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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

June 5, 2012

GROWING DEGREE DAY ACCUMULATIONS through June 4th at the NWMHRC

Year	2012	2011	2010	2009	2008	2007	22 yr. Avg.
GDD42	1007	620	998	620	612	874	700.0
GDD50	550	312	551	284	291	475	357.3

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

Apple: Red Delicious – 20 mm fruit

Gala – 18 mm fruit

Yellow Delicious – 16 mm fruit

Pear: Bartlett: 18 mm fruit

Sweet Cherry: Hedelfingen: 15 mm fruit

Napoleon: 16 mm fruit

Gold: 14 mm fruit

Tart Cherry : 14 mm fruit

Balaton: 13 mm fruit

Apricot: 33 mm fruit (new tree)

Grapes: 10"-16" shoots

Weather Report

The big weather news in northwest Michigan, as well as most of the state, was the cold and rainy days on 1 and 2 June. Daytime temperatures from 30 May through 2 June only rose to the mid-50s, which seemed very cool considering we hit the high 80s on 28 May. Temperature swings have been extreme throughout the season thus far. Although frost was forecasted in the state, no fruit growing areas recorded any temperatures below freezing. Degree day accumulations are still well ahead of our 20+-year average: 1007GDD Base 42 and 550GDD base 50; our average accumulations are 700GDD base 42 and 357GDD Base 50. Rainfall was variable among the different weather stations, and the NWMHRC weather station recorded 1.49" on 1 June and 0.69" on 2 June. The rainfall total for the NWMHRC is 12.44" since March 1.

Crop Report

With the recent rains and small crop on most tree fruits, fruit is sizing. Sweet cherries are ~15mm, and fruit is straw colored with a bit of reddish tint starting to show. Many growers are considering harvesting sweet cherries in blocks with adequate fruit. Bacterial canker has taken its toll on trees throughout the region, and fruit has been lost to this disease this season. There are very few tart cherries to report. Apples are quickly passing the thinning window as the fruit is ~20mm for most varieties. Many growers are opting to hand thin this year to minimize the potential of over thinning in a year with few fruit. Some varieties look better than others: Honeycrisp, Gala, Jonathans, and Golden Delicious blocks have a small but harvestable crop load. MacIntosh, Red Delicious, and Northern Spy orchards have few fruit. Strawberry harvest will be getting underway this week, and the crop looks great heading into the season.

Pest Report

Cherry

With the continued rainfall, the region experienced a number of **cherry leaf spot** infection periods with the symptoms from earlier infections already visible around the region. These early infections have not yet caused the leaves to yellow but pose a significant obstacle to retaining leaves going into this fall. As temperatures warm, the infection will become more obvious as leaves yellow and drop from the canopy. Leaf spot currently appears as red-purple lesions on the upper leaf surface. If you flip the leaf over, there is often a white dot in the middle of the lesion; these are the secondary spores. Cherry leaf spot lesions have also begun to drop out of some leaves giving a shot hole appearance. 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. Regardless of the crop load, growers should plan to continue to manage for cherry leaf spot. Powdery mildew symptoms are also being reported in tart cherry. Light crop loads this year will likely lead to increased shoot growth and succulent leaf area that is highly susceptible to powdery mildew. Growers who have not yet applied a strobilurin fungicide (Pristine, Gem, or Adament) for powdery mildew, should consider applying as 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 must be tank mixed with a different leaf spot material as the sterol inhibitor fungicides are not effective against leaf spot due to widespread resistance in Michigan. Fungicides for **powdery mildew** must be applied on a protectant bases as there are no effective burn-out materials.

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 cool wet weather this week all but halted insect activity in the north. No **borers** were trapped this week and only 2 **oblique-banded leafroller** (OBLR) adults were trapped across the entire Center's trap line. OBLR larvae are becoming more visible. Growers can scout their orchards by examining 20 terminals 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 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. The materials that target the larval stage of OBLR include Delegate, Belt, Altacor, Voliam flexi, Entrust and Bt's. 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.

Plum curculio (PC) activity continues this week with the delayed P.I.T.S. model predicting that many area farms are in the ideal treatment window to prevent larvae in cherries at harvest. The 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. Growers who have no harvestable crop may consider reducing or delaying their PC management as the issue of internal larvae in the fruit at harvest is not of concern. Refer to the E-154 Fruit Management Guide for more information on PC management materials.

Rose chafer are out in high numbers and may be of particular concern in young orchards with limited leaf area. Established trees with light crops loads will be able to tolerate a substantial amount of foliar feeding. The first **spotted wing drosophilas** were trapped in west central this week. If growers have not yet done so, they should be hanging their yeast traps now. For more information on trapping and monitoring spotted wing drosophila, visit <http://www.ipm.msu.edu/swd.htm>.

Apple

The wet weather triggered a protracted **apple scab** infection period around the region. Based on a 3/20 biofix (McIntosh green tip), the Enviroweather apple scab model is estimating that we are approaching the end of scab season; however, spores continue to be caught in other regions of the state and so protecting tissue against primary scab should continue in the region. EBDC's 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 EBDC's 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 E-154 Fruit Management Guide for more options. Growers should also carefully consider their powdery mildew management as high infection levels 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. Once mildew is established, there are no adequate burn-out materials.

Codling moth flight stopped completely at the Center this past week due to the cool and wet weather. We have continued to accumulate degree days towards the larvicide treatment window, but degree day accumulation is HIGHLY dependent on the biofix date (the first date of sustained codling moth trap catch) for each apple block. Growers should track the progress on their farms using the Enviroweather codling moth model and on-farm trap catch data. 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. Treatments for first generation codling moth should only be applied when a single trap location reaches a cumulative catch of 5 moths or more. 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 cooler evening temperatures over the past week have slowed activity and the zero trap catches reflect how quickly male moth activity drops 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 reduced flight 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 E-154 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, we caught the first 2 moths in apple this week. First generation **oriental fruit moth** emergence has all but ceased with only 1 moth trapped this week. **Rose chafers** are out in high numbers and may be of

particular concern in young orchards with limited leaf area. Established trees with light crops loads will be able to tolerate a substantial amount of foliar feeding.

Grapes

There have been some reports of **powdery mildew** in some locations but no infections have been seen yet in the unsprayed row at the Research Center. Spore release was quite likely following the weekend rains, and infection potential is still high through the end of bloom. Bloom of wild grapes has occurred in the past week. This is the biofix for the **grape berry moth** model. **Potato leaf hopper** adults are now more widespread in the area. Cool weather has limited their reproduction thus far; nymphs should appear soon. **Rose chafer** has appeared in some sites and in a few areas the numbers are very high. The first symptoms of **grape erineum mite** have been seen.

Saskatoons

Saskatoon growers should be on the lookout for **rose chafer** infestation.

HOW TO GET THE MOST OUT OF YOUR FUNGICIDE SPRAYS ON FRUIT CROPS

Consider these tips for improving fungicide spray efficacy and efficiency for your fruit crops.

Posted on **May 31, 2012** by **Annemiek Schilder**, MSU-E News, Michigan State University Extension, Department of Plant Pathology

With the high cost of pesticide applications in terms of product cost, fuel and labor, as well as environmental impact, it is important to get as much benefit from fungicide sprays as possible. There are several things to consider in improving fungicide spray efficacy and efficiency.

Use an appropriate sprayer for the crop and calibrate your sprayer so you know you are applying the right amount of product per acre. This should be done at the beginning of the growing season. A good time to calibrate is in early spring. Check for worn disks and be sure that all nozzle tips have the same angle and capacity rating. Use the right kind of nozzles for the intended application. Nozzles that produce very fine droplets may lead to more drift and less deposition on the target. The use of wettable powder sprays enlarges nozzle openings, so calibration of each nozzle is essential. Use only clean water when calibrating sprayers. Calibration instructions can be found in E-154, [2012 Michigan Fruit Management Guide](#).

Adjust sprayer nozzles to aim at the intended target (e.g., fruit zone in grapes) – reduce speed and airflow to get more fungicide on the target and less drift. Remember any product that drifts away is lost for the purposes of disease control and may contaminate non-target areas and crops. A “patternator” can help you understand where most of the spray is ending up.

Apply the fungicide in a sufficient volume of water to obtain thorough coverage, but not lead to run-off as any fungicide that runs off the plant is lost and is more likely to contaminate ground water. Coverage is especially important for protectant fungicides. Spray volume should be increased as a crop canopy expands. For instance, for an airblast sprayer in grapes, it is recommended to start out with 30 gpa early in the season then increase to 50 gpa after bloom and maybe as high as 75 gpa at veraison. Spray every row. With an airblast sprayer, insufficient product is deposited on the second and third rows to get good disease control.

