at least a week in advance so we can make sure these events can take place.

The remaining NW Michigan meetings are:

June 1 3:00-5:00 PM

Chateau Chantal, 15900 Rue de Vin, Traverse City, MI
Disease, insect and vineyard floor management. 2 RUP credits. \$10 registration fee.

July 13 1:00-5:00 PM

Shady Lane Cellars, 9580 Shady Lane, Suttons Bay, MI
Vineyard Sprayer Rodeo. 4 RUP credits. \$25 registration fee.

August 3 3:00-5:00 PM

Location to be announced. 2 RUP credits. \$10 registration.

We'll be selecting a site and inviting speakers for this meeting to address current topics of interest, based on the specific conditions of the 2012 growing season.

August 23

Northwest Michigan Horticultural Research Station Annual Open House.

APPLYING FOR DISASTER ASSISTANCE

Growers with severe crop damage should promptly call their USDA Farm Service Agency office and crop insurance agent to ensure paperwork is timely.

Posted on **April 30, 2012, MSU-E News** by **Amy Irish-Brown**, Michigan State University Extension

When severe crop losses occur, growers are reminded that they need to make a couple of phone calls to insurance providers as soon as possible. These include the local county [USDA Farm Service Agency](#) (FSA) and the crop insurance agent to get the proper paperwork started.

If you have insured crops, you should contact your insurance agent as soon as possible - typically within 48 hours after a freeze event. This is very important so that your loss is acknowledged by the insurance provider.

For uninsured crops, the USDA FSA offices in Michigan want you to call them to file the appropriate paperwork for any potential disaster funds that might come this way. Growers who have NAP policies with FSA on uninsurable crops need to file a Notice of Loss (form CCC-576) within 15 days of knowing they have a loss. Call the FSA office in the county where crops are grown - which might mean more than one phone call if your acreage crosses county lines.

This article was published by [MSU 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).

ISLAND TO HOLD THREE SOIL BUILDING WORKSHOPS IN EARLY

The Institute for Sustainable Living, Art and Natural Design will host Joe Scrimger to teach two soil building workshops in early May. Joe Scrimger, owner and operator of Bio-Systems, a soil testing and consulting business in Marlette, Mich., will lead an Introduction to Soil Building on May 4, from 6 to 8 p.m. at the Northwest Michigan Horticultural Research Center located at 6686 South Center Highway, Traverse City. Soil biology, testing and amendments will be discussed, as well as mulching, weeds, pests and diseases. The focus will be on farms that are 10 acres or less, but the concepts can be utilized on larger farms and in home gardens. The cost of this workshop is a \$10 to \$20 sliding scale. Scrimger has served the Great Lakes Area since 1980. An organic farmer since 1975, he has been recognized for his work by the Michigan Organic Food and Farm Alliance with a 2002 Lifetime Achievement Award and a 2006 Public Service Award.

Scrimger will also lead a half-day Soil Building Intensive on May 5, from 8:30 a.m. to 12:30 p.m. at the Leelanau Conservancy's DeYoung Farm, located at 9510 E. Cherry Bend Road, Traverse City. Workshop participants will learn how to develop a plan for returning overused soils to a biologically active, productive state. Using the sandy soils of the Leelanau Conservancy DeYoung farm as an example, Scrimger will cover each step of the process in depth: soil testing and interpreting results, connecting those results to field observations, and crafting an action plan to amend and improve the soil. The cost of this half-day intensive is \$50 (\$40 for CRAFT members).

These events are made possible by a partnership between ISLAND, the Natural Resources Conservation Service, and the Northern Michigan Small Farm Conference. For more information or to register, call ISLAND's new phone number: 231-622-5252 or visit ARTmeetsEARTH.org.

WEBSITES OF INTEREST

Insect and disease predictive information is available at:

<http://www.enviroweather.msu.edu/home.asp>

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

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

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

<http://agbioresearch.msu.edu/nwmihort/faxnet.htm>

[ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1, 2012](#)

Please send any comments or suggestions regarding this site to:

Bill Klein, kleinw@msu.edu

Last Revised: 5-1-12



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Northern Michigan FruitNet 2012 *Weekly Update* NW Michigan Horticultural Research Center

[Nikki Rothwell](#)

District Horticulturist

[Erin Lizotte](#)

District Fruit IPM/IFP Agent

[Bill Klein](#)

Farm Mgr, NWMHRS

[Duke Elsner](#)

Agricultural & Regional Viticulture Agent

May 15, 2012

GROWING DEGREE DAY ACCUMULATIONS through May 14th at the NWMHRC

Year	2012	2011	2010	2009	2008	2007	22 yr. Avg.
GDD42	610	263	511	346	359	460	372.4
GDD50	303	99	225	147	162	236	169.8

Growth Stages at NWMHRS (May 14, 1:30 p.m.)

Apple: Red Delicious – 6 mm fruit

Gala – 6 mm fruit

Yellow Delicious – Petal fall

Pear: Bartlett: 8 mm fruit

Sweet Cherry: Hedelfingen: 11 mm fruit

Napoleon: 10 mm fruit

Gold: 9.5 mm fruit

Tart Cherry : 8 mm fruit

Balaton: 8 mm fruit

Apricot: 26 mm fruit (new tree)

Grapes: Bud burst

Weather

Last week's cold and wet temperatures have been followed by sunny and seasonable conditions. Daytime temperatures have been reaching into the 70s and overnight temperatures still remain cool but predicted to be warmer in the coming week. We had frost on the evening of 13 May, and strawberry growers were frost protecting for the duration of the evening. Forecasted temperatures will continue to be seasonable for the remainder of the week with a slight chance of thunderstorms on 15 May. Despite the rain last week, conditions are dry throughout the region. So far this season, we have accumulated 610 GDD base 42 and 303 GDD base 50.

Crop Report

As the crop develops, we have a better understanding of its size. Sweet cherries are out of the shuck, and there is evident fruit on the tree. However, bacterial canker has reared its ugly head with the wet and cool spring. Orchards that did not have frost damage did not escape the impacts of canker. We suspect that this disease will cause major problems in sweet cherry blocks across the region, and we will likely lose a lot of bearing surface to bacterial canker. According to many growers, this disease is the worst it has ever been here in northwest Michigan. The tart cherry crop remains extremely small, and there is some fruit out in the orchards that is just coming out of the shuck. In many blocks, you have to look very hard to find a cherry. Later blooming varieties of apples are still in bloom while other varieties are just starting to size. There is still an apple crop in northwest Michigan, depending on variety and on site, but we are still waiting to estimate the crop size.

Pest Report

Cherry

The dry weather over the last week kept the risk for **cherry leaf spot** infection low. Regardless of the crop load, growers should plan to continue to manage for cherry leaf spot and **powdery mildew**. As we move into first cover timing, growers should consider a fungicide with a strobilurin (Pristine, Gem, or Adament) because they are effective against both cherry leaf spot and powdery mildew. The sterol inhibitor fungicides (Indar, Elite, Orbit) are also effective powdery mildew materials but will not be effective against leaf spot due to widespread resistance in all the major fruit producing areas of Michigan.

Additionally, the Cherry Industry, Michigan State University, EPA, MDARD, and Syngenta have worked together to obtain a 24 (c) special local need registration (SLN) for use of Bravo Weather Stick (chlorothalonil) beyond shuck split. Traditional timing of chlorothalonil for cherry leaf spot has been prohibited past the shuck split timing prior to this newly registered

use. With the 24 (c), growers must follow a series of restrictions in order to use this product legally throughout the growing season to ensure that post-shuck split applications do not result in illegal residues. Growers should be aware that cherries harvested 21 days after the last application of Bravo will have illegal residues, and to ensure the residues on the fruit are reduced to a legal level (less than 0.5 ppm), growers **MUST** carefully follow all label directions. The cooling pad procedures on the SLN label are key to reducing residues to a legal level. Illegal residues not only violate federal law, but they have serious consequences for growers, processors, and the Michigan tart cherry industry. Although a more permanent solution is underway for the 2012 season, growers should obtain the Training Affidavit by going to MDARD's Cherry SLN webpage and complete Steps 2 and 3. MSU Extension will be available to help growers work through this educational step to be able to use chlorothalonil beyond shuck split by using the MDARD website. Growers with questions or those in need of assistance can call the Northwest Michigan Horticultural Research Center at 231-946-1510. However, if orchards have no crop and will **not** be harvested in 2012, chlorothalonil can be used as the label states for non-bearing orchards. This distinction needs to be clear—to harvest or not to harvest—to comply with the 24 (c) label for 2012. Additionally, this special label is for Bravo Weather Stick only and will **not** apply to other products containing chlorothalonil.

The symptoms of **bacterial canker** are prevalent on sweet cherry around the north, with some varieties showing symptoms on almost every spur. Area growers also have reported canker infection in tarts. Bacteria can survive in the bark, cankers, and systemically within trees that have been previously infected. This spring conditions were favorable for bacterial canker (prolonged periods of cold, frosty wet weather) and allowed the bacteria to multiply within the overwintering sites and be disseminated by rain. Freeze and frost damage caused by the weather allowed for an easy entry point and infection. Unfortunately there is no effective treatment for bacterial canker at this time. Dormant copper applications are the traditional treatment for bacterial canker, but even this treatment has had marginal impact on bacterial canker wood infections.

American plum borers (APB) adult flight picked up this week with trap counts indicating that we have likely reached peak adult emergence at the Center. Peak adult emergence is the critical control period for American plum borer and trunk applications of Lorsban remain the recommended strategy. Additionally, the first **lesser peach tree borers** have begun to emerge with an average of 4 per trap this week. Growers should be looking for **oblique-banded leafroller** (OBLR) larvae as leaves expand; we have observed very few larvae in terminals at the Center and at OBLR trials throughout the state. Overwintering OBLR larvae feed inside bud clusters prior to bloom and move to terminals to continue feeding on foliage. Targeting these overwintering larvae is critical because they are small and easier to kill. Growers can scout their orchards by examining 20 clusters per tree in five trees per orchard for larvae or feeding sites. An insecticide should be applied if they observe more than two larvae or feeding sites per tree. The materials that target the larval stage of OBLR include Delegate, Belt, Altacor, Voliam flexi, Entrust and Bts. Growers in northwest Michigan should not expect organophosphates or pyrethroids to provide effective control of OBLR because of insecticide resistance. **Black cherry aphids** are visible in on isolated sweet cherry trees.

Plum curculio activity has started at the Center with adults migrating into orchards from overwintering sites and fresh, crescent-shaped egg laying scars visible on green fruit. Plum curculio (PC) is often found in the orchard before fruit is present with spring migration lasting about six weeks. Many of the non-organophosphate insecticides (pyrethroids, neonitotinoids, and oxadiazines) for PC management require treatment to begin around petal fall to provide adequate control. The MSU Tart Cherry Postponed Insecticide Treatment Strategy (P.I.T.S.) model for the control of plum curculio is estimating the accumulation of 100 degree days since tart cherry biofix (full bloom 4/20 at the NWMHRC), control is not recommended until 375 GDD from the biofix date leaving plenty of time before treatment. The MSU P.I.T.S. model should only be used in carefully scouted orchards. If growers have a short crop that they plan to harvest this year, increased competition for those fruit as egg-laying sites will warrant earlier plum curculio control to protect the remaining fruit. Refer to the E154 Fruit Management Guide for more information on PC management materials.

Apple

The cool dry weather last week led to a low risk of **scab** infection occurring. Based on a 3/20 biofix (McIntosh green tip), the Enviroweather apple scab model is estimating that 64% of primary scab spores have been discharged, and almost 100% are mature and ready to be discharged in upcoming rain events. EBDCs tank mixed with captan are the recommended protectant scab materials at this time in the season. EBDCs and Captan are both excellent scab protectants, and provide five to six days of protectant activity when used at full rates. Growers should remember that spray intervals should be tighter when relying on these materials. Keep in mind that EBDCs have a 77-day PHI, so they are best used early in the growing season. Growers should also note that strobilurin resistance has been confirmed in all major apple growing regions of the state and the mutation confers complete resistance—fungicides containing strobilurins will not work against apple scab and increasing the rate of a strobilurin is not an effective option. Regardless of crop load, growers should carefully consider their scab management program as inoculum can build quickly over a season and make control difficult in subsequent seasons. If growers are approaching their season long limits for EBDC applications, there are a number of alternatives, refer to the E154 Fruit Management Guide for more options.

As most orchards are in some stage of bloom, **fire blight** remains a concern and keeping an eye on the weather and the fire blight model remains important. Based on the current forecast, the weather will remain cool enough to keep the risk low early in the week, but things can change quickly so keep an eye on that model as it accumulates in hours rather than days like many other insect and disease models. When the epiphytic infection potential reaches 100 (or is forecasted to do so) and the average temperature is greater than or equal to 60 °F, the Enviroweather model will show the corresponding boxes on the chart turning red, which indicates that if rain or trauma (high winds or hail) occur there is a high potential for infection. At this time, streptomycin remains the bactericide of choice for controlling fire blight in the northwest. However, many growers are considering a 1:1 tank mix of oxytetracycline materials (FireLine or Mycoshield) and streptomycin due to streptomycin resistance concerns (at a 1lb rate of each material).

Growers located in Grand Traverse County that believe they have streptomycin resistance can apply Kasumin during bloom for fireblight control. EPA has granted a Section 18 Specific Exemption for the use of Kasumin 2L (kasugamycin) for the control of the blossom blight phase of fire blight in 2012. This use is for orchards where streptomycin-resistant fire blight bacteria are present. The Section 18 is applicable to Berrien, Cass, Grand Traverse, Ionia, Kent, Montcalm, Newaygo, Oceana, Ottawa, and Van Buren counties. This Section 18 exemption only applies to counties where we have detected streptomycin-resistant isolates of the fire blight pathogen *Erwinia amylovora*. Read Dr. Sundin's article, "[Kasumin has been granted a Section 18 Specific Exemption for fire blight control for 2012](#)" for more information. The next most important fire blight control measure is to use Apogee (prohexadione calcium) for shoot blight management. Apogee is a growth inhibitor that provides excellent control of shoot blight. The first timing for an Apogee spray is at king bloom petal fall. Apogee is shoot specific, i.e. the effect is only observed if the shoot is covered; thus excellent coverage is essential. The "Apogee

effect” on fire blight begins approximately 10 to 14 days after application. Growers who used Apogee last season are encouraged to continue with treatments this year as the removal of Apogee from the system combined with light crop loads could lead to excessive vegetative growth.