Check the pH of the spray solution, especially when using alkaline well water. While most fungicides are stable over a range of pH values, some fungicides (e.g., Captan, Dithane, Rovral) can degrade under alkaline conditions. For example, the half-life of Captan is 32 hours at pH 5, eight hours at pH 7, and 10 minutes at pH 8. The half-life of Dithane is 32 hours at pH 5, 17 hours at pH 7, and 34 hours at pH 9. (Insecticides in general are more sensitive to pH than fungicides.) For a list of pesticides and their sensitivity to pH, see the [2012 Michigan Fruit Management Guide](#), pages 59-60. The pH can be adjusted with an acidifying or buffering agent. Avoid letting the spray sit overnight in the spray tank. Fungicides should, whenever possible, be mixed and sprayed as soon after mixing as possible.

Use an appropriate fungicide for the diseases you want to control. Regularly scout vineyards to know what diseases are present and if you are not sure what the problem is, [send a sample to MSU Diagnostic Services](#). Use disease models if they are available (i.e., in the [Enviro-weather](#) system) to estimate disease risk so as to optimize application timing. For best post-infection activity, apply fungicides as soon as possible after an infection period, weather permitting.

During rainy periods, systemic fungicides perform better than protectant or contact fungicides since they are less susceptible to wash-off by rain (although eventually, a portion of systemic fungicides also gets washed off by rain). To get the most curative (post-infection) action from a systemic fungicide, apply the highest labeled rate since activity is concentration dependent. The same goes for preventive action; usually a higher rate often extends the residual period. You may need to reapply protectant fungicides after 1 to 2 inches of rain. Systemic fungicides can last a bit longer.

Add an adjuvant (surfactant, sticker, penetrant) if recommended on the label. Some adjuvants have ultraviolet (UV) light blockers that slow UV degradation of pesticides. However, many modern fungicides are formulated in such a way that adjuvants are not necessary. In fact, some fungicide labels prohibit the use of adjuvants due to the increased potential for phytotoxicity. In our experience, most biocontrol agents (e.g., Serenade) do benefit from the use of stickers or extenders, such as Nu-Film P. In some cases, adjuvants have a disease-suppressive effect because they are detrimental to pathogens; i.e., surfactants zoospores of downy mildew pathogens to explode.

Apply protectant fungicides (e.g., Captan, Ziram, Manzate) during sunny, dry conditions to allow for quick drying onto the leaves. In fact, it appears that protectant fungicides become better adsorbed to the plant surface and more rainfast over several days after application. Any dew formation at night will help redistribute product over the plant surface. While it is better to have protectant fungicide applications on before a rain or heavy dew event which could represent an infection period, avoid putting on protectant fungicides within several hours before a rainstorm as you may lose much of it to wash-

off.

Apply systemic fungicides (e.g., Elite, Abound, ProPhyt, etc.) under humid, cloudy conditions when the soil is moist. That way, the cuticle, or the waxy layer covering the plant surface, will be swelled up and allow the active ingredients to quickly pass through. Under extended hot, dry conditions, the cuticle becomes flattened and less permeable; any product that is not absorbed may remain on the plant surface and break down due to UV light or microbes or get washed off by rain.

Spraying fungicides when there is a light breeze, like two to six miles per hour at nozzle level, is actually better than spraying during still conditions, because even without wind there may be updrafts and eddies caused by the spray equipment leading to fungicide off-target movement. A little wind will aid deposition; you will know where the spray is going and can adjust your spray configuration accordingly. If conditions are not good for spraying, it is better to wait an extra day for better conditions than to lose most of the product to drift.

Another important timing consideration is the time of day, particularly as it relates to temperature and humidity relationships. Both temperature and humidity can affect fungicide drift. The higher the temperature and lower the relative humidity, the greater the opportunity for fungicide evaporation or volatilization. This can be avoided by spraying early in the morning when temperatures are lower and the relative humidity is higher. In addition to the reduced drift hazard from fungicide volatilization early in the morning, drift may also be minimized in the morning hours due to calmer winds and lower convective air turbulence.

If you are not getting the control you used to get with a particular product, do consider the possibility of fungicide resistance. This could be an issue with pathogens that have a high reproductive potential (powdery mildews, downy mildews and rusts) that have been exposed to repeated sprays of systemic fungicides, such as the strobilurins (Abound, Cabrio, Flint, Pristine), sterol inhibitors (Rally, Elite, Procure, Indar, etc.), benzimidazoles (Topsin M), phenylamides (Ridomil) and dicarboximides (iprodione). In grape powdery mildew in Michigan, strobilurin resistance has been demonstrated, and sterol inhibitor resistance is suspected. Furthermore, we also suspect strobilurin resistance in grape downy mildew. However, you must first rule out poor spray timing and coverage as possible causes of poor fungicide performance. Ways to reduce the risk of fungicide resistance include alternating or tank-mixing fungicides with different modes of action and avoiding spraying systemic fungicides at below-label rates. Also, try to avoid applying systemic fungicides on heavily sporulating colonies as the probability of selecting mutants increases with higher pathogen population densities. Use a contact fungicide (JMS Stylet Oil, Oxidate, Kaligreen) first or in the tank-mix if appropriate to kill spores.

Tank-mixing certain fungicides can increase the risk of phytotoxicity. For instance, do not tank-mix sulfur and oil-containing products nor spray them within two weeks of each other. Do not apply sulfur to sensitive crop cultivars or at temperatures above 80°F. Do not apply copper under cool, slow-drying conditions. Also, do not tank-mix phosphorous acids (Prophyt, Phostrol) with copper, as copper can become more available and phytotoxic in acidic solutions. Also, do not apply phosphorous acids to plants that are stressed (i.e., due to heat or drought stress). Tank-mixing products containing difenoconazole (Revus Top, Inspire Super) with non-ionic surfactants or foliar fertilizers can increase the risk of phytotoxicity, particularly on succulent, fast-growing plant tissues. Some crop cultivars are sensitive to strobilurins – ‘Concord’ grapes are sensitive to Pristine and Flint. Captan can become phytotoxic when applied with oil or within four days of an oil spray.

Tank-mixing some fungicides can inactivate one or both. For instance, don’t tank-mix copper with the biofungicide Serenade (*Bacillus subtilis* – a bacterium), since copper is toxic to bacteria and can inactivate Serenade. While part of the activity of Serenade is due to antibiotics resulting from the fermentation process used to produce Serenade, some of the efficacy is related to activity of live bacteria. Similarly, the biofungicide RootShield (*Trichoderma harzianum* – a fungus) is incompatible with the fungicides Orbit (propiconazole), Elite (tebuconazole), and Procure (triflumizole) which can kill the *Trichoderma* spores. Also, don’t tank-mix bicarbonates with phosphorous acids or use lime with Captan as fungicide activity will be reduced. Fixed copper formulations and lime should not be used with Guthion, Imidan, Sevin, Thiodan, Bayleton, or Captan as efficacy may be lessened and the risk of phytotoxicity increased.

Chemical compatibility also needs to be considered. For instance, fungicides in dissolvable bags are incompatible with spray oils and boron-containing fertilizers because these materials prevent the bags from dissolving. In addition, chemical incompatibility may cause products to go out of solution or suspension and precipitate in the bottom of the tank. When tank-mixing chemicals, read the label for indications of incompatibility with certain products. Also, add products in the following order unless otherwise directed on the product label:

Small amount of water, and begin agitation

Water-soluble packets

Wettable powders as a slurry

Dry flowables or water-dispersible granules

Liquid flowables

Emulsifiable concentrates (oil concentrates)

Remaining water

Do not apply systemic fungicides to dead or partially dead leaves; this also applies to leaves in which the veins have been killed. Systemic products cannot move around in dead tissue or through dead leaf veins and, therefore, will not be distributed well in the plant.

To improve fungicide coverage of the fruit zone, timely leaf pulling and shoot thinning in the fruit zone will be helpful. In addition, shoot positioning will help open up the canopy and will improve fungicide coverage as well as sunlight penetration, which will help suppress fungal development. Overall, pruning and training grapevines to have a more exposed and open canopy will aid in disease control.

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).

MARKETMAKER ASSISTS FRUIT INDUSTRY

MarketMaker provides assistance to Michigan's fruit producers affected by spring freezes.

Posted on **May 30, 2012** by **Tom Kalchik**, MSU-E News, Michigan State University Extension
Many Michigan fruit producers were adversely affected by warm temperatures in March followed by freezes in April. This resulted in many farmers being short of popular fruits like apples and peaches when selling directly to the consumer. [MarketMaker](#) can provide assistance to farmers who experience a shortage of fruits due to this spring's adverse weather and now operates in 17 states. Some of those states produce some of the same fruit crops that are produced in Michigan but have not been effected by the extreme temperatures. For example, [MarketMaker](#) lists 45 peach producers in South Carolina, 75 in Georgia, 13 in Florida, 5 in Alabama and 53 in Kentucky. Michigan growers who need peaches for their farm markets can contact growers through [MarketMaker](#) to secure fruit and help fill gaps in their locally produced products.

Simply go to the [Michigan MarketMaker website](#) to find growers in other states.

The ideal situation is to have locally produced products available for direct market customers. However, this spring's adverse weather makes offering locally produced products difficult if not impossible for some growers. Farmers involved in direct marketing need to have products available to meet customer needs. Shipping product from areas to the south is not the ideal scenario but may be a market necessity this year to meet customer expectations.

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).

PESTICIDE APPLICATOR CREDITS GRANTED FOR MAEAP VERIFICATION

Michigan farmers who have achieved verification in the Farmstead or Cropping Systems through the Michigan Agriculture Environmental Assurance Program (MAEAP) will be eligible for eight core pesticide applicator re-certification credits. Re-verified Cropping or Farmstead Systems, completed three or more years after the initial verification, will be eligible for four core pesticide applicator re-certification credits. The MAEAP verification pesticide applicator re-certification credits are available for Systems verified after January 1, 2012.

The verification credits are in addition to the pesticide applicator re-certification credits already available for completing environmental risk assessments with Farm *A* Syst and Crop*A*Syst.

This recognition is based on the number of hours of pesticide-related technical support work completed by the farmer and the conservation district MAEAP technician after an environmental risk assessment in preparation for MAEAP System verification.

It was determined an average of 12 hours of pesticide related technical work is done to mitigate pesticide related environmental risks on the Farmstead System and 18 hours for the Cropping System.

Activities supported by technician activities in preparation for System verification include: developing an emergency farm plan; reporting extremely hazardous substances stored on the farm to the local emergency planning committee and the State; maintaining required setbacks for pesticide storages from wells and surface water; preparing environmentally sensitive field maps; identifying pesticide use restrictions for pesticides with groundwater or surface water use restrictions; assisting with pesticide inventory control; and proper disposal of unwanted or unusable pesticides. Most of these activities fall outside the scope of regulatory requirements but enhance environmental protection efforts.

Pesticide applicator re-certification credits are awarded to the owner/applicator of the MAEAP verified farm. The applicator must be currently certified and either own or lease the farming system.

Farmers with multiple cropping systems at one location must have all enterprises evaluated for environmental risks and verified to be eligible for Cropping System pesticide applicator re-certification credits. Farmers with multiple farming locations may receive credits for only one Farmstead System and one Cropping System.

For additional information on pesticide applicator re-certification credits and other producer incentives for MAEAP verification, farmers are encouraged to contact their MAEAP technician. Dan Busby and Garrett Coggon can be contacted at the Grand Traverse Conservation District office at 231.941.0960.

SOIL ACADEMY 2012 SET FOR SEPTEMBER 5

MSU Extension's Soil Academy 2012 is a refresher course in soil science designed to help farmers, crop consultants and agribusiness understand more advanced topics in soil fertility and nutrient management.

Posted on **June 4, 2012** by **George Silva**, MSU-E News, Michigan State University Extension

The [Soil Academy 2012](#) will be held on Wednesday, September 5 from 9:30 a.m. to 5 p.m. at the Mason Technology Center, 474 S. Onondaga Road, Mason, Mich. ([view map](#)). We will discuss scientific vocabulary and on-farm practices needed to understand more advanced topics in soil fertility and nutrient management.

This event will feature [USDA](#) soil surveys and web applications, Michigan soil types, soil health and quality, soil fertility and nutrient management basics, GPS and variable rate technology, muck soil crop production, tours of the [MSU](#) field crop research plots and the [MSU Soil and Plant Nutrient Laboratory](#). Speakers from [USDA](#), [Michigan State University Extension](#), [Dekalb/Asgrow](#), Jorgenson Elevator and other agencies will address the event.

This phase one session will serve as a primer to a comprehensive soil fertility and nutrient management phase two in

winter 2013. The registration is \$50 and is limited to 40 participants. The registration deadline is August 15. [Register online](#) or [view the brochure and mail-in registration form](#).

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).

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](#)

Please send any comments or suggestions regarding this site to:

Bill Klein, kleinw@msu.edu

Last Revised: 6-5-12

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June 12, 2012

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Gala – 24 mm fruit

Yellow Delicious – 25 mm fruit

Pear: Bartlett: 21 mm fruit

Sweet Cherry: Hedelfingen: 19 mm fruit

Napoleon: 18 mm fruit

Gold: 15 mm fruit

Tart Cherry : 14 mm fruit

Balaton: 13 mm fruit

Apricot: 36 mm fruit (new tree)

Grapes: First bloom

Weather Report

Summer weather has officially arrived in northwest Michigan this past week. Daytime temperatures were in the 70s and 80s, and over the weekend, we almost hit 90 on Sunday. Nighttime temperatures over the past few nights never went below the mid-60s, which contributed to the summery feel. As of this week, we have accumulated 1202GDD base 42 and 689GDD base 50. These are significantly higher than our 20+-year averages: 850GDD base 42 and 453GDD base 50. There were scattered showers on 8 and 9 June, and rainfall amounts varied by weather station. Here are the NWMHRC, we received no rain while the East Leland station recorded 0.29" and Kewadin recorded 0.67" of rain on those two days.

Crop Report

Fruit is sizing in all crops. Unfortunately, a few cracks are starting to show up in certain varieties of sweet cherries. Sweet cherries are also coloring up, and a few varieties in our variety trial are almost ripe here at the NWMHRC. There will be no doubt that we will have Michigan cherries for the National Cherry Festival. Some growers are starting to hand thin apples in blocks where they did not use chemical thinners. Sweet and tart cherry trees are starting to look a bit healthier over the past week—lots of slow growth and light green leaves. Strawberry harvest began in the region on Friday, and growers are pleased with the size and quality.

Pest Report

Cherry

Despite the varied rainfall levels around the region, the **cherry leaf spot** model did not indicate that any primary infection took place, though the symptoms from earlier infections continue to become visible around the region and produce secondary spores that are not accounted for in the cherry leaf spot infection model. Some of these early infections have not yet caused the leaves to yellow but pose a significant obstacle to retaining leaves going into this fall. As temperatures warm, the infection will become more obvious as leaves yellow and drop from the canopy. Leaf spot currently appears as red-purple lesions on the upper leaf surface. If you flip the leaf over, there is often a white dot in the middle of the lesion; these are the secondary spores. Some older cherry leaf spot lesions have also begun to drop out of some leaves giving a shot hole appearance. If leaf spot is present, growers must be diligent about keeping the remainder of the leaves protected as we still have a long season ahead. Regardless of the crop load, growers should plan to continue to manage for cherry leaf spot. **Powdery mildew** symptoms are also being reported in tart cherry. Light crop loads this year will likely lead to increased shoot growth and succulent leaf area that is highly susceptible to powdery mildew. Growers who have not yet applied a strobilurin fungicide (Pristine, Gem, or Adament) for powdery mildew, should consider it as they are effective against both cherry leaf spot and powdery mildew. The sterol inhibitor fungicides (Indar, Elite, Orbit) are also good powdery mildew materials but must be tank mixed with a leaf spot material as the sterol inhibitor fungicides are not

effective against leaf spot due to widespread resistance in Michigan. Fungicides for powdery mildew must be applied on a protectant basis as there are no effective burn-out materials.

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.

Insect activity rebounded this week with the first catch of **cherry fruit fly** on Friday (6/8) at the Station. Cherry fruit fly treatments target the adult to prevent egg-laying with most requiring application 7-10 days after the first fly is captured in the region. Growers should carefully consider the risk of not treating for this pest in low crop load situations, particularly in moderate-high pressure site. An average of 20 **lesser peach tree borer** were captured in each trap this week and the first greater peach tree borer was captured; significant first generation **American plum borer** flight appears to have come to an end. **Oblique-banded leafroller** (OBLR) adult flight was way up this week with an average of 21 moths per trap indicating that we are well through the early treatment timing to target young larvae. Growers who haven't had luck finding the larvae can hang delta traps with sticky liners and lures to determine if OBLR adult moths are present in their orchards at this time. During this growing season, growers may end up targeting the second larval generation of OBLR, expected around harvest.

Plum curculio (PC) activity continues this week. Growers who have no harvestable crop may have decided to delay plum curculio insecticide applications and should also consider reducing their PC management programs as the issue of internal larvae in the fruit at harvest is not of concern. Refer to the E-154 Fruit Management Guide for more information on PC management materials.