Three adult **codling moths** were trapped at the station this past week, and if we continue to catch moths in the coming week, then we will set the biofix at the Center and begin accumulating degree days toward the treatment windows. Growers can track the progress using the Enviroweather codling moth model. The codling moth model is designed to help growers accurately apply insecticides at the recommended treatment timings which range from 100-350 DD50 post biofix depending on pest pressure and insecticide mode of action. Ovicidal insecticides are positioned early to coincide with first generation egg laying (100 DD50), followed by larvicides (250 DD50) which are targeted at first generation egg hatch and finally some growers might find late season application timings (350 DD50) adequate in low pressure situations. We typically see two generations with a partial third generation in exceedingly warm years, and at this time, it is unclear how the early warm up this season might affect development, which makes trapping and scouting even more critical this season. The adults we are currently catching are primarily mating during a four-hour period beginning around dusk. Cool temperatures, wind and rain greatly limit codling moth flight during this critical period with male activity dropping quickly if temperatures fall below 60°F so growers should be confident that low catches are accurately assessing codling moth activity. The positive effects of this slowed activity is compounded as female fecundity (ability to reproduce) decreases by approximately 25% for every 24 hours a codling moth female is delayed from mating after she has emerged from her cocoon. There are a number of effective codling moth materials, refer to the E154 Fruit Management Guide for more information.

Growers should be on the lookout for **oblique banded leafroller** larvae feeding on blossom parts. **Spotted tentiform leafminer** adults continue to emerge in growing numbers. **Oriental fruit moths** were caught for the first time this week with an average of 6 moths per trap.

Grapes

A long drive through the Old Mission and Leelanau Peninsulas on May 14 showed that we suffered little or no significant injury from the last frost. Bud and shoot development stage does vary quite a bit at a given site, but the more advanced shoots are now over two inches and clusters are showing.

No potato leafhoppers have been reported yet, but they have arrived in some downstate sites—we should be starting scouting for these. A few grape berry moth adults have been trapped at the station. The first generation of this pest is usually of minor concern; unless you have a significant hot spot for them treatments are usually reserved for later generations.

The risk of powdery mildew development at this time is still relatively minor, especially if dry conditions continue.

Saskatoons

Saskatoons are at petal fall to early fruit set throughout the region. I have seen a good deal of leaf deformity from frost injuries, and it appears that some of these injured leaves have also been infected by diseases. Foliar disease infections might be due to Entomosporium leaf spot, but there is always the possibility of some lesser-known pathogens being able to infect the leaves because of the pre-disposing cold injury. If you are already seeing diseased leaves, it may require a tight spray program for fungal pathogens this year.

USING GIBBERELIC ACID IN A LOW CROP YEAR

Nikki Rothwell, District Educator, MSU-E

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. Because of the high probability of setting a large crop next year, it is important to continue the application of GA on mature tart cherries. This recommendation will be difficult this year as there will be little income, but the recommendation to continue GA use is vital as to not overset the crop in 2013. Dr. Bukovac and Jim Nugent recommend that growers increase the rate of gibberellic acid by 20% to combat the trees' natural tendencies to overset in the year following a crop loss. However, if growers do not feel comfortable with increasing the rate, they should still use the same rate as in the past (see below recommendations).

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 2012 influences flowering in 2013. 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.

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 should occur 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) 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/a 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. Figure 1 shows the successful use of GA to increase lateral shoots and spurs in a Balaton orchard at the NWMHRS. However, we cannot conclude that GA applications improve Balaton yields based on 2008 data although GA does appear to help with yield (Figure 2).

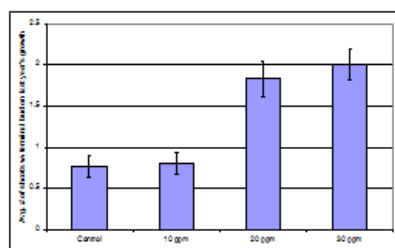


Figure 1. Average number of shoots with terminal buds in a Balaton orchard (2008).

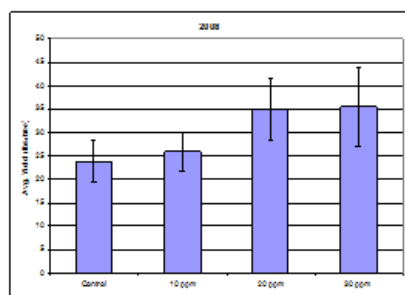


Figure 2. Average Balaton yield with different rates of GA (2008)

PRIMARY, SECONDARY, TERTIARY APPLE BLOOM IN 2012

Will these fruit add up?

Posted on **May 8, 2012, MSU-E News**, by **Philip Schwallier and Amy Irish-Brown**, Michigan State University Extension
This frosty year seems to have promoted a second and even third bloom. Our apple crop is made up of primary bloom (bloom on 2-year-old and older wood) every year, but this year the secondary bloom (bloom on 1- year-old wood) may be important in setting a crop. This secondary bloom opens later than primary bloom and will tend to produce lesser quality fruit with shorter storage life. Even these blooms have been damaged by the numerous frost this year.

Perhaps because of the extensive frost damage, our attention turns to this rare third wave of bloom, or tertiary bloom, which appears to be mostly undamaged. This tertiary bloom develops on a few varieties on shoot tips and on [bourse shoots](#). If this weak tertiary bloom set at all, they tend to produce small fruit and these fruit have potential even lesser quality than fruits from secondary bloom.

Of course, all these blooms are very susceptible to fire blight. Secondary and tertiary bloom can produce fruit, but fruit is weaker and does not set well most years. Also, these fruits are of poor quality and shorter shelf life. We expect all apple

fruits to be marked up with frost marks and internal damage. The take-home message is to not expect excellent fruit quality from secondary and tertiary bloom fruits. This article was published by **MSU 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).

LEGAL UPDATE FOR THE LOCAL FOOD COMMUNITY

You are invited to a free seminar for business persons involved in the local food industry:

This labor-focused seminar is specifically prepared for owners and managers, including farms, processors, distributors, restaurants, grocers, and related businesses.

June 4, 2012 - 5:30-7:00 p.m. - There is no cost to attend. [Click to register.](#)

When:

Monday, June 4, 2012
5:00-5:30 p.m. Registration
5:30-7:00 p.m. Program
A reception with light refreshments will be held at the conclusion of the program.

Where:

Hagerty Center at
Northwestern Michigan
College
715 E. Front Street
Traverse City, MI 49686

[Driving Directions](#)

Questions? Contact:

Keri Amlotte
Smith Haughey Rice & Roegge
events@shrr.com 231-929-4878

The U.S. immigration system has a real and significant impact on our food production.

Join us for a free legal seminar to be guided through the maze of immigration and employment regulations.

KEYNOTE PRESENTATION:

Fundamentals of Immigration Law

Presented by Joanna C. Kloet, Immigration Law Attorney

We live in an era of rapidly evolving immigration policies that have a powerful impact on businesses and their employees. During this presentation, Joanna will focus on the key immigration law issues facing farmers and businesses in northwestern Michigan and steps that employers must take to comply with the myriad immigration law statutes. The following topics will be covered:

- * Obtaining lawful immigration status in the U.S.
- * The concept of "admissibility"
- * I-9 Requirements
- * The E-verify Program
- * Anatomy of a deportation proceeding
- * Much more!

ADDITIONAL PRESENTATION:

Child Labor Laws

Presented by Kristen A. Campbell, Employment Law Attorney

- * Important changes and how they impact your business.

[Click here to register now!](#)

Presented by:

FREE WEBINAR

**Integrated Pest Management for Organic and Sustainable farmers-web tools, scouting and understanding degree days
June 21, Thursday from 2:00-3:30 (EST)**

**Are you a bit nervous about the pests that may attack your crops this year?? Do you have your scouting plan ready??
Do you know how to calculate degree days for the key pests on your crops??**

If these questions have you thinking then perhaps you should join us for a webinar on how to setting up an IPM program for your farm!! All smart farmers scout their fields to be ready for pest occurrences, but especially organic farmers who use multiple tools to manage pests. Having a good idea if and when insects will attack is the first step to smart pest management.

If you cannot attend the live presentation the webinar will be available for later viewing on www.MichiganOrganic.msu.edu website.

To join the meeting on June 21 at 2 pm EST Click on this link: <http://connect.msu.edu/msuorganicipm/>

The North Central SARE program is sponsoring this webinar that will be presented by Beth Bishop, Michigan State University's Enviro Weather Coordinator how to set up a sound Integrated Pest Management program for your farm. You will also have the opportunity to learn how to use online tools to assist you predict pest outbreaks as well as give you a heads up of possible pest outbreaks.

This year will likely be challenging to all farmers in the Midwest, given the mild winter and early heat spell, triggering perennials to bloom too early and allowing overwintering insects and disease to survive in the soil. Beth Bishop, Enviro-Weather coordinator will share how to use this great online tool to predict insect flights as well as steps toward a sound Integrated Pest Management program for your farm.

IPM model plants will be shared for three model crops; corn, apples and tomatoes.

If you have any questions please contact Vicki at sorrone@msu.edu.

If you have never attended an Adobe Connect meeting before:

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Get a quick overview: http://www.adobe.com/go/connectpro_overview

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517-353-3542/517-282-3557 (cell)

WEBSITES OF INTEREST

Insect and disease predictive information is available at:

<http://www.enviroweather.msu.edu/home.asp>

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/>

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

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[ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1, 2012](#)

Please send any comments or suggestions regarding this site to:

Bill Klein, kleinw@msu.edu

Last Revised: 5-15-12

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Northern Michigan FruitNet 2012 Weekly Update NW Michigan Horticultural Research Center

[Nikki Rothwell](#)

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Farm Mgr, NWMHRS

[Duke Elsner](#)

Agricultural & Regional Viticulture Agent

May 22, 2012

GROWING DEGREE DAY ACCUMULATIONS through May 21st at the NWMHRC

Year	2012	2011	2010	2009	2008	2007	22 yr. Avg.
GDD42	755	362	630	449	408	526	463.3
GDD50	400	152	295	207	180	264	219.0

Growth Stages at NWMHRC (May 21, 4:00 p.m.)

Apple: Red Delicious – 10 mm fruit

Gala – 7.5 mm fruit

Yellow Delicious – 7 mm fruit

Pear: Bartlett: 11.5 mm fruit**Sweet Cherry:** Hedelfingen: 13 mm fruit

Napoleon: 13 mm fruit

Gold: 11.5 mm fruit

Tart Cherry : 11.5 mm fruit**Balaton:** 11 mm fruit**Apricot:** 31 mm fruit (new tree)**Grapes:** 4"-8" shoots

Weather Report

The weather across the region has been very summer-like where daytime temperatures reached into the high 80s and even low 90s over the weekend. Growing degree days continue to accumulate, and with the recent warm temperatures, they have accumulated quickly over the last week. At this time, we have accumulated 755GDD base 42 and 400GDD base 50, and these accumulations are much higher than our average: 463GDD base 42 and 219GDD base 219. We have received no rainfall in the last week, and it is extremely dry here in the north. Newly planted trees that have no irrigation are starting to wilt. Our light soils have really dried out in the past week, and we do not see moisture in soil above 8-10" in depth.

Crop Report

Bloom has ended in all tree fruit crops except for some apple orchards in the far north, and fruit is starting to size. Fruit size is noticeably big for sweet and tart cherries, likely due to the small crop load throughout the orchard. Sweet cherries are already approaching 11-13mm, and apples at the NWMHRC are between 7.5-10mm. There is still an apple crop in NW Michigan, although it will be small. Growers are now moving into thinning mode, and those with a crop will need to thin with caution because king bloom in most orchards were damaged by the frost.

Pest Report

Cherry

The dry weather continued over the last week keeping the risk for cherry leaf spot infection low but the symptoms from earlier infections are being reported. Unfortunately, the symptoms we are observing now came with the rains of two weeks ago. Growers need to be scouting their orchards for **leaf spot** at this time. If leaf spot is visible, growers must be diligent about keeping the remainder of the leaves protected as we still have a long season ahead of us (Please see the Rothwell and Sundin article on this topic). Regardless of the crop load, growers should plan to continue to manage for cherry leaf spot and **powdery mildew**. Early cover sprays (ideally at first cover timing) are critical to season long powdery mildew management so growers should consider a fungicide with a strobilurin (Pristine, Gem, or Adament) because they are effective against both cherry leaf spot and powdery mildew. The sterol inhibitor fungicides (Indar, Elite, Orbit) are also effective powdery mildew materials but will not be effective against leaf spot due to widespread resistance in all the major fruit producing areas of Michigan. Light crop loads this year will likely lead to significant shoot growth and increased succulent leaf area that is highly susceptible to powdery mildew.

Additionally, the Cherry Industry, Michigan State University, EPA, MDARD, and Syngenta have worked together to obtain a 24 (c) special local need registration (SLN) for use of Bravo Weather Stick (chlorothalonil) beyond shuck split. Traditional timing of chlorothalonil for cherry leaf spot has been prohibited past the shuck split timing prior to this newly registered

use. With the 24 (c), growers must follow a series of restrictions in order to use this product legally throughout the growing season to ensure that post-shuck split applications do not result in illegal residues. Growers should be aware that cherries harvested 21 days after the last application of Bravo will have illegal residues, and to ensure the residues on the fruit are reduced to a legal level (less than 0.5 ppm), growers **MUST** carefully follow all label directions. The cooling pad procedures on the SLN label are key to reducing residues to a legal level. Illegal residues not only violate federal law, but they have serious consequences for growers, processors, and the Michigan tart cherry industry. Although a more permanent solution is underway for the 2012 season, growers should obtain the Training Affidavit by going to MDARD's Cherry SLN webpage and complete Steps 2 and 3. MSU Extension will be available to help growers work through this educational step to be able to use chlorothalonil beyond shuck split by using the MDARD website. Growers with questions or those in need of assistance can call the NW Michigan Horticultural Research Center at 231-946-1510. However, if orchards have no crop and will **not** be harvested in 2012, chlorothalonil can be used as the label states for non-bearing orchards. This distinction needs to be clear—to harvest or not to harvest—to comply with the 24 (c) label for 2012. Additionally, this special label is for Bravo Weather Stick only and will **not** apply to other products containing chlorothalonil.

The symptoms of **bacterial canker** remain prevalent on sweet cherry around the north; canker has also been reported in tart cherry. Bacteria can survive in the bark, cankers, and systemically within trees that have been previously infected. This spring conditions were favorable for bacterial canker (prolonged periods of cold, frosty wet weather) and allowed the bacteria to multiply within the overwintering sites and be disseminated by rain. Freeze and frost damage caused by the weather allowed for an easy entry point and infection. Unfortunately there is no effective treatment for bacterial canker at this time. Dormant copper applications are the traditional treatment for bacterial canker, but even this treatment has had marginal impact on bacterial canker wood infections.

American plum borers (APB) adult flight continued this week with trap counts indicating that we had likely reached peak adult emergence for first generation at the Center last week. Peak adult emergence is the critical control period for American plum borer and trunk applications of Lorsban remain the recommended strategy. Additionally, there was a large emergence of **lesser peach tree borers** (LPTB) this week with an average of 29 moths per trap, slightly higher than the highest trap catch in 2011. These LPTB trap catches indicate that we are at the beginning of peak emergence in that species. Lorsban trunk applications are also recommended for LPTB, growers who applied Lorsban for APB should keep in mind that trunk applications should be applied at least two weeks apart. The Lorsban labels vary between products so growers should read and follow the label carefully to ensure proper use. Growers should be scouting for **oblique-banded leafroller** (OBLR) larvae as leaves continue to expand; we have observed a few larvae in terminals at the station and at OBLR trials throughout the state. Growers can scout their orchards by examining 20 clusters per tree in five trees per orchard for larvae or feeding sites. An insecticide should be applied if they observe more than two larvae or feeding sites per tree. The materials that target the larval stage of OBLR include Delegate, Belt, Altacor, Voliam flexi, Entrust and Bts. Growers in northwest Michigan should not expect organophosphates or pyrethroids to provide effective control of OBLR because of insecticide resistance. **Black cherry aphids** are visible in on isolated sweet cherry trees.

Plum curculio (PC) activity has increased visibly this week with adults migrating into orchards from overwintering sites and fresh, crescent-shaped egg laying scars visible on green fruit. Many of the non-organophosphate insecticides (pyrethroids, neonitcinoids, and oxadiazines) for PC management require treatment to begin around petal fall to provide adequate control. The MSU Tart Cherry Postponed Insecticide Treatment Strategy (P.I.T.S.) model for the control of plum curculio is estimating the accumulation of 211 degree days since tart cherry biofix (full bloom 4/20 at the NWMHRC), control is not recommended until 375 GDD from the biofix date leaving plenty of time before treatment. The MSU P.I.T.S. model should only be used in carefully scouted orchards. If growers have a short crop that they plan to harvest this year, increased competition for those fruit as egg-laying sites will warrant earlier plum curculio control to protect the remaining fruit. Growers who have no harvestable crop may consider reducing their PC management as the issue of internal larvae in the fruit at harvest is not of concern. Refer to the E154 Fruit Management Guide for more information on PC management materials.

Apple

The cool dry weather last week led to a low risk of **scab** infection occurring but unfortunately it also means we cannot call an end to primary scab. Based on a 3/20 biofix (McIntosh green tip), the Enviroweather apple scab model is estimating that 80+% of primary scab spores have been discharged around the region, and 100% are mature and ready to be discharged in upcoming rain events. EBDCs and Captan are both excellent scab protectants, and provide five to six days of protectant activity when used at full rates. Growers should remember that spray intervals should be tighter when relying on these materials. Keep in mind that EBDCs have a 77-day PHI, so they are best used early in the growing season. Growers should also note that strobilurin resistance has been confirmed in all major apple growing regions of the state and the mutation confers complete resistance—fungicides containing strobilurins will not work against apple scab and increasing the rate of a strobilurin is not an effective option. Regardless of crop load, growers should carefully consider their scab management program as inoculum can build quickly over a season and make control difficult in subsequent seasons. If growers are approaching their season long limits for EBDC applications, there are a number of alternatives, refer to the E154 Fruit Management Guide for more options.

In orchards where bloom remains, **fire blight** is a concern and keeping an eye on the weather and the fire blight model remains important. The warm weather has caused the epiphytic infection potential (EIP) to climb well over 200 in many areas. When the EIP reaches 100 (or is forecasted to do so), the average temperature is greater than or equal to 60 °F, and rain or trauma (high winds or hail) occur there is a high potential for infection. For now the forecast is not predicting rain. At this time, streptomycin remains the bactericide of choice for controlling fire blight in the northwest. However, many growers are considering a 1:1 tank mix of oxytetracycline materials (FireLine or Mycoshield) and streptomycin due to streptomycin resistance concerns (at a 1lb rate of each material).

Growers located in Grand Traverse County, that believe they have streptomycin resistance, can apply Kasumin during bloom for fireblight control. EPA has granted a Section 18 Specific Exemption for the use of Kasumin 2L (kasugamycin) for the control of the blossom blight phase of fire blight in 2012. This use is for orchards where streptomycin-resistant fire blight bacteria are present. The Section 18 is applicable to Berrien, Cass, Grand Traverse, Ionia, Kent, Montcalm, Newaygo, Oceana, Ottawa, and Van Buren counties. This Section 18 exemption only applies to counties where we have detected streptomycin-resistant isolates of the fire blight pathogen *Erwinia amylovora*. Read Dr. Sundin's article, "[Kasumin has been granted a Section 18 Specific Exemption for fire blight control for 2012](#)" for more information. The next most important fire blight control measure is to use Apogee (prohexadione calcium) for shoot blight management. Apogee is a growth inhibitor that provides excellent control of shoot blight. The first timing for an Apogee spray is at king bloom petal fall. Apogee is shoot specific, i.e. the effect is only observed if the shoot is covered; thus excellent coverage is essential. The "Apogee

effect” on fire blight begins approximately 10 to 14 days after application. Growers who used Apogee last season are encouraged to continue with treatments this year as the removal of Apogee from the system combined with light crop loads could lead to excessive vegetative growth.

Eight **codling moths** were trapped at the Center this past week, setting the biofix at the Center as 5/14 based on initial emergence. We accumulated degree days quickly with the hot weather over the weekend leading to the accumulation of 111 DD50 as of 5/22, growers can track the progress on their farms using the Enviroweather codling moth model. The codling moth model is designed to help growers accurately apply insecticides at the recommended treatment timings which range from 100-250 DD50 post biofix depending on pest pressure and insecticide mode of action. Ovicidal insecticides are positioned early to coincide with first generation egg laying (100 DD50), followed by larvicides (250 DD50) which are targeted at first generation egg hatch. The adults we are currently catching are primarily mating during a four-hour period beginning around dusk. Cool temperatures, wind and rain greatly limit codling moth flight during this critical period with male activity dropping quickly if temperatures fall below 60°F so growers should be confident that low catches are accurately assessing codling moth activity. The positive effects of this slowed activity is compounded as female fecundity (ability to reproduce) decreases by approximately 25% for every 24 hours a codling moth female is delayed from mating after she has emerged from her cocoon. Based on the unusual patterns of emergence we have observed in other pests this season, growers should be carefully monitoring for codling moth and weighing the pros and cons of treatment in no crop situations. There are a number of effective codling moth materials, refer to the E154 Fruit Management Guide for more information.

Growers should be on the lookout for **oblique banded leafroller** larvae feeding on blossom parts. **Spotted tentiform leafminer** adults continue to emerge in growing numbers. **Oriental fruit moths** continued to emerge with an average of 33 moths per trap.

Grapes

Vineyards are looking very nice now, as recent warm weather has promoted rapid shoot growth. Adult **potato leafhoppers** were seen in very low numbers in a few Old Mission vineyards on May 21. On wild vines in woodlots, adults of the **three-banded leafhopper** are quite active, causing stippling injury to leaves. This species usually does not cause any injury to vinifera or hybrid cultivars; it prefers cultivars with leaves that have relatively hairy lower surfaces. The larvae of **grape plume moth** are numerous on wild vines. They tie together terminal leaves (and clusters at this stage of growth) with silk and feed inside the webbing. This species is another species that rarely reaches significant numbers on cultivated vines, but growers should be looking for them in areas nearest wild vines.

No **powdery mildew** infections have been reported yet, but we are in the period when initial leaf infections are possible. Ascospores of this disease are typically released from over-wintering structures during rains of at least 0.1 inch if the temperatures are over 50 degrees between bud break and fruit set. Our droughty conditions have really limited the potential for powdery mildew so far.

Saskatoons

It looks like saskatoons fared pretty well despite the odd spring weather. Berry set is complete at all sites, and there appears to be a good crop. No significant insect pests have been active at the sites I monitor. There is a bit of **Entomosporium leafspot** in many sites; I suspect cold injury to leaves may have served as a pre-disposing agent to infection. This disease may become a major concern if we get into a period of rainy weather.

CHERRY LEAF SPOT SYMPTOMS ALREADY OBSERVED IN LOW CROP ORCHARDS

Control strategies for orchards with CLS symptoms early in the season and a light crop

Nikki Rothwell and George Sundin, MSU

If the devastating spring weather was not the only problem in tart cherry orchards, we have already observed cherry leaf spot (CLS) symptoms showing up across the state. We suspect that these early symptoms are a result of the rainy weather two weeks ago coupled with half side fungicide applications and/or stretching the intervals in a year with a light to nonexistent crop load. Cherry leaf spot symptoms at this time of the season are a cause for major concern, particularly as we recommend that trees keep their leaves until mid-September. The occurrence of symptoms in orchards right now indicates that leaf spot will be exceedingly difficult to control this year.

At the start of infection, leaf spot can be difficult to see on the leaves. The typical symptoms of cherry leaf spot are small (1-3 mm) red to purple spots on the upper leaf surface (looking at leaves with back-lighting is helpful) and there is often a visible dot of white spore growth in the middle of the lesion. These spore masses are a sign of the pathogen and serve as inoculum for new infections. Eventually the lesions will turn brown and fall out of the leaf. In heavy infections, spots can coalesce and produce larger areas of dead leaf tissue. With a lot of bacterial canker visible in orchards, growers should look for the growth of white spores to identify leaf spot as well as smaller purple lesions. Bacterial canker symptoms on the leaves are dark brown, circular to angular and often have a yellow halo; canker lesions are also larger in size than leaf spot lesions. Leaves that are accumulating lesions will soon begin to turn yellow and drop prematurely from the tree. Early defoliation will increase the potential for tree mortality in a hard winter.

Cherry leaf spot is usually effectively controlled early in the season with proper fungicide application timing. In years with extended dry weather, leaf spot symptoms are not visible in most orchards until August-September. However, in years when we receive significant rainfall early in the season with extended wetting periods, early infections of leaf spot can occur. These early season infections begin on bract leaves (Fig. 1) and spread throughout the canopy from these small leaves. Growers should be scouting their orchards for such infections now. If leaf spot symptoms are evident, they are an indication that spore loads in orchards will soon be very high and difficult to control through September.

If CLS symptoms are present in the orchard this early in the season, tart cherry leaves will need effective fungicide protection from now until after the traditional harvest timing. Because of the potential high disease pressure with symptoms so early in the season, we recommend growers use the maximum label rates of fungicides and cover entire orchard blocks (i.e., do not use an alternate middle row spray plan). If CLS symptoms are present, full cover sprays are needed to minimize the impacts of this fungal disease by reducing the potential of a CLS epidemic this season.

If CLS infection is observed in a block, growers should apply a full cover of chlorothalonil (Bravo or generic brands) in orchards that will *not* be harvested as this material is highly effective against CLS. If the orchard will be harvested, we recommend using the new 24 (c) label for Bravo Weather Stik—again chlorothalonil is rated excellent against CLS. The extended label is for Bravo Weather Stik only. However, a chlorothalonil application will not eliminate the current infection,

and the intent of this spray is to protect tissue from the onset of spores from the existing infections. As we no longer have materials that will 'burn out' CLS, this protectant strategy will need to be used season-long. Syllit (or dodine) used to have some eradicant activity, and although it is an excellent CLS material, we are unsure of its current abilities to stop a CLS infection. Copper has also exhibited some post-infection activity, but again, this material cannot be relied on to eradicate a CLS infection.

Leaves currently exhibiting a number of lesions at this time are almost sure to defoliate, and the goal of this season's management plan is to limit the amount of infection of currently healthy foliage through protection against subsequent infections. The CLS spore load will probably be high in most orchards for the remainder of the season, and these blocks must be intensively managed for the next several months to minimize impacts on overall orchard health. Even in a year without a crop, it is important to keep the trees healthy for 2013.



Fig. 1. Early season cherry leaf spot infection on bract leaf (white arrow) of Montmorency tart cherry.

THINNING APPLES IN A LOW CROP YEAR

Chemical thinning strategies and recommendations for growers with a light apple crop

Nikki Rothwell and Phil Schwallier, MSU Extension

Despite this spring's unusual weather patterns, northwest Michigan still has some apples left in its orchards. At this time, we estimate the region has <20% of a crop, but this estimate varies between site and variety. In short, if growers think that they need to thin, then they should get out with a chemical thinner soon as the fruit is close

to optimal size and temperatures are predicted to be warm in the coming days. Our recommendation is for growers to use their normal thinning rates for their blocks. The thinking behind this recommendation is that growers should go with 'normal', because if the trees only have a crop in the tops of the trees (or the bottoms), the fruit will most likely be harder to thin with an overall lighter whole tree crop load. We are also telling growers to be careful, but to thin if the crop load warrants it. However, growers should be sure to leave a check – it is possible that injured fruits will fall off this year anyway (poor pollination, etc.) and growers will not know if the fruit falls off due to weather conditions or thinning applications if they do not leave a check.

This year is a mixed bag of set and fruit health. This situation will make it difficult to impossible to predict set, thinning sensitivity, and outcome. In general, frost damaged fruits thin easier and thus cutting back 20% or so at the 10 mm stage is recommended. Thinning only the tops of trees and hand thinning bottoms may also be a good idea. When fruits have been significantly reduced to low levels early in the set window (bloom to 5 mm), remaining fruit will tend to be stronger, but no more than moderate normal rates of thinner should be used at the 10 mm stage. If thinning late (20 mm stage), then more aggressive combinations could be used. Next year's return bloom should not be an issue because 80% of blocks and trees have low fruit set and low seed number. Damaged fruit with no/few seeds or internal damaged tissue will fall in most years, but we can't predict what will happen for this year. Fruit with only external damage (checks and rings) typically do not drop. We recommend that it would be best to chemically thin tops of trees that appear to setting fruit. Growers without crop insurance may want to lean more toward hand thinning trees. Again, leave check trees to confirm the impact of the thinning efforts.

Factors to Consider:

Frost damage. As we have suffered more than our fair share of frosts this season, thinning is going to be a bigger challenge than usual. Additionally, many of the king blooms were killed in the frost/freeze events, and with only side bloom or a portion of side bloom remaining, thinning becomes even more challenging. First, if at all possible, check to see if you actually have fruit in the orchard before thinning. Optimum thinning time is around 10mm, so most growers will know how the block has fared with this season's many spring frosts. There will likely be differences within orchards and even within trees.

Pollination and bee activity. As this spring has been riddled with cold and windy days, honeybee activity has been notably down during much of the apple bloom period. As growers know, honeybees like to fly on sunny, calm days with the temperatures above 50 degrees F. We have not had many of those this season, but apples that were still in bloom last week and into the weekend would have had excellent bee activity on those surprise warm and calm days. Pollination will play a major role in this season's apple crop, just as the frosty conditions during this spring. Also, fertilization may be a factor.

Weather conditions during thinning. Cold temperatures and sunny weather increase fruit set. Cloudy conditions increase thinning and drop (See Table 1).

Tree vigor and growth. Trees that are growing with moderate vigor with lots of leaves and lush growth present are harder to thin due to the strength of the trees. In many orchards, tree had a rough start to this spring. Trees suffered damage from frost, but because soil temperatures were cold for much of the early spring, trees had trouble taking up nutrients from the spring fertilizer application. This combination will have likely caused trees to be weaker than anticipated. However, if the crop load is light, the trees will likely bounce back and grow well without too many fruit sinks to demand the trees' energy. Highly vigorous trees (very upright with long shoot growth) are very easy to thin. These trees do not set well any year and caution should be used to thin these (perhaps apply only half rates to these types of trees).

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Table 1. Abiotic factors the affect thinning.