Rose chafer are out in high numbers and may be of particular concern in young orchards with limited leaf area. Established trees with light crops loads will be able to tolerate a substantial amount of foliar feeding. These insects are related to Japanese beetles, and both insects feed on many crops including, apples, cherries, and wine grapes, among a long list of other plants. Rose chafers are often more problematic in crops that are adjacent to grassy areas, particularly those with sandy soils where grubs overwinter and feed on grass roots. Rose chafer adults are tan, long-legged beetles (<http://www.grapes.msu.edu/rosechafer.htm>), and feed on tree fruit and grape vine foliage. The feeding damage is also similar to that of Japanese beetles where adult beetles feed on the leaf tissue between the large veins, a type of injury known as skeletonizing. However, if populations reach high enough levels, rose chafers can feed on developing fruits. The good news is that mating and egg-laying only lasts for around two weeks, and the average life span of the adult is three weeks. Rose chafer management can be questionable in orchard or vineyard systems both because the insects are only present for a short time and they can re-infest an area quickly after an insecticide application. The feeding damage and/or population size of this pest may not warrant an insecticide, particularly on older trees or vines with ample leaves present at this time of the year. Many insecticides will knock down the beetle population effectively, but most are only rated as fair or good because of the beetles' mobility and potential to re-infest an orchard or vineyard. There are many options for control, and growers should consult the E-154 Michigan Fruit Management Guide for specific insecticides. Growers should also consider using a control option that would be effective against other insect pests that are also present in orchards or vineyards at this time.

Apple

With the additional rainfall and warm temperatures, most growers in the region have likely moved out of the risk for primary **scab**, though growers with highly susceptible varieties or high pressure sites should consider a conservative approach to primary scab management, regardless of crop load. Inoculum can build quickly over a season and make control difficult in subsequent seasons; refer to the E-154 Fruit Management Guide for management options. Growers should also carefully consider their **powdery mildew** management as high infection levels 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. Once mildew is established, there are no adequate burn-out materials.

Codling moth flight picked up this week with an average of 8 moths per trap. We continue to quickly accumulate degree days with the hot weather this weekend, but degree day accumulation is HIGHLY dependent on the biofix date (the first date of sustained codling moth trap catch) for each apple block. Growers should track the progress on their farms using the Enviroweather codling moth model and on-farm trap catch data. Treatments for first generation codling moth should only be applied when a single trap location reaches a cumulative catch of 5 moths or more. 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 E-154 Fruit Management Guide for more information. **Oblique banded leafroller** adult flight picked up this week in apple sites with an average of 11 moths per trap indicating that we are passed the larvicide treatment window for the first generation. We expect a second larval generation in July. Growers can hang delta traps with sticky liners and lures to determine if OBLR adult moths are present in their orchards and to help determine the optimal treatment timing in July. The second generation flight of oriental fruit moth has begun.

Rose chafers have been observed across northwest Michigan, and some areas seem to have higher populations than usual. These insects are related to Japanese beetles, and both insects feed on many crops including, apples, cherries, and winegrapes, among a long list of other plants. Rose chafers are often more problematic in crops that are adjacent to grassy areas, particularly those with sandy soils where grubs overwinter and feed on grass roots. Rose chafer adults are tan, long-legged beetles (<http://www.grapes.msu.edu/rosechafer.htm>), and feed on tree fruit foliage. The feeding damage

is also similar to that of Japanese beetles where adult beetles feed on the leaf tissue between the large veins, a type of injury known as skeletonizing. However, if populations reach high enough levels, rose chafers can feed on developing fruits. The good news is that mating and egg-laying last only about two weeks, and the average life span of the adult is three weeks. Rose chafer management can be questionable in orchard or vineyard systems both because the insects are only present for a short time and because they can re-infest an area quickly after an insecticide application. The feeding damage and/or population size of this pest may not warrant an insecticide, particularly on older trees or vines with ample leaves present. Many insecticides will knock down the beetle population effectively, but most are only rated as fair or good because of the beetles' mobility and potential to re-infest an orchard or vineyard. There are many options for control, and growers should consult the E-154 Michigan Fruit Management Guide for specific insecticides. Growers should also consider using a control option that would be effective against other insect pests that are also present in orchards or vineyards at this time.

Grapes

Early cultivars are into bloom; Chardonnay, Riesling and others are not far behind.

Potato leafhopper adult numbers are still climbing in vineyards, and nymphs are now more numerous. **Rose chafer** populations are extremely high at some sites, resulting in skeletonization of tender leaves and some injury to flower buds. Vineyards should be scouted closely for this pest so population hot spots can be found and treated where needed. The adults of **sphinx moths** are now in flight, so the first larvae of these will likely appear in the next couple of weeks. No symptoms of **powdery mildew** have been seen in the vineyards we scout for the FruitNet, but there have been some reports of this disease in the region. Scouting for this disease will become more difficult as the vine canopy becomes more dense with leaves. We are now in the most critical period for preventing powdery mildew infections of fruit clusters, which will last until 3-4 weeks after bloom.

Saskatoons

Rose chafers are causing significant skeletonization of leaves at many sites, but the distribution of this pest is spotty- some areas have very few of them. **Potato leafhopper** adults are in high numbers at some sites. Infections of **rust** disease have been seen on leaves and berries; this is a particularly destructive and fast spreading disease that require a tight fungicide schedule to manage it.

Shot Hole Borer

Nikki Rothwell, District Educator, MSU-E

We have identified shot hole borer, *Scolytus rugulosus*, in two apple orchards planted in 2011.

These beetles are an introduced pest from Europe and are a rare pest of tree fruit in northwest Michigan. Shot hole borers do not attack and breed in healthy trees but prefer trees that are weak, and in the two cases reported, these beetles are killing these young apple trees. These beetles do not typically cause problems in orchards unless they are excessively abundant. In addition to apple, other shot hole borer hosts include cherry, peach, plum, prune, apricot, nectarine, apple, pear, quince, wild cherry, wild plum, almond, hawthorn, ash, and elm.

The adult borer (Figure 1) is very small--1/10 of an inch long and 1/3 as wide and are black in color.

The wing covers are grooved and the posterior margins of the wings have a toothed edge. Around 1 June, adult beetles appear on suitable hosts and begin to excavate brood chambers between the bark and sapwood. The female chews a perfectly round hole (Figure 2), about 1/20 of an inch in diameter, through the bark and then extends a slightly enlarged burrow that is made parallel to the grain of wood and 1 1/2-2 inches in length. She deposits eggs into the brood chamber and is capable of laying 75-90 eggs. The eggs hatch and the larvae burrow between the bark and sapwood (Figure 3) and will feed for 30-36 days. The larvae (Figure 4) pupate just beneath the surface of the sapwood, and the adult beetles chew holes to exit the trees. The beetles have been given their name due to the holes looking like 'shot' from a gun if the beetles are numerous enough. In both recent cases, only isolated holes were observed in each tree. Because these holes are so small, they can be difficult to see. Most holes we observed were located on the graft union or on the scion ~1 1/2 feet from the ground.

Shot hole borer infestations are likely the result of unburned burn piles that have been left for more than one year or in orchards near woodlots. They also only attack weakened trees, such as freshly killed or diseased trees, trees that are stressed by drought, winter injury or insect damage, trees with low vigor, or newly planted trees (transplant shock). Lorsban trunk applications will protect the trees from burrowing females, but once trees are infested, there are few good control options that will penetrate the wood to eradicate feeding larvae.



Figure 1. Adult Shot Hole Beetle



Figure 2. Entry Hole



Figure 3. Chamber with Larvae



Figure 4. Shot Hole Larva

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](#)

Please send any comments or suggestions regarding this site to:

Bill Klein, kleinw@msu.edu

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[Nikki Rothwell](#)

District Horticulturist

[Erin Lizotte](#)

District Fruit IPM/IFP Agent

[Bill Klein](#)

Farm Mgr, NWMHRC

[Duke Elsner](#)

Agricultural & Regional Viticulture Agent

June 19, 2012

GROWING DEGREE DAY ACCUMULATIONS through June 18th at the NWMHRC

Year	2012	2011	2010	2009	2008	2007	22 yr. Avg.
GDD42	1383	923	1289	865	930	1259	1018.4
GDD50	816	506	731	426	498	680	566.5

Growth Stages at NWMHRC (June 18, 1:00 p.m.)

Apple: Red Delicious – 34 mm fruit

Gala – 30 mm fruit

Yellow Delicious – 33 mm fruit

Pear: Bartlett: 25 mm fruit

Sweet Cherry: Hedelfingen: 22 mm fruit

Napoleon: 21 mm fruit

Gold: 19 mm fruit

Tart Cherry : 18 mm fruit

Balaton: 16 mm fruit

Apricot: 40 mm fruit (new tree)

Grapes: 50% Bloom

Weather Report

In the past week, our temperatures varied from the mid-70s into the high 80s over the weekend, and the forecast is predicting temperatures to hit the 90s in the next two days. Humidity has also been high, and this situation is cause for concern with the cherry leaf spot symptoms showing up throughout the northwest. In 2012, we have accumulated 1383 GDD base 42 and 816 GDD base 50, and these accumulations are still higher than our 22-year averages: 1018 GDD base 42 and 566.5 GDD base 50. We have also received substantial rainfall over the past week. Here at the NWMHRC, we received 1.72" on 17 June, 0.18" on 18 June, and another 0.72" on 19 June. The rainfall over the last evening came as a thunderstorm coupled with high winds and an intense downpour.