Factor	Condition	Fruitset effect	Thinning sensitivity
High night temperature	>65oF	Greater drop	Sensitive
High day time temperatures	>85oF	Greater drop	Sensitive

Excessively cloudy conditions	Cloudy	Greater drop	Sensitive
Cold day temperatures	<65°F	Greater set	Resistant

In each year of production, despite the amount of fruit on a tree, the fruitlets need energy to grow, survive and set. The carbohydrate model predicts what grams of carbon/tree unit is available to the tree for fruitlets and vegetative use. A deficit of energy (carbohydrates) is needed to obtain tree stress; this stress increases the sensitivity to naturally drop apples or to enhance the applications of chemical thinners.

At the time of optimal thinning (~10 mm), we prefer to have two to three days (in a row) to increase that stress level and improve thinner activity. A single day of deficit is not important as the trees can probably buffer that deficit. We have observed that too many days of energy deficit will drop fruit, and when this situation occurs, thinners will overthin. We really need to pay attention to tree stress/deficit this year as we really do not want to overthin or drop all of our remaining fruit.

A surplus of energy in the tree will strengthen fruitlets, and they will resist thinning. Our region likely has this hard-to-thin situation in most years because we have cold sunny conditions which conserves energy and results in trees that resist thinning.

Where king fruits are missing, past thinning trials have shown that it will be difficult-to-impossible to achieve a perfect thinning job. In a year like this one, growers may want to be even more cautious than usual and potentially wait until 12 mm to make the first thinner application. In waiting, growers will be better able to evaluate fruit set. At 12 mm to 15 mm, growers will still need combinations to achieve thinning; however, use only *moderate* rates. Frost damage commonly occurs in the bottom half of the trees and the top half of the tree is probably undamaged or less damaged and will need full thinning to achieve large quality fruit. In this case, growers should only thin the tree tops. As growers drive up and down hills, in and out of frost pockets, gear up through the low areas and slow back down through the tops of hills to achieve better thinning.

Because of the crop load in the orchard, the following chemical recommendation is an example of how to use chemical thinners in this light crop year. First, if apples are at the optimal thinning time, 8-10mm, growers should take their normal thinning rate and reduce it by 10-20%. If growers usually apply Sevin at 1 quart with 15ppm NAA, this year, growers should use Sevin at 1 pint and 8-10ppm of NAA. If apples are larger, in the 18mm stage, then growers should use their normal thinning rates. Unfortunately, no one can predict if the fruit will stick, but again, growers should take caution when thinning this season.

Take Home Thinning Points for 2012:

Thin tops of trees, hand thin bottoms.

Reduce rates 10 to 20 % (for 10 mm stage)

Apply thinners at the beginning of a warming trend

Sunny cool weather increase set

Cloudy warm weather increase drop

BLOOM IS A CRITICAL TIME FOR CONTROL OF BOTRYTIS GRAY MOLD IN STRAWBERRIES

Applying fungicides at bloom will reduce problems with Botrytis gray mold in strawberries at harvest.

Posted on **May 15, 2012, MSU-E News** by **Annemiek Schilder**, Michigan State University Extension, Department of Plant Pathology

Botrytis gray mold, caused by the fungus *Botrytis cinerea*, is one of the most important fruit rot diseases affecting strawberries. Typical symptoms include a spreading brown rot and fuzzy gray mold on ripening berries. Wet weather and moderate temperatures are conducive to development of this disease. The bloom period is the most important time for control of gray mold, since primary infections take place almost exclusively through the blossoms. The infections then remain dormant until the berries start to ripen. As gray mold develops on infected berries, these become sources of inoculum secondary infections of adjacent berries. Ripe and overripe berries in particular are very susceptible and gray mold can spread rapidly at that time.

The gray mold fungus overwinters on old leaves and plant debris and can sporulate profusely on dead and decaying plant material. The spores are airborne and are usually plentiful in strawberry fields. If the bloom period is dry or good fungicide coverage is maintained, incidence of gray mold at harvest will be low. However, if primary infections get established, it will be harder to control the disease both before and after harvest. Where possible, remove sporulating berries from the field and destroy them to limit inoculum availability.

There are a number of excellent fungicide choices for gray mold control in strawberries: Switch (cyprodinil and fludioxonil) and Pristine (pyraclostrobin and boscalid) provide excellent control; both have two different active ingredients – one of which is systemic –that broaden their spectrum of activity. Pristine also provides outstanding control of fungal leaf spots and anthracnose fruit rot. Elevate (fenhexamid) is a locally systemic fungicide with good to excellent activity against gray mold. Captevat is a pre-mix of captan and fenhexamid and has a broader spectrum of activity than Elevate alone as it also protects against anthracnose and leaf spots. Scala (pyrimethanil) is a newer fungicide labeled for Botrytis gray mold control in strawberries and is similar to one of the active ingredients in Switch. Rovral and Iprodione (both iprodione) are older fungicides with good activity against Botrytis gray mold, but they can only be applied once and not after first fruiting flower. Also, their activity is enhanced by adding a spreader-sticker.

With respect to older fungicides, a tank-mix of Topsin M (thiophate-methyl) and Captan (captan) has good activity against a broad spectrum of fungi, including gray mold. Adding Kocide (copper hydroxide) or Cuprofix (basic copper sulfate) can help tackle angular leaf spot as well. Thiram (thiram) is a broad-spectrum fungicide with fairly good efficacy against gray mold as

well, but is strictly a protectant.

Just as a reminder, Cabrio (pyraclostrobin) and Abound (azoxystrobin) are **NOT** suitable for gray mold control, but are effective against anthracnose and other fruit rot and leaf spot diseases. All fungicides mentioned above have a zero-day pre-harvest interval, except Topsin M (one day), Scala (one day) and Thiram (three days). Copper products have a 24-hour re-entry interval. Remember to alternate fungicides in different fungicide classes for resistance management purposes. A table showing fungicide classes is available in the [2012 Michigan Fruit Management Guide](#) (E-154).

Be careful using older fungicides like Captan, Rovral and Thiram when bees are foraging as these fungicides may be toxic to the brood when they are carried back into the hive by the worker bees. Some other fungicides may have toxicity in combination with certain insecticides or adjuvants. It would be best to spray in the evening during dry conditions or to avoid using these materials altogether.

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

GRAPE VIRUS DIAGNOSTIC SUPPORT DURING THE 2012 GROWING SEASON

Free diagnosis of grapevine viruses proved by Michigan State University.

Posted on **May 15, 2012, MSU-E News** by **Annemiek Schilder**, Michigan State University Extension, Department of Plant Pathology

We will again provide free diagnostic support for suspected grape virus problems this season. Even though symptoms can lead us to a tentative diagnosis, virus diseases can only be positively confirmed using laboratory tests, such as ELISA (enzyme-linked immunosorbent assay). This type of test uses sap from ground-up grape leaves in an enzymatic reaction with antibodies from animals. At the end of the two-day process, a yellow color indicates that the virus is present in the plant tissue. No color reaction indicates a negative outcome. Test kits for grapevine leafroll viruses (1 through 9), Grapevine virus A, Grapevine virus B, tobacco ringspot virus, tomato ringspot virus, grapevine fanleaf virus, grapevine fleck virus and peach rosette mosaic virus will be used. These tests can also be done on weeds (e.g., dandelion) in prospective grape plantings to determine if dagger nematode-transmitted viruses that have a wide host range, such as tobacco ringspot virus and tomato ringspot virus, are present in the field prior to planting.

Grapevine viruses cause various types of symptoms, including dead and dying vines, weak vines, few clusters with small berries, uneven berry size, uneven or late ripening, small or misshapen leaves, leaf curling, leaf reddening or yellowing, ring-like patterns or mottling. Not all leaf reddening is caused by viruses – sometimes crown gall, wounding, drought stress or nutrient deficiencies can also cause leaf discoloration. Viruses typically affect scattered vines throughout the vineyard, although sometimes several vines in a row may be infected. Soilborne (nematode-transmitted) viruses are often associated with spreading, roughly circular patches of declining and dying vines. The infection may also appear to be spreading and getting worse from year to year. Symptoms may be more pronounced in cool growing seasons.

If you suspect a virus disease and would like us to help you figure out what is going on in your vineyard, please let us know. We plan to run three batches of tests: around mid-June, mid-August and mid- to late September. We will send out a reminder one to two weeks before we plan to run the tests so you can arrange for sampling. Leaf roll viruses are best sampled later in the season, when symptoms are more pronounced and virus concentration in the leaves is higher. You can also send fresh symptomatic leaf samples by overnight mail or drop them off at:

Center for Integrative Plant Systems – Lab Building
578 Wilson Rd. Room 105
East Lansing, MI 48824

Samples can also be dropped off at an MSU research station, but do let us know so we can arrange for transport to the MSU campus.

Select the most symptomatic leaves and keep samples from different vines separate. Samples should be refrigerated as soon as possible and kept cool until delivered to the lab. The samples should be as fresh as possible. Make sure that the vines are tagged or numbered so that we can relate the results to specific vines.

Please also provide the following information so we can report back to you: farm (+ address and phone number), cultivar, vineyard block, symptoms observed and date. If you have any questions, please contact [Jerri Gillett](#) in the Small Fruit Pathology Lab (517-355-7539).

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

STRAWBERRY CLIPPER DAMAGE – DOES IT AFFECT YIELD?

Strawberry clippers, a pest of early strawberry buds, causes damage that many cultivars can recover from.

Posted on **May 15, 2012** by **Rufus Isaacs**, Michigan State University Extension, Department of Entomology

There have been some reports this spring of some intense feeding damage by strawberry clipper, *Anthonomus signatus*, in some strawberry fields. This small, reddish-brown weevil spends the winter in the leaf litter and tends to be most active in fields next to woods or other unmanaged areas. This pest seems to have survived the last winter well in some farms, and has moved into crop fields during the early growth.

While the time for management of this pest is generally past for this season, it is important for growers to know about this pest and some important research from [Cornell University](#) about how plants can respond to clipper feeding.

For more on the identification of this pest and its damage, read Cornell Cooperative Extension's [Small Fruit Crops: Strawberry Bud Weevil \(Clipper\)](#).

The Cornell University research by Marvin Pritts, Greg Loeb and Joe Kovach showed that many cultivars can tolerate clipping damage by this pest, and these can respond to the feeding activity by making the remaining secondary and tertiary fruit larger. This response then results in little economic effect on many of the tolerant cultivars such as Jewel and Kent. A summary of the Cornell study can be read at [*Is Strawberry Clipper \(Anthonomus signatus\) an Economically Important Pest?*](#)

As a reminder to strawberry growers, Cornell also has a [*diagnostic tool for berry crops*](#).
Dr. Isaacs work is funded in part by MSU's AgBioResearch.

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MARK THE DATE OF WILD GRAPE BLOOM TO HELP PREDICT SPRAY TIMINGS FOR GRAPE BERRY MOTH

Know the date of wild grape bloom to manage grape berry moth later in the season.

Posted on **May 15, 2012, MSU-E NEWS**, by **Rufus Isaacs**, and Steve Van Timmeren, Michigan State University Extension, Department of Entomology

The date of wild grape bloom is used as the biofix for running the [*MSU Enviro-weather*](#) grape berry moth degree day model for timing sprays against the second and third generation of grape berry moth. This is typically about a week before the primary buds of Concord vines bloom, and well before secondary buds bloom. The biofix date is when 50 percent of the wild grape clusters have 50 percent of their flowers in bloom. Samples of wild grape from different vineyards are likely to show different biofix dates, allowing you to adjust the timing of sprays later in the season for the predicted phenology of this damaging grape pest, according to the different conditions at different vineyard sites. Using this model can help take some of the guesswork out of knowing when best to make applications to protect the crop from grape berry moth.

Wild grape vines have started blooming in some areas of Berrien and Van Buren counties already. The warm weather this week is expected to bring bloom along quickly around vineyard sites with later wild grape bloom in Allegan County, and then the rest of the state in the coming days and weeks.

Once the date of wild grape bloom is set, record this date in a notebook, on the calendar or anywhere else for later retrieval. The start of the second and third generations of this pest are then predicted to start at 810 and 1,620 degree days later, respectively, using the grape berry moth degree day model that can be found online at the [*Enviro-weather website*](#). These typically occur in mid-July and mid-August in southwest Michigan, but with this year's warm weather, these events are likely to be early.

The predicted dates of early egg laying would be the appropriate timing for insecticides that target egg laying and young larvae such as the insect growth regulator Intrepid or the new diamide insecticides Altacor or Belt. For broad-spectrum insecticides (Imidan, Sevin, Baythroid, etc.) with the best activity on young larvae, delaying the timing of applications to 100 degree days later is recommended.

A final point on this unusual spring: As secondary clusters develop in many southwest Michigan vineyards, there are sites that have primary and secondary clusters and others with only secondary clusters. Whatever has happened to the timing of the developing grapes, the timing of grape berry moth development this year will still be based on the degree days from wild grape bloom described above. This may result in predicted egg laying at times when cluster development is out of synchrony with the crop, but the insects are not expected to change their timing for these later clusters.

Dr. Isaacs work is funded in part by MSU's AgBioResearch.

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CRITICAL TIME FOR WEED CONTROL IN ORCHARDS

Leslie Huffman
Weed Management Specialist (Horticultural Crops)
Ontario Ministry of Agriculture and Food
Harrow, Ontario

Weeds will rob the most growth and fruit size from your trees during the months of May and June. So the smart orchard manager will find time early in the season to minimize weed competition now - in spite of all the other important jobs in the orchard at the same time.

Newly planted trees need to grow quickly and fill their allotted space, so that fruit buds can begin development in mid-summer. Research by Dr. Ian Merwin at Cornell University, New York has shown the effect on early weed control in new orchards. Gala/M26 trees produced their first crop 2 years after planting, and yields were much larger when weeds were controlled early (May) *in the planting year*, and as well, when weeds were controlled longer (May to July) *in the planting year*. The competition from weeds occurred even under a full trickle irrigation schedule. Note that these effects were measured 2 years after the weed competition occurred!

Weed competition early in the season will also have an effect on fruit size. In Dr. Merwin's research with Gala, weed control during May and June, as well as during the preharvest month of August gave better fruit size in the first crop year - again, 2 years after the weed competition occurred.

For **bearing apples**, the **Critical Period for weed competition runs from bloom through to 30 days after petal fall**. Remember also that apple trees form next year's fruit buds when terminal buds set - another important time to remove weed competition. So squeeze a little time now to get your herbicide or mulch on, and use your hoes early to get the most effect from your weed management dollars.

WHY IMPROVE WEED MANAGEMENT IN YOUNG TREES?

Leslie Huffman
Weed Management Specialist (Horticultural Crops)
Ontario Ministry of Agriculture, Food and Rural Affairs
Harrow, Ontario

The investment in a new orchard is large, and poor weed management can reduce the performance of a new orchard for many years. Planning your weed management strategy for the planting year, as well as the following seasons, is an important step in getting the most out of your investment.

Although most growers have a large dislike for weeds in general, it is important to understand the “enemy” and to focus efforts and expense to manage them for the biggest return.