Crop Report

Growers are currently applying ethephon to sweet cherries, and harvest in early varieties will start within the next week. Ethephon applications in the forecasted heat may cause phytotoxicity, and we are recommending growers reduce their rates to 75% of a full rate if temperatures are over 84F. Cracking may be a problem with such a light sweet cherry crop and the recent rains. Apples are still looking good, and of this morning, we have had no reports of hail associated with the thunderstorms of last evening. However, with high winds and extreme downpours, trauma may have been caused to apple trees in some orchards. Strawberry harvest is still underway, and although the size is small, the quality is good. This coming heat will not be conducive for stretching out the strawberry harvest.

Pest Report

Cherry

There is tremendous leaf loss in tart cherries at this time (Please see Yellowing and Leaf Loss Reported in Tart Cherry). Defoliation will vary from orchard to orchard, but there are reports of extremely high levels of leaf loss throughout the region. We suspect that this leaf drop is due to the following: sour cherry yellows, cherry leaf spot, bacterial canker, green ring mottle virus, and potential chemical phytotoxicity. Although the leaf yellowing and potential drop may be the result of a combination of issues above, growers should be out scouting the orchards for **cherry leaf spot** (CLS). With the heat and recent rainfall, we have the potential for a serious CLS epidemic. We are recommending that growers come back in after these next rain (that is coming across the lake now) with a *full cover of Syllit/captan as soon as they can get into the orchard*. Growers in Wisconsin have reported Syllit damage in Montmorency, but we have only seen this type of phytotoxicity in Balatons. Growers should *not* use Syllit in Balatons with the predicted heat in the next few days. Half sides at this time will not be effective in reducing the amount of CLS fungi in the orchards. If growers are using the 24 (c) with Bravo Weather Stik, applications will need to be discontinued *21 days prior* to harvest. **Powdery mildew** is present in

cherry orchards, but at levels much lower than apples.

Bacterial canker on sweet cherry fruits is evident in orchards at this time. In 2011, we saw these canker infections provide an entry for the **American brown rot** (ABR) pathogen. With canker on the fruit and these warm and wet conditions, growers should be diligent about spraying for ABR to protect the small crop in the trees. Additionally, this last rain may have caused some cherries to crack, and these fruits are also susceptible to the ABR pathogen; cracking is more of an issue in a small crop than a large one. The SI's are the best products to protect fruit against ABR, but Pristine is also good against ABR and will provide some protection against PM if the infection has not already been established.

Some insects are more abundant this week. **Plum curculio** is evident in all orchards across the region, and because there are fewer fruit this season, they are competing for the remaining fruit on the trees. We are well past the 375GDD mark to use the PITS model, so growers should keep their fruits covered until harvest. Dr. Duke Elsner has reported that plum curculio have been found in houses due to their high population size and lack of available hosts. We captured an average of 13 **cherry fruit flies** here at the station this week, and we predict their emergence to be prominent across the region after the recent rains. Fruit is susceptible to CFF egg laying in the coming weeks, and growers should keep covered for this insect as well. Lesser peach tree borer numbers remain high this week, and we have captured an average of 3 peach tree borers in our traps this week. A trunk spray targeting both of these trunk boring pests may be optimal at this time.

Obliquebanded leafroller (OBLR) trap counts are up this week with an average of 29 moths per trap. These adults will be mating, and females will be laying eggs—the larvae hatching from these eggs are the ones that have the potential to be present in tanks at harvest. There are many effective insecticides for OBLR, but growers should be sure to check the pre-harvest intervals (PHIs) for these products as we near harvest in sweet cherries. The materials that target the larval stage of OBLR include Delegate, Belt, Altacor, Voliam flexi, Entrust and Bts. Because larvae were difficult to find at the petal fall timing, growers should be prepared to treat for the summer generation of OBLR larvae, particularly if trap counts and/or larvae rolling terminals or found in fruit clusters are at high levels. Larvae that web together sweet cherry fruit clusters will result in less penetration of fungicides into the clusters, which will likely increase ABR infections. Growers in northwest Michigan should not expect organophosphates or pyrethroids to provide effective control of OBLR because of insecticide resistance.

Apple

With the heat and rain, an infection period was triggered for **apple scab**. Based on the 3/20 biofix (McIntosh green tip), the Enviroweather apple scab model is estimating that approximately 98% of primary scab spores have been discharged around the region, and 100% are mature and ready to be discharged. Although the model does not predict the end to primary apple scab, the recent rains and heat have likely caused all spores to mature and be discharged at this time. Growers should be aware of the 77-day PHI for the EBDCs as we are approaching that date depending on variety and time of harvest. 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. **Powdery mildew** (PM) is evident in area orchards, and other areas of the state are reporting severe PM infections.

Fireblight strikes have started to show up across the region. Growers should be aware of trauma events with these recent intense thunderstorms. Mycoshield will not be effective after a storm event—it needs to be applied prior to the event.

For some reason, **codling moth** (CM) trap counts are still low here at the NWMHRC. However, higher trap counts have been reported in commercial blocks in northwest Michigan. Codling moth numbers are also up across the state. Growers should continue to monitor for this pest in their own orchards as there is tremendous variability in the pest population from block to block; the degree day accumulation is HIGHLY dependent on the biofix date (the first date of sustained codling moth trap catch) for each apple block. Growers should track the progress on their farms using the Enviroweather codling moth model and on-farm trap catch data. Treatments for first generation codling moth should only be applied when a single trap location reaches a cumulative catch of 5 or more moths. 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 E-154 Fruit Management Guide for more information.

Obliquebanded leafroller numbers are also up in apple, and we caught 16.5 moths per trap this week. The summer generation larvae will begin showing up in regional orchards in the coming weeks, and fruit should remain protected from these larvae as the fruit are less likely to drop as a result from insect feeding at this time.

Rose chafers have been observed in extremely high numbers across northwest Michigan. Rose chafers have a long list of host plants, including apples, cherries, and winegrapes. Rose chafers are often more problematic in crops that are adjacent to grassy areas, particularly those with sandy soils where grubs overwinter and feed on grass roots. Rose chafer adults are tan, long-legged beetles (<http://www.grapes.msu.edu/rosechafer.htm>), and feed on tree fruit foliage. The adult beetles feed on the leaf tissue between the large veins, a type of injury known as skeletonizing. The good news is that mating and egg-laying last only about two weeks, and the average life span of the adult is three weeks. Rose chafer management can be questionable in orchard or vineyard systems both because the insects are only present for a short time and because they can re-infest an area quickly after an insecticide application. The feeding damage and/or population size of this pest may not warrant an insecticide, particularly on older trees or vines with ample leaves present. Many insecticides will knock down the beetle population effectively, but most are only rated as fair or good because of the beetles' mobility and potential to re-infest an orchard or vineyard. There are many options for control, and growers should consult the E-154 Michigan Fruit Management Guide for specific insecticides.

Grapes

High temperatures over the last few days has brought most cultivars into full bloom.

Fortunately, the same warm weather has rushed along the period of rose chafer activity; the numbers of adult beetles have dropped quite rapidly over the last few days. **Potato leafhopper** can be found in most vineyards, with nymphs now present and easy to find.

Powdery mildew is the principle concern for vineyards for the next few weeks. Even if scouting reveals no infections at the moment, it is advisable to keep vines protected during this time to protect the newly set berries.

Saskatoons

Fruit is maturing and gaining color. Even in the Northport area a few ripe fruits can be found. **Potato leafhoppers** are easy to find on succulent terminal growth, but their injury does not seem to be significant to leaf condition or shoot growth. The feeding of the first generation of **leafroller** caterpillars is nearly over. I'm rearing out a few leafrollers to see what species are involved in saskatoons.

YELLOWING LEAVES AND LEAF LOSS REPORTED IN TART CHERRIES

Defoliation in tart cherry orchards may be caused by bacterial canker, cherry leaf spot, cherry yellows or chemical phytotoxicity.

Posted on **June 18, 2012, MSU-E News**, by **Nikki Rothwell**, and George Sundin, Michigan State University Extension, Department of Plant Pathology

Defoliation has been observed in many tart cherry orchards across the region. The list of potential culprits causing this leaf drop is long, and we are still investigating the cause of defoliation in many blocks.