Planting new orchards requires time & labour when orchard growers are busiest– usually the spring – and controlling weeds after planting may become a low priority. We’ve all heaved a sigh of relief as the last tree is tamped in, and we rush off to catch up on other orchard work. But this is exactly when we should be focusing efforts on keeping weed competition down.

The Goal: Weed scientists have been working to identify the Critical Weed-free Period for each crop. For annual crops this time is early in the season and surprisingly short. This concept is easy – **if a crop is kept weed-free during its Critical Period, no yield reduction from weeds will result. Weeds growing within the crop before and/or after this Critical Period will not affect yields.**

In perennial crops like fruit trees, the “yield” effect may not be apparent in the first year. But research has shown a direct effect between tree growth in the first year, and yields in each of the subsequent years. And the economics of new orchard plantings show that yields early in the orchard life are much more valuable than yields later in the life of the orchard. As growers, we recognize that there may be reasons other than yield to control weeds at other times eg. to facilitate harvest or to attract PYO customers. But to maximize your dollar return in yield, weeds need to be controlled only for this short period.

Critical Weed Free Period in Fruit Trees: Research by Dr. Ian Merwin at Cornell University has shown the effects of weeds in new orchards. In a Gala/M26 planting, first cropping 2 years after planting, yields were much larger when weeds were controlled early (May) *in the planting year*, and as well, when weeds were controlled longer (May to July) *in the planting year*. Weed competition occurred even under a full trickle irrigation schedule. Note that these yield effects were measured **2 years** after the weed competition occurred!

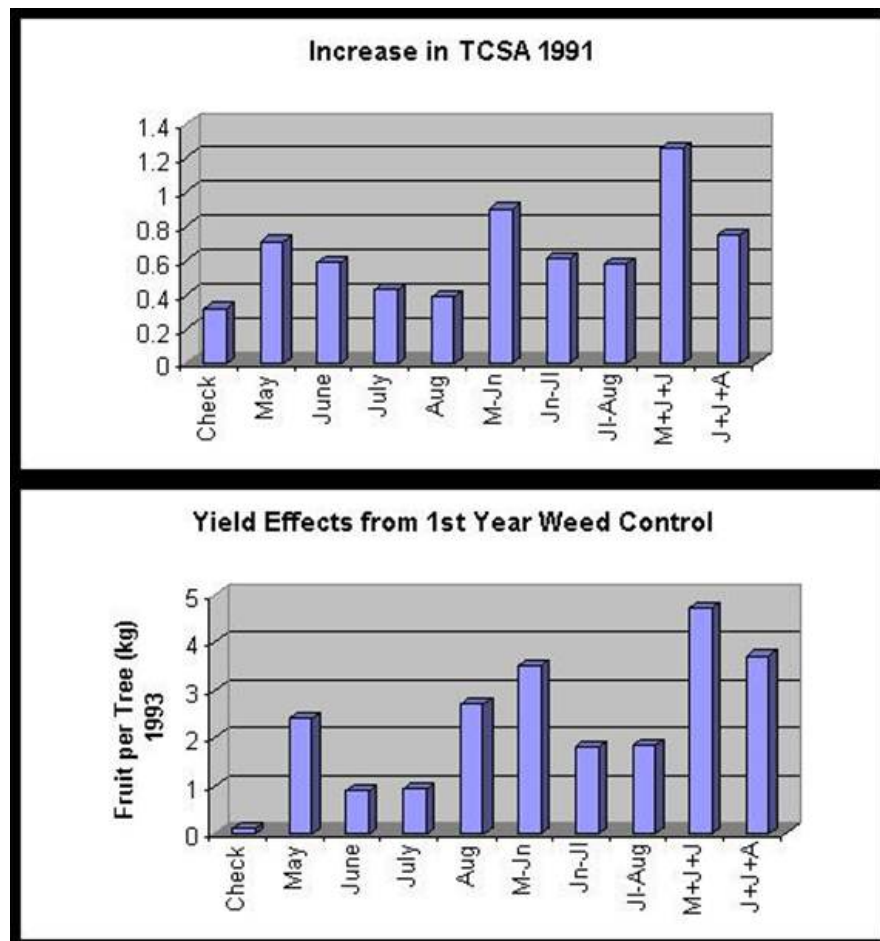


Figure 1. Effect on Trunk Cross-sectional Area in Newly Planted Gala/M26 Apple

Early weed competition will also have an effect on fruit size. In Dr. Merwin's research with Gala (where size can be a concern), controlling weeds during May and June, as well as during the preharvest month of August, gave better fruit size in the first crop year – again, 2 years after the weed competition occurred.

The strategy: Once we recognize the importance of controlling weeds during the Critical Weed-free Period, we can begin planning how to achieve the weed management needed. Watch for a series of articles in this season's newsletters to outline practical steps to achieve the weed management you need.

FRUIT LOSS GROWER SURVEY

MSU Extension's mission is "Helping people improve their lives through an educational process that applies knowledge to critical needs, issues, and opportunities". The 2012 Freeze is certainly one of those critical issues that has created critical needs within the fruit industry. In talking with fruit growers we know that there are a number of concerns and impacts on

your farm and farm families. As MSU Extension responds to these concerns and needs, we want to make sure that our educational efforts are targeted toward those issues/needs that you feel are most important.

The MSU Extension Educators from NW Michigan would like to invite you to attend a Grower Roundtable Breakfast to be held Thursday, May 31st at 7:00 a.m. at The Cottage (427 Munson Ave.) in Traverse City. At the meeting we would like to get your input on the impacts of the freeze on your farm, your needs as a result of these impacts, and the top short term and midterm educational needs that MSU Extension should program toward.

We hope that you are able to join us and provide us with your valuable insight. Each individual attending will be responsible for the cost of the breakfast they order. If you are not able to attend, we would still welcome your input. The link below leads to a Fruit Loss Grower Survey. Please take a few minutes and complete the survey. We want our efforts to be driven by your needs/concerns.

Survey Link: <http://www.surveymonkey.com/s/L8PV58P>

HOUSEHOLD HAZERDOUS WASTE COLLECTION – LEELANAU COUNTY

Leelanau County Solid Waste Council announces a new set-up for the **June 2** Household Hazardous Waste (HHW) collection.

The County has secured the services of Valley City Environmental Services, Inc. from Grand Rapids, to collect electronic items at NO COST. Items collected will include: DVD players, VCR's, stereos, game systems, TV's, radios, cameras, phones, pagers, fax machines, photocopiers, typewriters, etc. For a complete list, visit www.leelanau.cc/solidwaste.asp Computers and computer components will once again be collected by Goodwill of Traverse City, at **NO COST**.

Mr. Dave Perry, (Electronics Recycling Division Mgr) of Valley City Environmental Services, Inc. states: "electronic waste accounts for up to 70% of all toxic waste currently found in landfills, as a Michigan based R2 Certified electronics recycling company it is our goal to keep all electronics from entering landfill's while creating jobs here in our State".

Collection of these materials at no cost allows the Solid Waste Council to consider expanding the services it offers, under collection of PA 69 of 2005 (a household fee placed on winter tax bills).

Residents are reminded that **Reservations are always required** to participate in a Household Hazardous Waste collection. **Please call 256-9812 or 866-256-9711, Ext. 812** to make a reservation.

Materials NOT ACCEPTED:

Latex Paint, Shock-sensitive Materials, Tires, White Goods (Refrigerators and other items with Freon, Washers & Dryers, Water Softeners, other major appliances), Home Business Waste and Commercially Generated.

WEBSITES OF INTEREST

Insect and disease predictive information is available at:

<http://www.enviroweather.msu.edu/home.asp>

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

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

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

<http://agbioresearch.msu.edu/nwmihort/faxnet.htm>

[ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1, 2012](#)

Please send any comments or suggestions regarding this site to:

Bill Klein, kleinw@msu.edu

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Farm Mgr, NWMHRS

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Agricultural & Regional Viticulture Agent

May 3, 2012

APPLYING APOGEE 2012

Phil Schwallier, District Hort Educator, Amy Irish-Brown, District IPM Educator

Apogee has 2 major uses on apple, 1) to reduce vegetative growth and 2) to suppress Fire Blight. This year with no crop, the need for Apogee will increase.

Suppression of Fire Blight has become a major use of Apogee in Michigan. This years' loss of our crop will tempt growers to cut back on their sprays including Apogee sprays. This will not be wise on Fire Blight susceptible varieties, high value orchards, and blocks that had Fire Blight last year. However, other blocks of less or no risk to Fire Blight, may be candidates for a reduced Apogee program. But when Apogee is discontinued from an apple spray program where the trees have been sprayed every year, the trees will respond with additional excessive shoot growth.

Timing

Apply Apogee when vegetative shoot growth is less than three inches. This is about a 7-to 10-day window commencing at the king bloom petal fall stage. Most years all varieties can be treated at this time. The second application should be applied two weeks later and the third application two weeks after the second. Sometimes a fourth application is needed, but that is optional based on crop load and tree vigor. An apple crop loss like this year will require a 4th and perhaps a 5th application of Apogee. Excessive rainfall and light crops will promote vegetative growth; therefore more applications and material will be needed.

Rate

Rate per acre is usually calculated on a tree row volume basis and can be adjusted to two-thirds of the label full rate. The two-thirds rate is the starting rate growers should consider if they don't have any experience using Apogee in the past. Past experience on your block will indicate if this rate is too high or too low per acre. This suggested two-thirds rate per acre is a season long rate per acre. For example, if your trees are at 75 percent tree row volume, then 24 ounces per acre is the seasonal rate ($48 * .75 * 2/3$). Best results occur when seasonal rate is split into three or four sprays, for example, 8 + 8 + 8 oz per acre. When fire blight is a severe risk, the first application at king bloom petal fall timing should be increased, perhaps as much as 150 percent of a split rate. For example, increased from 8 ounces per acre to 12 ounces per acre. Subsequent sprays, the second and third sprays could be reduced, so the seasonal application would be $12 + 6 + 6 = 24$ ounces per season. This year $12 + 8 + 8 + 6 = 34$ ounces will be needed to make up for the controlling effect of a normal crop and lesser Apogee rates.

In summary, Apogee is an excellent tool to help control vegetative growth and especially suppress fire blight spread among shoots and within shoots. This year remember to protect valuable blocks with an increased seasonal rate.

CONSIDERATIONS FOR COMMERCIAL APPLE ORCHARDS WITH REDUCED CROP

There are still many things to consider for 2012 if you have a reduced apple crop.

Posted on **May 1, 2012, MSU-E, MSU-E News** by **Amy Irish-Brown, Phil Schwallier, Larry Gut and Bill Shane**, Michigan State University Extension, Department of Entomology

The spring of 2012 is one for the record books. Early high temperatures moved growth and development along at alarming rates. Then, several freeze events and colder than normal temperatures have led to a reduced fruit set for the 2012 apple crop. Crop guesstimates are still to be determined, but in general, it looks like the apple crop may be less than 10 percent in many Michigan locations. There is much variation in fruit set due to location and site considerations, differences in varieties, and quality of pollination and fertilization of flowers.

For those growers with crop insurance, the guidelines of your policy commonly state that you have to maintain the trees in a normal fashion in order to qualify for claim payments. With reduced or no crop on the tree, several insects and diseases may be ruled out of your spray programs. It is difficult to justify costly applications to trees with little or no crop, but there

are some pests that you need to be aware of to prevent problems for the 2013 season.

Fire blight. The southern half of the state is past the blossom period where blossom blight is of greatest concern. However, trauma blight situations that may occur with high winds and hail can still cause devastation to orchards. Trauma blight situations should still be managed with applications of streptomycin or copper. Copper applications can help to slow down fire blight, but will be somewhat harsh on tree growth. Streptomycin is the best antibiotic material we currently have labeled for fire blight in a post-trauma blight situation where resistance is not an issue.

Growers should patrol orchards to remove active fire blight cankers promptly. Apogee applications post bloom is very useful for managing fire blight by suppressing excess terminal growth on susceptible varieties. Apogee does take advanced planning to judge the treatment amounts and timing. Apogee treatment takes 10 or more days to see the effects. Apogee on high value blocks, highly susceptible varieties and where fire blight was a problem last year should be applied and at higher seasonal rates due to the very light crop.

Apple scab. Hopefully you are staying ahead of primary scab this year. If you have scab in blocks with little crop it would be best to get the lesions under control before you reduce or eliminate fungicide application. Blocks with heavy scab in them prior to June 1 could defoliate early, leading to reduced winter hardiness and a high potential inoculum level for 2013. Once primary scab season is over, you can reduce further control measures if you had primary scab under control. Use of lime sulfur and even copper are lower-cost alternatives to scab control. Multiple applications of lime sulfur or copper can be harsh on tender tissue.

Powdery mildew. Just as with apple scab, powdery mildew left uncontrolled in highly susceptible varieties can lead to reduced winter hardiness. Again, as with apple scab, most commercial blocks have had some mildewcides in their programs already this year, so mildew might not be of concern in most blocks with no crop. If you have running mildew right now, it could reduce winter hardiness of buds and lead to a higher inoculum potential for the 2013 season.

Plum curculio. Under light fruit load conditions, plum curculio will compete heavily for the fruit that is present. Unprotected this can result in a much higher percent damage level than normal. Most of this fruit will drop, but the larvae that emerge could be the source of next year's "resident" population. Growers with substantial plum curculio pressure in the past may want to treat, however, overall this pest is not of real concern for this year due to the near zero fruit on the trees.

Potato leafhopper. Potato leafhoppers are normally controlled when broad-spectrum insecticide programs are used to control primary pests like plum curculio, codling moth and oriental fruit moth. If you are reducing or eliminating insecticides for these key pests because of little or no crop, potato leafhoppers should not be ignored, but rather monitored closely – especially in non-bearing trees that need to fill their space. Potato leafhoppers typically first arrive in late May with southerly-based weather fronts, but in this strange weather year, they are present now. Those adults lay eggs, which hatch and begin feeding (phloem feeders) on foliage of actively growing terminals in mid-June, often reaching high populations by early July. The resulting damage appears as necrotic, cupped-leaf margins and can stunt growth significantly. Control will be particularly important in young blocks, especially highly sensitive European plums, that still have space to fill. This pest can, some years, do considerable damage, but is of less importance to control.

Obliquebanded leafroller. The obliquebanded leafroller is largely a foliage feeder, but can do significant damage to fruit. Fruit damage is most common under conditions of heavy fruit set where full clusters and adjacent foliage prevent adequate penetration of targeted insecticides. Thus, light fruit-load conditions like this year should reduce the risk of obliquebanded leafroller damage compared to normal years. Specific control for obliquebanded leafrollers in blocks with no harvestable crop is probably not warranted. The use of Apogee will help to set terminal buds and drive obliquebanded leafrollers to other hosts plants.

Codling moth. This pest should be monitored the entire year. If you have a few fruits on the trees – perhaps as few as 10 or 20 fruits on a dwarf tree – codling moth will easily infest these fruits in their first generation if you eliminate cover sprays for codling moth. This can lead to very high codling moth numbers and increases the potential damage for the 2013 season. Growers may want to take advantage of the light crop and late emergence of codling moth from overwintering sites due to cool weather by delaying the first codling moth spray by 100 degree days or so. For example, targeting egg hatch at 350 degree days instead of 250 degree days. The delayed application will better target peak activity and perhaps provide sufficient control with a single application. This is especially the case where mating disruption has already been applied.