First, **bacterial canker** is prevalent in tart cherry blocks with our cool, wet spring. This disease is most problematic in sweet cherries, but under the right conditions, bacterial canker can be present in tart cherries following cold, wet weather during bloom. Leaves that had bacterial canker infections earlier this season are now turning yellow and dropping from the trees. Canker symptoms on tart cherry leaves are characterized by large, brown spots that are circular to somewhat angular. Sometimes these spots coalesce and form large, dead areas on the leaves; leaves with bacterial canker also have a tattered appearance (Photo 1). We are seeing leaf drop from these early bacterial canker infections at this time, particularly in tart cherries.



Photo A. Bacterial canker. Photo credit: A. Jones and E. Lizotte, MSUE

The next offender on the defoliation list is **cherry leaf spot**. This disease is notorious for dropping leaves; however, with good spray coverage and timing, leaf loss does not usually occur until sometime after harvest. With the loss of crop, growers may have stretched fungicide spray intervals and there was likely wash off with heavy rains early in the season. This scenario resulted in cherry leaf spot infections in May, and many of these early-infected leaves are now dropping from the tree. Photo 2 is a good example of leaves infected with cherry leaf spot. Be sure to flip over the leaf to look on the underside – the fungus will look white and slightly fuzzy. This characteristic will not be present on leaves with bacterial canker.

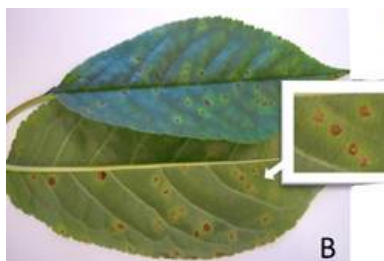


Photo B. Cherry leaf spot. Photo credit: A. Jones and E. Lizotte, MSUE

Cherry yellows is a viral disease that also causes tart cherries to drop their leaves. This classic, leaf-yellowing disease is caused by the prune dwarf virus. Defoliation is happening now and often occurs in waves throughout the season. The severity of leaf drop is temperature dependent at 30 days prior to defoliation, and cold temperatures

result in increased development of later symptoms. Leaves that are infected with cherry yellows have a yellow and green mottling that is not in a distinct pattern (Photo 3).



Photo C. Sour cherry yellows. Photo credit: A. Jones and E. Lizotte, MSUE

Another viral disease that causes defoliation in tart cherry is **green ring mottle virus**. We do not regularly observe this disease as most of our trees are certified virus-free. Leaves infected with green ring mottle virus are similar to those infected with cherry yellows, except that the green spots within the yellow leaf are in a ring pattern (Photo 4).



Photo D. Green ring mottle. Photo credit: A Jones and E. Lizotte, MSUE

The last two potential causes of leaf drop this season are from **phytotoxicity**, caused by spray applications that are still under investigation. Growers have reported leaf loss after using dodine and copper products. We cannot conclude for certainty that these materials caused the leaf loss as it has not been consistent in

all orchards. There may be secondary factors in blocks that caused leaf drop, such as temperature, humidity, slow drying time, fast drying time and other factors. Dodine has not been recommended for sweet cherries because of the potential for phytotoxicity, and we have observed phytotoxicity in Balatons in past seasons. We suspected that dodine phytotoxicity in Balatons is a result of the sweet cherry parentage in this variety. Last season, growers observed phytotoxicity in Montmorency, and the common denominator in those blocks appears to be the use of dodine (no photo available at this time). Leaves that are damaged from spray applications will eventually drop from the tree.

Lastly, we have some reports of phytotoxicity from copper products (Photo 5). Many growers that used copper in the 1960s remember the phytotoxicity issue in tart cherries with copper use, as copper was one of the recommended fungicides for cherry leaf spot control. More recent data have shown that copper products are particularly effective against cherry leaf spot and provide excellent control at 1.2 lbs of metallic copper. However, the potential from phytotoxicity from copper use remains a concern for many growers, and this year we have evidence that suggests that some copper formulations can cause some leaf loss. But as mentioned above, we have blocks where copper was used and defoliation was a concern while other blocks received the same amount of copper product and resulted in significantly less leaf loss.



Photo E. Copper phytotoxicity. Photo credit: A. Jones and E. Lizotte, MSUE

Until we further investigate this issue, growers should not abandon the use of copper products, particularly as those blocks that have used copper exclusively this season are some of the cleanest cherry leaf spot orchards in the region. Some of this phytotoxicity may also be related to the amount of lime used in a copper spray – many growers have reduced the lime in the spray tank as it is difficult to use. Reduced amounts of lime may have influenced the phytotoxicity in the copper applications.

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

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PROTECT YOUNG GRAPE CLUSTERS FROM ALL MAJOR GRAPE DISEASES

Developing grape clusters are very susceptible to fungal diseases and need to be protected.

Posted on **June 12, 2012**, **MSU-E News**, by **Annemiek Schilder**, MSU-E News, Michigan State University Extension, Department of Plant Pathology

Young fruit clusters are highly susceptible to all major diseases, including [downy mildew](#), [powdery mildew](#), [black rot](#), [Phomopsis](#) and [anthracnose](#). If prolonged cool, wet weather prevails during bloom, Botrytis can also gain a foothold in clusters of susceptible varieties by promoting fungal growth on senescent flower parts. However, with continued dry, warm conditions, it is unlikely that bloom will be an important time for Botrytis infection. Black rot and Phomopsis lesions have been seen in the last couple of weeks and indicate that the pathogens are active. Grape anthracnose symptoms are also visible on shoots, leaves and cluster stems of susceptible varieties. The first powdery mildew colonies have been seen on unsprayed Chardonnay vines in Clarksville, Mich. Powdery mildew has also been spotted near Traverse City, Mich., but this report is still being confirmed. Downy mildew so far has only been seen in low-lying wild grapes, which often show symptoms at least a week before cultivated grapes. However, it has been relatively dry, so downy mildew development may be a bit late this year. Careful scouting is advised on a weekly basis.

It is possible to have powdery mildew fruit infection without seeing any foliar infections, so protect the fruit of susceptible cultivars even if no powdery mildew has been seen on the leaves. Often, downy mildew infections of flower clusters in cv. Chancellor are seen before leaf infections as well. In 2009, we first observed downy mildew in Chancellor in Fennville, Mich., during the first week of June and in 2010 during the second week of June. Growers are strongly advised to protect flower and fruit clusters from infection by all these pathogens using effective fungicides. The risk of infection is especially high if we have multiple rain events and moderate to high temperatures.

In general, aim to protect the clusters from the major diseases from immediate pre-bloom until four to five weeks after bloom. As the berries develop, they become naturally resistant to black rot, downy mildew and powdery mildew and the need for protection diminishes after the susceptible period ends. This happens quite rapidly for downy mildew (two to three weeks after bloom), whereas for powdery mildew it is about four weeks after bloom. Concord grapes become resistant to black rot at four to five weeks after bloom, but some wine grape varieties may remain susceptible to black rot for up to eight weeks post bloom. However, be aware that the cluster stem (rachis) and berry stems can remain susceptible longer than the berries in most cases. The only disease to which berries remain susceptible throughout their development is Phomopsis, but the risk of infection diminishes after bunch closure because inoculum levels drop off then. Botrytis is just the opposite in that berries actually become more susceptible as they get closer to harvest, especially in tight-clustered varieties.

Powdery mildew

Sterol inhibitor (e.g., Elite, Rally, Procure, etc.) and strobilurin (e.g., Sovran, Flint, Abound, Pristine) fungicides have the ability to cure early infections, but will not eliminate colonies that are already established. JMS Stylet Oil and potassium bicarbonate fungicides (Kaligreen, Armicarb, MilStop) can be used to eradicate visible powdery mildew colonies. If you use eradicants, make sure that coverage is thorough (use sufficient spray volume), as only those colonies contacted by the fungicide will be killed. Since strobilurin-resistant powdery mildew isolates have been found in Michigan (mostly in MSU experimental vineyards and wine grape vineyards with a history of strobilurin use) and we have circumstantial evidence for sterol inhibitor (SI) resistance, we recommend adding a protectant fungicide like Sulfur or Ziram to the tank-mix when using either type of fungicide. Sulfur is the most cost-effective option for non-sulfur sensitive grape cultivars.

Over the past two years, we have noticed that Ziram as a tank-mix partner did improve control of powdery mildew in a spray program on the research stations where we have strobilurin resistance. Also, alternate fungicides with different modes of action, for example Sulfur, Quintec, Vivando, Luna Experience, Endura, Serenade, Sonata or Regalia. Revus Top is a new fungicide for powdery and downy mildew and black rot control in grapes. However, the ingredient that is active against powdery mildew is difenoconazole, which belongs to the sterol inhibitor class. This fungicide is phytotoxic on Concord and Noiret grapes, so do not use on these cultivars. Inspire Super also contains difenoconazole. Luna Experience is a new fungicide for control of powdery mildew, black rot, Phomopsis and anthracnose.

Downy mildew

For most varieties, foliar infections are the main phase to be concerned about. However, the downy mildew pathogen can also infect clusters. Cultivar Chancellor is the poster child for downy mildew cluster infection. Both the rachis and berries can be destroyed. If active infections are found, use fungicides with post-infection activity at the highest labeled rate. For downy mildew, Ridomil Gold (MZ or Copper) are the strongest fungicides, followed by phosphorous acid fungicides like Phostrol and ProPhyt. When using phosphorous acids, applying a "booster spray" five days after the first spray will enhance the curative effect. Strobilurin fungicides have limited post-infection activity and should preferentially be used in a preventive mode.

Newer fungicides for downy mildew control are Presidio, Revus and Revus Top (don't apply Revus Top to Concord or Noiret vines due to risk of phytotoxicity), Gavel (contains mancozeb), Forum, Reason, Ranman and Tanos. While some of these new fungicides have post-infection (curative) activity, they are best applied on a preventative basis. They are good for integration into a fungicide resistance management program as many of them represent new and different chemistries.

Black rot

Black rot lesions have been seen on grape leaves in various locations and range from 1 to 5 mm in size. They can be recognized by the tiny, black pimples (pycnidia) in a ring along the inner edge of the lesion. Temperatures in the high 70s and low 80s are perfect for black rot. At these temperatures, only six to seven hours of wetness are needed for infection, so a nightly dew period may be sufficient for infection.

Black rot is a tricky disease because infections can remain latent (invisible) for a long period of time, so you won't know the berries are infected until it is too late to do anything about it. However, one can scout for the small, roundish leaf spots – a lot of black rot leaf lesions indicate high disease pressure from ascospore inoculum and will also contribute conidia for fruit infections. Conidia produced in leaf spots are rainsplashed, whereas the old fruit mummies produce airborne ascospores. In a field with a history of black rot, old fruit cluster remnants left hanging in the trellis are major contributors to infection. Fruit infections can take place anytime from bloom onwards, but only become apparent between bunch closure and veraison. Black rot is relatively easy to control in the period from immediate pre-bloom through early fruit development. The approach to black rot control now focuses primarily on protecting the clusters from infection. EBDC sprays applied earlier in the season for Phomopsis will also control black rot leaf infections, and therefore no sprays are recommended specifically for black rot on the foliage early in the season. In five years of trials in New York, good black rot control was achieved with one immediate pre-bloom and one to two post-bloom fungicide sprays. A second post-bloom application is strongly advised if black rot has been a problem in the vineyard the previous year, and should be considered prudent if wet weather is anticipated. During three years of fungicide trials in a 'Concord' vineyard in Fennville, Mich., just two post-bloom applications of SI fungicides (Rally, Elite) provided very good control under high black rot pressure. Sterol inhibitor fungicides (e.g., Rally, Elite) continue to provide outstanding control of black rot and provide several days of post-infection activity. Currently, there are various "generic" tebuconazole products on the market, like Orius and Tebuzol, that may be more cost-effective. The difenoconazole ingredient in Revus Top and Inspire Super is similar to Rally and Elite when it comes to black rot control. When using SI fungicides on a post-infection schedule, use the highest label rates because post-infection activity is strongly rate dependent, particularly when extended "kickback" activity is required. The strobilurin fungicides (Abound, Flint, Sovran, Pristine) and Luna Experience are also excellent against black rot, but provide only limited post-infection activity. Flint, Pristine, Inspire Super and Revus Top should **not be used on Concord grapes** because of potential phytotoxicity.

Phomopsis

Cane and leaf lesions have been showing up in fairly high numbers in susceptible varieties. Each rainfall event will lead to spore dispersal and can also lead to successful infection if the tissue remains wet for a sufficient amount of time. The optimum temperature for infection is 59 to 68 degrees Fahrenheit, at which time about six to 10 hours of wetness are needed for infection. The longer the tissue stays wet, the more severe the symptoms will be. At this time, we should be concerned with preventing Phomopsis infection of the rachis and fruit, especially in mechanically pruned vineyards and vineyards with a history of the disease. Rachis infections are most closely correlated with yield losses due to berry drop at harvest in Niagara vines, whereas fruit infections are more of a problem in wine grapes.

If at this time you find a lot of lesions on the leaves and canes, infection pressure will be high for the fruit also. It is not too late to apply fungicides for cluster protection from Phomopsis. Sterol inhibitors, overall, do not have good efficacy against Phomopsis, although fungicides containing difenoconazole (Revus, Revus Top, Inspire Super) are among the more effective. The best fungicides for control of Phomopsis during and after bloom are Abound and Pristine (do not use Pristine on Concord grapes). Phosphorous acid fungicides such as ProPhyt and Phostrol are also good and cost-effective alternatives. These are systemic and will likely provide some kickback activity.

In trials done in Michigan, ProPhyt provided very good control of Phomopsis when sprayed on a 14-day schedule. Tighten the schedule and increase the rate if disease pressure is high. Luna Experience is also quite effective. Ziram is a moderate to good protectant against Phomopsis and can be a tank-mix partner with any of the phosphorous acid fungicides. EBDC fungicides and Captan are good protectants, but cannot be applied after bloom has started in grapes grown for the National Grape Cooperative (these fungicides are suspected carcinogens). EBDC's have a 66-day pre-harvest interval.

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

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RAINFEST CHARACTERISTICS OF INSECTICIDES ON FRUIT CROPS

Precipitation can impact the performance of insecticides, but some compounds resist wash-off.

Posted on **June 12, 2012** by **John Wise**, MSU-E News, Michigan State University Extension, Department of Entomology

The rainfall events experienced in Michigan have prompted questions about the relative "rainfastness" of the insecticides used in fruit production. In 2006, [AgBioResearch](#) provided funds to purchase and install a state-of-the-art rainfall simulation chamber at the [MSU Trevor Nichols Research Center](#), after which we have conducted trials (with generous funding support from Michigan fruit commodity groups) on fruit crops for a range of insecticides.

There are several critical factors that influence impact of precipitation on a pesticide's performance. First is the plant penetrative characteristic of the various compounds. Some pesticide chemistries, like organophosphates, have limited penetrative potential in plant tissue, and thus are considered primarily as surface materials. Some compounds such as carbamates and pyrethroids penetrate plant cuticles, providing some resistance to wash-off. Many newer compounds such as spinosyns, diamides, avermectins and Insect Growth Regulators (IGR) readily penetrate plant cuticles and have translaminar movement in leaf tissue. Others, like the neonicotinoid insecticides, are systemic and can have translaminar, as well as acropetal, movement in the plant's vascular system. Penetration of plant tissue is generally expected to enhance rainfastness of pesticides.

The second factor is the inherent toxicity of an insecticide to the target pest and the persistence of activity in the environment. In some cases, a compound may be highly susceptible to wash-off, but its persistence and inherent toxicity to the target pest compensates for the loss of residue, thus delaying the need for immediate re-application.

The third factor is the amount of precipitation. In general, organophosphate insecticides have the highest susceptibility to wash-off from precipitation, although their toxicity level to most insect pests can often overcome the necessity for an immediate re-application. Neonicotinoid insecticides are moderately susceptible to wash-off, with residues that have moved systemically into plant tissue being highly rainfast, and surface residues less so. Pyrethroid and carbamate insecticides are moderately susceptible to wash-off and vary in their toxicity to the range of relevant fruit pests. Diamide, spinosyn, avermectin and IGR insecticides have proven to be moderate to highly rainfast on most fruit crops. For most insecticides, a drying time of two to six hours is sufficient to "set" the compound on the plant. With neonicotinoid, for which plant penetration is important, drying time can significantly influence rainfastness. For neonicotinoids, up to 24 hours is needed for optimal plant penetration, thus the time proximity of precipitation after application should be considered carefully. Spray adjuvants, materials intended to aid the retention, penetration or spread on the plant can also improve the performance of insecticides.

Based on the results from the current studies, the following charts have been developed to serve as a guide for general rainfastness characteristics and re-application recommendations for certain insect pests (also printed in the E-154 [2012 Michigan Fruit Management Guide](#)). Note that these recommendations should not supersede insecticide label restrictions or farm-level knowledge based on site-specific pest scouting, but rather are meant to compliment a comprehensive pest management decision-making process.

Rainfastness rating chart: General characteristics for insecticide chemical classes.