A good codling moth management approach with the very light crop would be to apply hand-applied mating disruption at a low rate of 200 dispensers per acre. If you have orchards with a crop on them, you should be very aware of any nearby orchards that may be on a reduced insecticide program because of no crop. Codling moth will move from an orchard with little fruit to a neighboring orchard with fruit. This can happen with the first generation, but can be more of a concern for the second generation.

Oriental fruit moth. This insect can be a significant problem in apples, especially in peach-growing regions. Larvae can bore into ends of new growing terminals or into fruits. If insecticide cover sprays are eliminated from apple blocks, oriental fruit moth and other insects will build in number, likely increasing pest pressure somewhat the following year. Oriental fruit moth can be a problem in terminals especially in young blocks. It should be closely monitored for its activity in 2012.

European red mites. Left uncontrolled, European red mites can reduce photosynthesis and overwintering carbohydrate reserves. These reserves provide the tree with its winter hardiness, as well as help set the next year's crop. European red mites can cause severe bronzing, but if this occurs in a year without a crop, the damage will not be as severe, due to the lack of competition for the carbohydrates from fruits. In fact, if certain broad-spectrum insecticides are left out of an orchard system (codling moth, for example), then mite predators will have a chance to build their populations to help curb the European red mites. European red mites are of most concern on young plantings.

Other things to think about...

Benefits of beneficials. One possible benefit of reducing broad-spectrum insecticide sprays would be a potential increase in biological control organisms such as [beneficial insects](#), which could be helpful for your orchard system for the future.

Return bloom for 2013. Next year will most likely have a tremendous return bloom. The crop potential could be huge for Michigan. With little crop, the vegetative growth should be at a maximum for 2012 – leading to extra pruning for the dormant season. A strong dormant pruning program will help regulate the 2013 crop. Apogee applications will help reduce terminal growth, but much of the state is out of the window for good growth control with Apogee for this current season.

Eliminating fruit. If you have less than 30 percent of a crop, you might want to consider eliminating fruit completely from the trees. You can limit the infestation from the apple insects, codling moth and apple maggot by eliminating the fruits on the trees. Choose warm temperatures (70 to 80 degrees) to apply thinners. Chemical fruit removal can be done with the highest labeled rates of spray thinners, such as NAA or Sevin XLR. Chemical thinners should be applied as soon as the flower petals are 80 percent fallen (not too soon in bloom or you can harm pollinators). A second application 10 to 14 days later may be needed to remove more fruit. Even with two applications of chemical thinners, there may be some fruit remaining that may need to be removed by hand. Suggested fruit removal program: 20 PPM NAA (8 oz. NAA in 100 gallons of water) PLUS 1 quart Sevin XLR.

Large fruits. Fruit size will most likely be large on trees with a light to moderate crop set. Large fruits have some potential inherent problems such as bitter pit, water core, and cracking, which can cause storage and marketing problems. Calcium sprays can help and might be justified in certain higher value varieties that commonly have problems such as bitter pit. Reducing nitrogen applications is also suggested to reduce the potential for bitter bit.

Scarred fruits. There is likely to be a lot of surface damage on apples this year due to the cold weather during and after bloom. Growers should carefully evaluate crop quality – if it is poor, eliminating the fruit and using a reduced spray schedule could be considered. However, with the whole state apple crop affected this year, processing and juice apples might bring some income.

In conclusion

Be sure of your crop situation before you decide to eliminate cover sprays entirely from an apple block. Apple fruit set can fool the eye sometimes – one week it may look like a total loss, and the next week the fruit will start to show up more readily. Also, if you have crop insurance, be sure to check with your insurance representative the details that they may require of your pest management program so that you are not disqualified in any way.

CONTROLLING POWDERY MILDEW IN TART CHERRY ORCHARDS WITH REDUCED CROP

Growers can minimize powdery mildew infections with early, well-timed applications.

Nikki Rothwell and George W. Sundin

Powdery mildew (PM) can be problematic in tart cherry orchards, and because this disease rarely infects fruit, it still needs to be controlled in years with a light crop. The biggest issue for PM control is the prevention of initial fungal infection. We currently do not have fungicides that will eradicate a PM infection, so growers need to control this disease *before* they see it by using protectant fungicides. If growers observe the white mycelium on the leaves, it is too late to apply a control spray.

The most important spray timing for PM control is the first cover timing (the first spray application after shuck split). Prior to shuck split, chlorothalonil (Bravo and other generics) is the fungicide of choice in tart cherry orchards due to its excellent activity in cherry leaf spot control. At these early timings and in most years, the PM fungus is generally not active at this time. The first cover timing represents the first and optimal chance to protect the orchard from initial PM infection. *This spray is critically important.* We have shown in our previous research that if this timing is missed, the amount of PM-infected leaves can increase by at least threefold at harvest. We have also found that if fungicides targeting PM are only applied later in the season, PM infection can become seriously problematic by mid-August (~ 70% incidence of leaf infection). *In a year with no crop, this first cover timing is even more important as a cost saving measure*—essentially, if a grower applies a fungicide targeting PM at first cover timing, he/she will minimize the need to apply fungicides targeting PM later in the season. This one well-timed spray will also reduce PM inoculum for the 2013 season and save money.

The best fungicides currently available for PM control are Pristine and Gem. Other fungicides including sterol-inhibitors and sulfur provide some PM control but are not nearly as effective as Pristine or Gem. While the combination of Syllit + Captan is excellent for control of cherry leaf spot, it is weak against PM.

The newer fungicide Quintec (quinoxifen) has a mode of action that is different from the strobilurin in Gem. The strobilurin + boscalid in Pristine works well against PM, so this fungicide is a good choice for resistance management. Quintec at 7 fl oz per acre has performed very well in PM trials on cherry in Washington state. However, Quintec has no activity against cherry leaf spot, and growers must add another product to the tank for leaf spot.

CHERRY LEAF SPOT IN TART CHERRY ORCHARDS WITH REDUCED CROP

Cherry leaf spot must still be managed in tart cherry orchards in 2012. Without a crop, we suggest that growers focus on using broad-spectrum fungicides for long-term resistance management of other resistance-risk fungicides.

George W. Sundin and Nikki Rothwell

Cherry leaf spot (CLS) is the most important disease of tart cherry. Early defoliation caused by CLS infection (August, early September) reduces the ability of trees to store photosynthate in roots leading to an overall loss of vigor and leaving trees more susceptible to killing by winter injury. Early-defoliated trees also typically exhibit reduced flower bud formation and often set less fruit the following season.

In a year with no crop, CLS management remains important because, if left uncontrolled, the major effects of this disease

are on overall tree health and the potential for winter injury and tree death.

We believe that the focus in 2012 should be on using broad-spectrum fungicides that do not have fungicide resistance concerns. These fungicides are chlorothalonil, captan, and copper. Since American brown rot is not an issue this year, single-site fungicides such as Indar that target this disease will not be needed. Growers should also consider leaving other resistance-risk fungicides such as Pristine, Gem, and even the new fungicides Luna Sensation and Fontelis in the shed to protect these modes of action for the long-term.

The only situation in which resistance-risk fungicides may be needed would be in blocks where powdery mildew is a problem (SEE ACCOMPANYING ARTICLE). A single application of a fungicide such as Pristine or Gem at the first cover timing after shuck split will go a long way in keeping mildew under control. This application will also control CLS, but the fungicide should be tank-mixed with captan for fungicide resistance management.

BROAD-SPECTRUM FUNGICIDES FOR CLS:

1. Chlorothalonil is the fungicide of choice for the first spray timings targeting CLS starting about petal fall and again at shuck split. In a normal season, chlorothalonil cannot be used between shuck split and harvest. We do have a Section 24(c) label now in Michigan extending chlorothalonil use past shuck split under certain cropping conditions (SEE ARTICLE), but even timing limits from this label become moot with no crop. This is because label restrictions are there due to residue issues on fruit. Without a crop, the only label restriction for chlorothalonil of importance is the seasonal limit – 20.5 pints per acre for Bravo Weather Stik, 18.8 lbs per acre for Bravo Ultrex. These seasonal restrictions will enable approximately five applications per season.

2. Captan is an excellent CLS fungicide that is mainly limited by the maximum labeled use rate of 4 lbs per acre for Captan 50WP, 2.5 lbs per acre for Captan 80WDG, or 2 QTS per acre for Captec 4L. Seasonal limits are based on actual amounts of a.i. of captan used. The seasonal limits are 28 lbs per acre if using Captan 50WP, 17.5 lbs per acre for Captan 80WDG, and 14 QTS per acre for Captec 4L or 7 total captan applications.

3. Copper is a highly effective fungicide for CLS control when used at a rate of 1.2 lbs metallic Cu per acre. The only detriment to copper use is the potential for phytotoxicity effects to tart cherry trees. When copper compounds are applied to tart cherry trees in advance of hot, dry weather, the trees can exhibit phytotoxicity symptoms such as bronzing on the undersides of leaves, large yellow and brown blotches on the upper surface of a few leaves, or blackening of veins on the undersides of leaves. In severe cases, copper phytotoxicity can also cause leaf defoliation. Thus, the 2nd and 3rd cover timings are good for copper use if temperatures are not projected to remain above 80°F for several days.

FARM WOODLOTS MANAGED WISELY OFFER INCOME OPPORTUNITIES

Russell Kidd, Extension Forestry Educator, MSU Extension

The extreme cold temperatures across many areas of Michigan this spring have severely impacted fruit and other agricultural crops – causing widespread damage. Consequently, many fruit and agricultural producers looking for alternative sources of income may be thinking about selling timber from their farm woodlots this year to offset losses and pay for their fixed costs of production. The following article provides some useful information on how to conduct a successful timber sale and maintain the woodlot in a healthy condition for future harvests.

The extreme weather and temperature ranges across Michigan over the past several weeks have caused havoc with many fruit and other perennial agricultural crops – causing widespread damage. If the initial damage estimates prove to be true, then some fruit and agricultural producers that sustain heavy losses may be looking for alternative sources of income to offset losses and pay for their fixed costs of production in 2012.

For some producers, having a timber sale in their farm woodland may be an option for generating some additional cash flow. While timber harvesting is a good source of income, it is vitally important that harvesting be done wisely in order for it to produce a sustainable cash flow just as with other enterprises on the farm. Therefore, fruit and agricultural producers need to proceed with caution to be sure that a timber sale is handled properly to maximize income and prevent an undue amount of damage that can adversely affect the future value of the woodland.

The best way to get started is to take a little time to learn more about the value of your timber before allowing any trees to be cut. A few telephone calls might be all it takes for you to avoid a costly mistake. In general, current timber markets are essentially following our domestic economy and are slowly rebounding. As consumers begin to spend more on durable goods (such as kitchen cabinets or furniture) and as the housing market begins to recover, timber markets and lumber prices have begun to slowly rise as well. However, the biggest mistake most uninformed landowners make is to allow a logger to just to pay for all the best trees and leave behind the poor quality trees for the landowner as a basis for future growth. This is not considered good timber management from a professional forestry point-of-view.

When arranging for a timber sale it is best to use a sealed bid, competitive type of sale. This is where timber buyers in the area are notified of a landowner's intention to sell. Then a period of time is allowed for those buyers to inspect the trees marked for sale within the woods after which timber buyers will submit sealed bids as to what they are willing to pay for the timber. A competitive, sealed bid approach is the best way a farmer can ensure getting fair market value for his/her timber.

Once a successful bidder has been chosen (based upon bid price and reputation) the next step is to enter into a written timber sale contract with the logging contractor. For the farm manager, a well-written sales contract spells out how, when and what will be done; when the contract ends; how and when payment is to be made; dismisses the farmer from any liability should anyone get hurt logging; and other important details. Do not depend upon verbal agreements about any key elements of a timber sale – get it all written down.

After a contract is signed, it may take several months until the logger actually begins the harvest. From the start of the harvest operation, the farmer or his agent (i.e. a consulting forester) should periodically inspect the harvest site to be sure everything is going according to the terms of the contract.

When the timber sale is complete, all expenses for managing timber as well as the income generated from a timber sale should be recorded in the bookkeeping system that a farmer uses for his or her fruit or agricultural operation. For income tax purposes, revenue from timber sales can qualify for long term capital gains, depletion allowance and other special

income tax treatments and should not just be reported as ordinary income.

For those producers looking for assistance in conducting a timber sale, they can use the services of a private consulting forester. Consulting foresters are independent professionals who are self-employed and do not work for a logging or sawmill business. Instead, they contract with landowners to conduct a timber sale and get paid on a commission basis (which is also an income tax deduction). Just as with any other professional, ask for a forester's credentials and references.

For more information, MSU Extension has a number of publications for sale through their MSU Extension Bookstore. Publications such as E-1656, "Timber Sale Contracts"; E-2832 "Important Considerations When Harvesting Hardwood Timber for Income"; and E-2769 "Northern Hardwood Management" are available for purchase from the MSUE Bookstore at: <http://www.bookstore.msue.msu.edu/>. Another concise but useful publication is the MSU Extension Forestry Fact Sheet "Getting the Most from Your Farm Woodland" that is available for free on-line at <http://forestry.msu.edu/extension/extdocs/facts28.pdf>

WEBSITES OF INTEREST

Insect and disease predictive information is available at:

<http://www.enviroweather.msu.edu/home.asp>

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

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

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

<http://aqbioresearch.msu.edu/nwmihort/faxnet.htm>

[ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1, 2012](#)

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Bill Klein, kleinw@msu.edu

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Agricultural & Regional Viticulture Agent

May 8, 2012

GROWING DEGREE DAY ACCUMULATIONS through May 7th at the NWMHRC

Year	2012	2011	2010	2009	2008	2007	22 yr. Avg.
GDD42	513	165	469	279	295	343	288.1
GDD50	252	51	212	118	136	186	125.1

Growth Stages at NWMHRS (May 7, 4:30 p.m.)

Apple: Red Delicious – Full bloom

Gala – Full bloom

Yellow Delicious – 90% bloom

Pear: Bartlett: Late petal fall

Sweet Cherry: Hedelfingen: 7.5 mm fruit

Napoleon: 6 mm fruit

Gold: 4.5 mm fruit

Tart Cherry : Late petal fall

Balaton: Late petal fall

Apricot: 15 mm fruit (new tree)

Grapes: Late bud swell

Weather Report

Not much new to report with the weather this week. Temperatures remain cool, and the daytime high for the week reached into the low 70s but the cold winds made those temperatures feel cooler. For the first week in a few, we had no nighttime temperatures below freezing. We had substantial rainfall throughout the region last week, and the NWMHRS received 2.25" of rain in six days. This cloudy, cool, and wet weather has minimized honeybee flight and pollination in blooming apples. In 2012, we have accumulated 513 GDD base 42 and 252 base 50; these accumulations are still much higher than our 22-year averages of 288GDD base 42 and 125GDD base 50.

Crop Report

Sweet cherries are starting to size in blocks that have a crop, and we are still waiting to see what fruit have been pollinated and will continue to size. As time goes on, there are some areas of the region that is reporting a better sweet crop than we had initially estimated. We are at late petal fall in tart cherries, and the crop still looks extremely small compared to what the region has the potential to produce. Balatons have weathered the conditions much better than Montmorency. Apples are in bloom across the region, and the wet weather has not been conducive for honeybee flight. The forecast is predicting warm and sunny conditions on Friday, and we are hopeful for good pollination weather for apple blooms that were not impacted by the frost.

Pest Report

Cherry

Regardless of the crop load, growers should plan to continue to manage for **cherry leaf spot** and **powdery mildew**. The wet weather over the past week has triggered leaf spot infections around the region. As we move into first cover timing, growers should consider a fungicide with a strobilurin (Pristine, Gem, or Adament) because they are effective against both cherry leaf spot and powdery mildew. The sterol inhibitor fungicides (Indar, Elite, Orbit) are also effective powdery mildew materials but will not be effective against leaf spot due to widespread resistance in all the major fruit producing areas of Michigan.

Additionally, the Cherry Industry, Michigan State University, EPA, MDARD, and Syngenta have worked together to obtain a 24 (c) special local need registration (SLN) for use of Bravo Weather Stick (chlorothalonil) beyond shuck split. Traditional timing of chlorothalonil for cherry leaf spot has been prohibited past the shuck split timing prior to this newly registered use. With the 24 (c), growers must follow a series of restrictions in order to use this product legally throughout the growing season to ensure that post-shuck split applications do not result in illegal residues. Growers should be aware that cherries harvested 21 days after the last application of Bravo will have illegal residues, and to ensure the residues on the fruit are

reduced to a legal level (less than 0.5 ppm), growers **MUST** carefully follow all label directions. The cooling pad procedures on the SLN label are key to reducing residues to a legal level. Illegal residues not only violate federal law, but they have serious consequences for growers, processors, and the Michigan tart cherry industry. Although a more permanent solution is underway for the 2012 season, growers should obtain the Training Affidavit by going to MDARD's Cherry SLN webpage and complete Steps 2 and 3. MSU Extension will be available to help growers work through this educational step to be able to use chlorothalonil beyond shuck split by using the MDARD website. Growers with questions or those in need of assistance can call the Northwest Michigan Horticultural Research Station at 231-946-1510. However, if orchards have no crop and will **not** be harvested in 2012, chlorothalonil can be used as the label states for non-bearing orchards. This distinction needs to be clear—to harvest or not to harvest—to comply with the 24 (c) label for 2012. Additionally, this special label is for Bravo Weather Stick only and will **not** apply to other products containing chlorothalonil.



Photo 1: Leaf symptoms of bacterial canker in sweet cherry

Photo 2: Spur death caused by bacterial canker (*P. syringae*) in sweet cherry

The blossom blight and spur blast symptoms of **bacterial canker** are prevalent on sweet cherry around the north, with the worst infection many growers have ever seen (see pictures). Area growers also have reported canker infection in tarts. Bacteria can survive in the bark, cankers, and systemically within trees that have been previously infected. This spring conditions were favorable for bacterial canker (prolonged periods of cold, frosty wet weather) and allowed the bacteria to multiply within the overwintering sites and be disseminated by rain. Unfortunately there is no treatment for bacterial canker at this time. Dormant copper applications are the traditional treatment for bacterial canker, but even this treatment



has had marginal impact on bacterial canker wood infections.

American plum borers (APB) adult flight began again last week with very low trap counts, we would expect to see the peak adult flight any time now and time trunk applications of Lorsban accordingly. Growers should be looking for oblique-banded leafroller (OBLR) larvae as leaves expand; we have observed only a few larvae in terminals at the station (see picture of larvae in apple, slightly larger in cherry at this time). Overwintering OBLR larvae feed inside bud clusters prior to bloom and move to terminals to continue feeding on foliage. Targeting these overwintering larvae is critical because they are small and easier to kill. Growers can scout their orchards by examining 20 clusters per tree in five trees per orchard for larvae or feeding sites. An insecticide should be applied if they observe more than two larvae or feeding sites per tree. The materials that target the larval stage of OBLR include Delegate, Belt, Altacor, Voliam flexi, Entrust and Bts. Growers in northwest Michigan should not expect organophosphates or pyrethroids to provide effective control because of insecticide resistance.

Plum curculio activity should start picking up with adults continuing to migrate into orchards from overwintering sites. Plum curculio (PC) is often found

in the orchard before fruit is present with spring migration lasting about six weeks. Many of the non-organophosphate insecticides (pyrethroids, neonicotinoids, and oxadiazines) for PC management require treatment to begin around petal fall to provide adequate control. The MSU Tart Cherry Postponed Insecticide Treatment Strategy (P.I.T.S.) model for the control of plum curculio is estimating the accumulation of 60 degree day since tart cherry biofix (full bloom 4/20 at the NWMHRC), and control is not recommended until 375 GDD from the biofix date leaving plenty of time before treatment. The MSU P.I.T.S. model should only be used in carefully scouted orchards. If growers have a short crop that they plan to harvest this year, increased competition for those fruit as egg-laying sites may warrant earlier plum curculio control to protect the remaining fruit. Refer to the E154 Fruit Management Guide for more information on PC management materials.

Apple

The wet and slightly warmer weather over the past week triggered a number of apple scab infections around the region. Based on a 3/20 biofix (McIntosh green tip), it is estimated that only 48% of the primary scab spores have been discharged, but 82% are mature. EBDCs tank mixed with captan are the recommended protectant scab materials at this time in the season. EBDCs and Captan are both excellent scab protectants, and provide five to six days of protectant activity when used at full rates. Growers should remember that spray intervals should be tighter when relying on these materials. Growers should keep in mind that EBDCs have a 77-day PHI, so their best and only use is early in the growing season. Growers should also note that strobilurin resistance has been confirmed in all major apple growing regions of the state and the mutation confers complete resistance—strobilurins will not work against apple scab and increasing the rate of a strobilurin is not an effective option. Regardless of crop load, growers should carefully consider their scab management program as inoculum can build quickly over a season and make control difficult in subsequent seasons. If growers are approaching their season long limits for EBDC applications, there are a number of alternatives, refer to the E154 Fruit Management Guide for more options.

As most orchards are in some stage of bloom, **fire blight** remains a concern and keeping an eye on the weather and the fire blight model remains important. Based on the current forecast, the weather will remain cool enough to keep the risk low (but things can change quickly so keep an eye on that model as it accumulates in hours rather than days like many other insect and disease models). When the epiphytic infection potential reaches 100 (or is forecasted to do so) and the average temperature is greater than or equal to 60 °F, the Enviroweather model will show the corresponding boxes on the chart turning red, which indicates that if rain or trauma (high winds or hail) occur there is a high potential for infection. At this time, streptomycin remains the bactericide of choice for controlling fire blight in the northwest. However, many growers are considering a 1:1 tank mix of oxytetracycline materials (FireLine or Mycoshield) and streptomycin due to streptomycin resistance concerns (at a 1lb rate of each material).

Growers located in Grand Traverse County that believe they have streptomycin resistance can apply Kasumin during bloom for fireblight control. EPA has granted a Section 18 Specific Exemption for the use of Kasumin 2L (kasugamycin) for the control of the blossom blight phase of fire blight in 2012. This use is for orchards where streptomycin-resistant fire blight bacteria are present. The Section 18 is applicable to Berrien, Cass, Grand Traverse, Ionia, Kent, Montcalm, Newaygo, Oceana, Ottawa, and Van Buren counties. This Section 18 exemption only applies to counties where we have detected streptomycin-resistant isolates of the fire blight pathogen *Erwinia amylovora*. Read Dr. Sundin's article, "[Kasumin has been granted a Section 18 Specific Exemption for fire blight control for 2012](#)" for more information. The next most important fire blight control measure is to use Apogee (prohexadione calcium) for shoot blight management. Apogee is a growth inhibitor that provides excellent control of shoot blight. The first timing for an Apogee spray is at king bloom petal fall. Apogee is shoot specific, i.e. the effect is only observed if the shoot is covered; thus excellent coverage is essential. The "Apogee effect" on fire blight begins approximately 10 to 14 days after application.

Growers should be on the lookout for **obliquebanded** larvae feeding on blossom parts Spotted tentiform leafminer adults continue to emerge in growing numbers.

Photo 3: Oblique-banded leafroller larvae

in apple



Grapes

Most cultivars are at bud burst to one inch shoot growth stage. Freeze injury has been quite minor throughout the area on good vineyard sites.

As shoot growth begins, the threat of **flea beetles** and climbing cutworms will diminish quickly. Our next insect concern will be **potato leafhoppers**, but we have no method of predicting when these will show up in vineyards since they are brought here from their more southerly overwintering sites by storm fronts. More on this in future weeks. Our main disease concern for the next few weeks will be **powdery mildew** management. Be sure to check the fungicide recommendations and comments on powdery mildew control in the 2012 Michigan Fruit Management Guide (MSUE Bulletin E-154).

Saskatoons

There has been some frost damage to bloom and new shoot growth in some plantings. More advanced sites are in petal fall, but up in the Northport area plants are in full bloom. Until recent days there had been fairly poor pollination conditions, so it will be very interesting to see what portion of the flowers will successfully set fruit.

No insect or disease issues have been seen thus far this growing season.

HOW TO MINIMIZE COSTS IN FROST DAMAGED CHERRY ORCHARDS

Growers that have frosted cherry orchards can use the following strategies to reduce input costs

N.L. Rothwell, District Horticulturist, NWMHRS

The initial step in determining how to manage cherry orchards with frost damage is first assessing the amount of damage. Enough time has elapsed that cherries not damaged by frost or those that were successfully pollinated are starting to properly size. Cherries that are still in the shuck, brown in color, or very small in size are not likely to develop this season. The second decision is whether growers will harvest a particular block. If growers do intend to harvest, minimizing costs is probably not the best strategy.

If growers do indeed have too few cherries to shake a block, a few management strategies are still necessary for this season. First and foremost, cherry leaf spot (CLS) control is vital. This pathogen infects the leaves, and even with no fruit, trees are still susceptible. Brown rot control, on the other hand, becomes a minimal concern as this pathogen infects the fruit. If no fruit is visible on the tree, brown rot control can be reduced. However, growers should keep in mind that even a small number of fruit on the tree can result in a brown rot infection, and these infected fruits can increase inoculum in subsequent years. The most important spray timing for PM control is the first cover timing (the first spray application after shuck split). In a year with no crop, this timing is even more important as a cost saving measure--essentially, if a grower applies a fungicide targeting PM at first cover timing, he/she will minimize the need to apply fungicides targeting PM later in the season.

Blocks where cherries will be harvested will need insecticide sprays to ensure marketable fruit. Trees with minimal fruit are more likely to be infested as there are simply fewer fruit in which plum curculio (PC) or cherry fruit fly (CFF) females can lay eggs. If growers do not intend to harvest a particular block, insecticide sprays for PC and CFF can be eliminated. Growers should keep in mind that reducing or eliminating insecticide sprays for these pests could result in higher insect populations the following season. Green fruitworm sprays can also be eliminated with no fruit. Two spotted spider mites (TSSM) can build up in an orchard with or without fruit; however, trees without fruit will be able to withstand more mite feeding than trees with fruit. Growers should monitor orchards later in the season for TSSM, particularly if temperatures are hot and dry and when the weeds under the canopy dry up and mites move into the trees.

Borers—lesser peachtree, peachtree, and American plum borer—are all still potential problems for cherry orchards with minimal fruit. Borers do not feed or depend on the cherry fruit for their life cycle, and trees without fruit will still be susceptible to borer infestations. Trunk sprays are still recommended in orchards with little or no fruit.

Obliquebanded leafrollers are also still a concern for growers this season as these insects feed on cherry foliage rather than the fruit. These insects overwinter as larvae, and as leaves develop, they move to the terminals to feed. In a block with no fruit, a strategy to save money this season would be to spray either the spring overwintering larvae or the summer generation larvae rather than spraying at both times. However, we have found very few larvae in the orchards at this time, likely due to the cool weather. We typically target sprays at the overwintering larvae around petal fall, but this year, we have not observed many larvae in the trees. If growers intend to spray at this timing, which is relatively soon (or now), we recommend that they wait until temperatures warm up and the larvae become more active. The other timing for control is approaching harvest where growers would target the summer generation larvae. These sprays can be difficult in a typical year as these insects web themselves inside the cherry clusters, therefore avoiding contact with the insecticide. But in a year with no fruit, this generation may be more easily killed because the larvae will not be able to hide amongst the clusters.

For other management strategies, we offer the following recommendations: 1) gibberellic acid is necessary this season to ensure that the trees will not overset next year, 2) weed control can be minimized, but not eliminated, as trees without fruit will require less water, 3) micronutrients can be reduced unless growers observe a deficiency, and 4) lastly, nitrogen applications could also be reduced but more than likely spring applications have already been made this season.

DEPARTMENT OF LABOR WITHDRAWS PROPOSED REGULATIONS FOR YOUNG HIRED FARM WORKERS

The decision to withdraw the rule, including provisions to define the “parental exemption,” was made in response to

thousands of comments expressing concerns about the effect of the proposed rules on small family-owned farms.

Posted on **May 4, 2012** by **Claire Layman**, Michigan State University Extension

The [U.S. Department of Labor](#) (DOL) announced on April 26, 2012 that it was withdrawing proposed revisions to regulations that govern youth (aged 14 and 15) who are employed in agriculture. The [DOL's press release](#) indicates that the withdrawal is in response to an outpouring of public concern that the changes would have harmed family farms and damaged the rural way of life.

Most public criticisms were aimed at proposed changes that would have reduced the number of youth eligible for the "parental exemption" provided under the [Fair Labor Standards Act](#) (FLSA). Under the act, a youth who is in an employment relationship with the farm owner/operator and who is directly supervised by a parent or a "person standing in place of a parent" is not subject to the law or to federal health and safety regulations governing child labor in agricultural occupations.

The proposed revisions would have defined the term "person standing in place of the parent" as that person directly responsible for a youth's "rearing, safety, health and well-being," and specifically excluded a "corporation" or a farm operator who is not the parent. In a [background section to the proposed revisions](#), rationale for this clarification is given as follows:

"These [parental] exemptions were granted in recognition of, and continue to rely upon, the concept that a parent's natural concern for his or her child's well-being will serve to protect the child. Congress, as evidenced by discussion on the floor of the House of Representatives (see Congressional Record, 75th Congress, page 1693, December 16, 1937) intended that the parental exemptions be applied quite narrowly, limiting their application to parents and those standing in place of a parent."

Farmers and ranchers responded that this clarification would have resulted in fewer opportunities for their teens to work on a relative's farm, even if the farm was co-owned by the youth's parent and the relative was directly supervising the youth. Farmers said that the revisions failed to recognize the reality of family farms, which often are jointly owned by adult family members and are filed as limited liability corporations (LLC). Other proposed revisions would have prohibited young hired farm workers, aged 14 to 15, from operating or tending any power-driven equipment. Currently, young hired farm workers who are 14 and 15 may operate tractors and other farm equipment after completing a safety course offered by 4-H, or if they are enrolled in student-learner programs or vocational agricultural training programs. The proposed rules would have eliminated the exemption provided to graduates of a 4-H safety program and would have required them to complete a semester of vocational agriculture instruction (offered through public or private schools) that included instruction on specific machinery.

In its press release, the [U.S. Department of Labor](#) stated that they intended to work with their rural partners, including 4-H, "to develop an educational program to reduce accidents to young workers and promote safer agricultural working practices." According to a [2000 Bureau of Labor Statistics Report](#), agriculture is one of the most dangerous occupations, and fatalities among young people working in agriculture are most likely to occur among the very youngest workers.

WEBSITES OF INTEREST

Insect and disease predictive information is available at:

<http://www.enviroweather.msu.edu/home.asp>

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May 29, 2012

GROWING DEGREE DAY ACCUMULATIONS through May 28th at the NWMHRC

Year	2012	2011	2010	2009	2008	2007	22 yr. Avg.
GDD42	924	457	832	550	488	674	571.4
GDD50	515	273	441	255	221	349	282.7

Growth Stages at NWMHRC (May 25, 3:30 p.m.)

Apple: Red Delicious – 14 mm fruit

Gala – 12 mm fruit

Yellow Delicious – 11 mm fruit

Pear: Bartlett: 14 mm fruit

Sweet Cherry: Hedelfingen: 13 mm fruit

Napoleon: 13 mm fruit

Gold: 12 mm fruit

Tart Cherry : 13 mm fruit

Balaton: 12 mm fruit

Apricot: 32 mm fruit (new tree)

Grapes: 10"-16" shoots

Weather Report

The late May weather continues to be unusual with extremely warm temperatures and dry conditions followed by some intense rainfall and thunderstorms on Sunday. Daytime temperatures for this past week were in the mid-70s into the mid-80s, and conditions were extremely dry. Growers without irrigation were concerned with the dry conditions as newly planted trees were starting to show signs of drought stress. These warm conditions were coupled with substantial winds, and the fire danger throughout northwest Michigan was at an extreme danger. As of today, Tuesday 29 May, we have accumulated 924GDD base 42 and 515GDD base 50—these accumulations are still well above our average (571GDD base 42 and 283GDD base 50). On Sunday morning, a thunderstorm rolled through the region and brought intense rainfall; the NWMHRC received 1.75" of rain on Saturday into Sunday. The rain came so fast, and many orchard roads and newly planted orchards have wash out areas.

Crop Report

Fruit that is out there is starting to size. With little fruit on the trees, we expect that the fruit will size quicker than usual, particularly with the recent rainfall. The rainfall over the weekend was a welcome relief to the droughty conditions that we have had over the past three weeks; however, the rain came fast and resulted in quite a bit of runoff rather than a nice metered soaking rain. Growers are considering apple thinning, and many are opting to hand thin rather than use chemical thinners because of crop variability and the potential to drop all of remaining fruit. We expect to better estimate the apple crop in the coming week with the sizing fruit. The sweet cherry crop appears to be smaller than we originally anticipated; growers are starting to determine the size of the crop in order to decide to harvest or not. Strawberries are sizing, and the crop is still looking good at this time.

Pest Report

Cherry

With some much needed rainfall over the weekend, the region had a **cherry leaf spot** infection. Symptoms from earlier infections are already visible around the region. Growers should be aware of the increased risk for early defoliation due to these early season infections and need to be scouting their orchards for leaf spot at this time. If leaf spot is visible, growers must be diligent about keeping the remainder of the leaves protected as we still have a long season ahead of us. Regardless of the crop load, growers should plan to continue to manage for **cherry leaf spot** and **powdery mildew**. Early season cover sprays (ideally at first cover timing) are critical to season long powdery mildew management, so growers who have not yet applied a strobilurin fungicide (Pristine, Gem, or Adament) for powdery mildew should consider it is they are effective against both cherry leaf spot and powdery mildew; this spray should go on immediately as these hot and dry conditions are conducive for PM infection. There have been reports of PM in apples across the state. The sterol inhibitor

fungicides (Indar, Elite, Orbit) are also effective powdery mildew materials but will not be effective against leaf spot due to widespread resistance in all the major fruit producing areas of Michigan. Light crop loads this year will likely lead to increased shoot growth and succulent leaf area that is highly susceptible to powdery mildew.

Additionally, the Cherry Industry, Michigan State University, EPA, MDARD, and Syngenta have worked together to obtain a 24 (c) special local need registration (SLN) for use of Bravo Weather Stick (chlorothalonil) beyond shuck split. Traditional timing of chlorothalonil for cherry leaf spot has been prohibited past the shuck split timing prior to this newly registered use. With the 24 (c), growers must follow a series of restrictions in order to use this product legally throughout the growing season to ensure that post-shuck split applications do not result in illegal residues. Growers should be aware that cherries harvested 21 days after the last application of Bravo will have illegal residues, and to ensure the residues on the fruit are reduced to a legal level (less than 0.5 ppm), growers **MUST** carefully follow all label directions. The cooling pad procedures on the SLN label are key to reducing residues to a legal level. Illegal residues not only violate federal law, but they have serious consequences for growers, processors, and the Michigan tart cherry industry. Although a more permanent solution is underway for the 2012 season, growers should obtain the Training Affidavit by going to MDARD's Cherry SLN webpage and complete Steps 2 and 3. MSU Extension will be available to help growers work through this educational step to be able to use chlorothalonil beyond shuck split by using the MDARD website. Growers with questions or those in need of assistance can call the Northwest Michigan Horticultural Research Station at 231-946-1510. However, if orchards have no crop and will **not** be harvested in 2012, chlorothalonil can be used as the label states for non-bearing orchards. This distinction needs to be clear—to harvest or not to harvest—to comply with the 24 (c) label for 2012. Additionally, this special label is for Bravo Weather Stick only and will **not** apply to other products containing chlorothalonil.

The symptoms of **bacterial canker** remain prevalent on sweet cherry around the north; canker has also been reported in tart cherry. This spring conditions were favorable for bacterial canker (prolonged periods of cold, frosty wet weather) and allowed the bacteria to multiply within the overwintering sites and be disseminated by rain. Freeze and frost damage caused by the weather allowed for an easy entry point and infection. Unfortunately there is no effective treatment for bacterial canker at this time.

American plum borers (APB) adult flight slowed this week reinforcing that earlier high trap counts indicated peak adult emergence for first generation at the Station. **Lesser peach tree** borers (LPTB) continued to emerge in large numbers this week with 40 moths per trap; this is a very high trap catch for the Station based on historical data. These LPTB trap catches indicate that we are likely at the peak emergence in that species. Lorsban trunk applications are also recommended for LPTB, but growers who applied Lorsban for APB recently should keep in mind that trunk applications should be applied at least two weeks apart. Growers should be scouting for **oblique-banded leafroller** (OBLR) larvae as leaves continue to expand; we have observed a few larvae in terminals throughout the region and caught the first adult moths this week. Growers can scout their orchards by examining 20 clusters per tree in five trees per orchard for larvae or feeding sites. An insecticide should be applied if they observe more than two larvae or feeding sites per tree. Growers who have not had luck finding the larvae can also hang delta traps with sticky liners and lures to determine if OBLR adult moths are present in their orchards. The materials that target the larval stage of OBLR include Delegate, Belt, Altacor, Voliam flexi, Entrust and Bts. During this growing season growers may end up targeting the second larval generation of OBLR, expected around harvest time. Growers in northwest Michigan should not expect organophosphates or pyrethroids to provide effective control of OBLR because of insecticide resistance.

Plum curculio (PC) activity continues this week with fresh and older, crescent-fan shaped egg-laying scars visible on green fruit. Many of the non-organophosphate insecticides (pyrethroids, neonictinoids, and oxadiazines) for PC management require treatment to begin around petal fall to provide adequate control. The MSU Tart Cherry Postponed Insecticide Treatment Strategy (P.I.T.S.) model for the control of plum curculio is estimating the accumulation of approximately 350 degree days since tart cherry biofix (full bloom 4/20 at the NWMHRC), control is recommended at 375 GDD from the biofix date. The MSU P.I.T.S. model should only be used in carefully scouted orchards using the on-farm biofix date and weather data from the closest weather station. If growers have a short crop that they plan to harvest this year, increased competition for those fruit as egg-laying sites will warrant earlier plum curculio control to protect the remaining fruit. Growers who have no harvestable crop may consider reducing their PC management as the issue of internal larvae in the fruit at harvest is not of concern. Refer to the E154 Fruit Management Guide for more information on PC management materials.

Apple

The wet weather over the weekend triggered an **apple scab** infection period around the region. Based on a 3/20 biofix (McIntosh green tip), the Enviroweather apple scab model is estimating that approximately 95% of primary scab spores have been discharged around the region, and 100% are mature and ready to be discharged. EBDCs and Captan are both excellent scab protectants, and provide five to six days of protectant activity when used at full rates. Growers should remember that spray intervals should be tighter when relying on these materials. Keep in mind that EBDCs have a 77-day PHI, so they are best used early in the growing season. Growers should also note that strobilurin resistance has been confirmed in all major apple growing regions of the state and the mutation confers complete resistance—fungicides containing strobilurin will not work against apple scab and increasing the rate of a strobilurin is not an effective option. Regardless of crop load, growers should carefully consider their scab management program as inoculum can build quickly over a season and make control difficult in subsequent seasons, refer to the E154 Fruit Management Guide for more options. Growers should also carefully consider their powdery mildew management as high levels of infection are being reported from other regions of the state. Strobilurin or sterol inhibitor fungicides are the recommended materials for mildew and should be applied on a protectant basis.

Codling moths flight continued at the station this past week. We have continued to accumulate degree days quickly with the hot weather over the past week leading to the accumulation of 250 DD50 as of 5/29, growers should track the progress on their farms using the Enviroweather codling moth model and on-farm biofix dates. The codling moth model is designed to help growers accurately apply insecticides at the recommended treatment timings which range from 100-250 DD50 post biofix depending on pest pressure and insecticide mode of action. Ovicidal insecticides are positioned early to coincide with first generation egg laying (100 DD50), followed by larvicides (250 DD50) which are targeted at first generation egg hatch. The adults we are currently catching are primarily mating during a four-hour period beginning around dusk. The mild evening temperatures over the past week are ideal conditions for mating. If the cooler evening temperatures forecasted are correct, then we should see activity slow as codling moth flight during this critical period drops quickly when temperatures fall below 60°F. Growers should be confident that low catches are accurately assessing codling moth activity during these cool periods. The positive effects of this slowed activity is compounded as female fecundity (ability to reproduce) decreases by approximately 25% for every 24 hours a codling moth female is delayed from mating

after she has emerged from her cocoon. Based on the unusual patterns of emergence we have observed in other pests this season, growers should be carefully monitoring for codling moth and weighing the pros and cons of treatment in no crop situations. There are a number of effective codling moth materials, refer to the E154 Fruit Management Guide for more information.

Growers should be on the lookout for **oblique banded leafroller** larvae feeding on leaves in the terminals. Growers who haven't had luck finding the larvae can also hang delta traps with sticky liners and lures to determine if OBLR adult moths are present in their orchards. **Oriental fruit moths** continued to emerge at lower levels this week.

REMINDER - GROWER ROUNDTABLE BREAKFAST

As many of you know, MSU Extension's mission has and continues to be "Help(ing) people improve their lives through an educational process that applies knowledge to critical needs, issues, and opportunities". Unfortunately, the series of 2012 weather events is certainly one of those critical issues that has created critical needs within the fruit industry. From many conversations with fruit growers across the state, we understand that there are a number of both immediate and longer-term concerns and challenges that family farms are facing in a year with little to no fruit crop. As MSU Extension hears these concerns and needs, we want to respond to them in a way that ensures our educational efforts are targeted toward those critical issues that timely, relevant, and of utmost concern to the state's fruit growers. We want our efforts to assist in keep Michigan farms successful despite the bleak outlook for the 2012 cropping season.

The MSU Extension Educators from NW Michigan would like to invite you to attend a Grower Roundtable Breakfast to be held **Thursday, May 31st at 7:00 a.m. at The Cottage** (427 Munson Ave.) in Traverse City. At the meeting, we would like to gather input on the impacts of the freeze events on the farm and the needs as a result of these weather events. We hope to facilitate a discussion with growers across the region that will help determine the most important short and mid-term educational needs and how MSU Extension can program to meet those needs.

We hope that you are able to join us and provide us with your valuable insight. Each individual attending will be responsible for the cost of the breakfast they order. If you are not able to attend, we would still welcome your input. The link below leads to a Fruit Loss Grower Survey. Please take a few minutes and complete the survey. We want our efforts to be driven by your needs/concerns.

Survey Link : <http://www.surveymonkey.com/s/L8PV58P>

ESTIMATING CHERRY CROP SIZE

Growers are at a point in the season where they are deciding whether or not to harvest a crop. In some cases, there is not much of a decision because if there is not fruit, obviously there is no need to harvest. However, there may be a few blocks where an estimate needs to be made to determine whether or not it is worthwhile to harvest all or a portion of blocks. The earlier in the season a grower can estimate that a block is not worth harvesting, the greater the potential savings.

To estimate crop size on trees with very light crops, it may be easiest to estimate the number of cherries per tree and convert this to estimated pounds per tree. On average, Montmorency tart cherries weigh about 4.5 grams per cherry, which equates to 100 cherries per lb. With a very small crop, the fruit will likely be larger, but will still take 90-95 cherries/lb. Sweets vary more in size due in large part to cultivar differences. For example, Golds probably average only slightly larger than Montmorency at about 5 grams per cherry or maybe 90 cherries/lb. Larger fruited commonly grown dark sweets average more like 7.0-7.5 grams/fruit, or about 60-65 cherries/lb.

Summary of 2012 Weather Events and Impact on Tree Fruit Crops, NW Michigan

[Click here](#) for the pdf version of the report.



The Northern Grapes Project Webinar Series

Winery Sanitation Basics

Tuesday, June 12, 2012

12:00 Noon Eastern (11:00 AM Central)

7:00 PM Eastern (6:00 PM Central)

Randy Worobo, an Associate Professor in the Department of Food Science at Cornell University, is a well-known food safety expert. He has presented many winery sanitation workshops for the wine industry in California, and will cover the basics of winery sanitation in this webinar.

To Register: Registration is free, but required. To register, fill out the online form posted at:

https://cornell.qualtrics.com/SE/?SID=SV_bDhUgisTebHHmQc

WEBSITES OF INTEREST

Insect and disease predictive information is available at:

<http://www.enviroweather.msu.edu/home.asp>

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

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

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

<http://agbioresearch.msu.edu/nwmihort/faxnet.htm>

[ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1, 2012](#)

Please send any comments or suggestions regarding this site to:

Bill Klein, kleinw@msu.edu

Last Revised: 5-29-12

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