Insecticide Class	Rainfastness ≤ 0.5 inch		Rainfastness ≤ 1.0 inch		Rainfastness ≤ 2.0 inch	
	Fruit	Leaves	Fruit	Leaves	Fruit	Leaves
Organophosphates	L	M	L	M	L	L
Pyrethroids	M	M/H	L	M	L	L
Carbamates	M	M	L	M	L	L
IGRs	M	H	M	M		
Neonicotinoids	M,S	H,S	L,S	L,S	L,S	L,S
Spinosyns	H	H	H	M	M	L
Diamides	H	H	H	M	M	L
Avermectins	M,S	H,S	L,S	M,S	L	L

* H – highly rainfast (≤ 30% residue wash-off), M – moderately rainfast (≤ 50% residue wash-off), L – low rainfast (≤ 70% residue wash-off), S-systemic residues remain within plant tissue

Apple insecticide precipitation wash-off re-application decision chart: Expected codling moth control in apples, based on each compound's inherent toxicity to codling moth larvae, maximum residual and wash-off potential from rainfall.

Insecticides	Rainfall = 0.5 inch		Rainfall = 1.0 inch		Rainfall = 2.0 inches	
	*1 day	*7 days	*1 day	*7 days	*1 day	*7 days
Guthion				X	X	X
Imidan		X		X	X	X
Asana		X	X	X	X	X
Calypso			X	X	X	X
Assail			X	X	X	X
Proclaim		X		X	X	X
Rimon			X	X	X	X
Delegate					X	X
Altacor						X
Belt						X

* Number of days after insecticide application that the precipitation event occurred.

X – Insufficient insecticide residue remains to provide significant activity on the target pest, and thus re-application is recommended.

(An un-marked cell suggests that there is sufficient insecticide residue remaining to provide significant activity on the target pest, although residual activity may be reduced.)

Grape insecticide precipitation wash-off re-application decision chart: Expected Japanese beetle control in juice grapes, based on each compound's inherent toxicity to Japanese beetle adults, maximum residual and wash-off potential from rainfall.

Insecticides	Rainfall = 0.5 inch		Rainfall = 1.0 inch		Rainfall = 2.0 inches	
	*1 day	*7 days	*1 day	*7 days	*1 day	*7 days
Imidan			X	X	X	X
Sevin				X	X	X

Brigade				X	X	X
Actara		X		X	X	X
Avaunt		X		X	X	X

* Number of days after insecticide application that the precipitation event occurred.

X – Insufficient insecticide residue remains to provide significant activity on the target pest, and thus re-application is recommended.

(An un-marked cell suggests that there is sufficient insecticide residue remaining to provide significant activity on the target pest, although residual activity may be reduced.)

Blueberry insecticide precipitation wash-off re-application decision chart: Expected cranberry fruitworm control in blueberries, based on each compound's inherent toxicity to cranberry fruitworm larvae, maximum residual and wash-off potential from rainfall.

Insecticides	Rainfall = 0.5 inch		Rainfall = 1.0 inch		Rainfall = 2.0 inches	
	*1 day	*7 days	*1 day	*7 days	*1 day	*7 days
Guthion		X	X	X	X	X
Asana		X	X	X	X	X
Intrepid		X	X	X	X	X
Assail		X		X	X	X
Delegate		X		X	X	X

*Number of days after insecticide application that the precipitation event occurred.

X – Insufficient insecticide residue remains to provide significant activity on the target pest, and thus re-application is recommended.

(An un-marked cell suggests that there is sufficient insecticide residue remaining to provide significant activity on the target pest, although residual activity may be reduced.)

Blueberry insecticide precipitation wash-off re-application decision chart: Expected Japanese beetle control in blueberries, based on each compound's inherent toxicity to Japanese beetle adults, maximum residual and wash-off potential from rainfall.

Insecticides	Rainfall = 0.5 inch		Rainfall = 1.0 inch		Rainfall = 2.0 inches	
	*1 day	*7 days	*1 day	*7 days	*1 day	*7 days
Imidan	X	X	X	X	X	X
Mustang Max		X		X	X	X
Sevin		X	X	X	X	X
Provado		X	X	X	X	X

* Number of days after insecticide application that the precipitation event occurred.

X – Insufficient insecticide residue remains to provide significant activity on the target pest, and thus re-application is recommended.

(An un-marked cell suggests that there is sufficient insecticide residue remaining to provide significant activity on the target pest, although residual activity may be reduced.)

Insecticide persistence, plant penetration and rainfastness rating

Compound Class	Persistence (residual on plant)	Plant Penetration Characteristics	Rainfast Rating
Organophosphates	Medium - Long	Surface	Low
Carbamates	Short	Cuticle Penetration	Moderate
Pyrethroids	Short	Cuticle Penetration	Moderate
Neonicotinoids	Medium	Translaminar & Acropetal	Moderate
Avermectins	Medium	Translaminar	Moderate
IGRs	Medium - Long	Translaminar	Moderate - High
Spinosyns	Short - Medium	Translaminar	Moderate - High
Diamides	Medium - Long	Translaminar	Moderate - High

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

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FREEZE 2012: UNDER WHAT CIRCUMSTANCES WOULD IT BE PROFITABLE TO HARVEST TART CHERRIES?

Tart cherry growers should analyze the most profitable strategy for each orchard situation to determine if the crop is worth harvesting or not.

Posted on **June 14, 2012**, **MSU-E News**, by **Roy Black** and Nikki Rothwell, Michigan State University Extension

Editor's note: This article has been updated on June 18, 2012. Some of the values in the tables and worksheets in the chemical section have been changed.

The frost damage in 2012 will result in extremely low tart cherry yields that most growers have not experienced since 2002. Some growers with portions of blocks with a partial fruit crop are thinking under what circumstances it would be advantageous to harvest. The standard rule is "harvest only if the added returns from harvesting exceed the relevant additional costs associated with harvesting."

The sooner a decision is made on whether or not to harvest, the greater the potential savings. This analysis was assembled to help growers analyze the most profitable strategy for each orchard situation. Given the lack of uniformity of freeze impacts across blocks, we have organized the discussion on a per tree basis instead of per block basis.

Our discussion is organized by:

What are the added gross returns per tree under alternative expected price-recoverable yield combinations?

What are the relevant added costs and what is an estimate of what they will be if harvest takes place?

If a farm is participating in the [USDA Farm Service Agency NAP program](#), what is the impact of harvest versus not harvest on the expected NAP payment?

What is the expected net gain or loss to harvesting when the added returns, including impact on the NAP payment, are compared to the added cost if growers were to harvest?

Table 1 frames the added revenue from sales if harvest takes place. We simply calculate the expected gross revenue per tree by multiplying expected recoverable yield times expected price. While this is an obvious step, we are not used to thinking about profitability on per tree basis. Calculations are framed on a per tree basis since few blocks will be harvested in their entirety versus selected areas within blocks.

Table 1. Gross revenue per tree for alternative price-recoverable yield combinations

Delivered price (\$/lb)	Recoverable Yield (lb/tree)				
	5	10	15	20	25
1.30	6.50	13.00	19.50	26.00	32.50
1.20	6.00	12.00	18.00	24.00	30.00
1.10	5.50	11.00	16.50	22.00	27.50
1.00	5.00	10.00	15.00	20.00	25.00
0.90	4.50	9.00	13.50	18.00	22.50
0.80	4.00	8.00	12.00	16.00	20.00
0.70	3.50	7.00	10.50	14.00	17.50

Our next step is to review relevant added costs that will be incurred if harvest takes place and to work through an example. Use this analysis as a general guide only because costs vary from farm to farm and across harvest systems.

"Overhead" costs, including depreciation, interest, insurance, and property taxes exist whether you harvest or not. These costs are not included in our analysis.

Variable operating costs for the machinery used in harvesting are included (Table 2). This includes fuel, an added repair allocation associated with greater use and labor. In our example, we assume a double-incline shaker; growers will need to adjust their budgets for the performance rate of the shaker and system they are using and the tree load and amount of time to cover the partial blocks.

Table 2. Estimated cash and overhead cost for harvesting tart cherries (assume 10,000 lb average yield/acre across bearing years at 120 trees/acre)

Operation	Time	Labor			Equipment		Total	
		Cash	Cash	Overhead	Cash	Overhead	Cash	Overhead
	Hrs/A	\$/hour	\$/hour	\$/hour	\$/acre	\$/acre	\$/acre	\$/acre
Harvest								
Double incline shaker1	1.8	\$40.57	\$40.34	\$34.81	\$145.64	\$62.66		
85 HP tractor/forklift	1.8	\$14.09	\$20.89	\$10.02	\$62.95	\$18.03		
60 HP used tractor/forklift	1.8	\$14.09	\$21.23	\$2.06	\$63.58	\$3.71		
Skimmer (or miscellaneous labor)	1.8	\$12.25			\$22.05	\$0.00		
Total					\$294.22	\$84.40		
1 Assumes shaker requires one skilled, year-round worker PLUS one skilled, hourly worker								

Labor should be charged at its opportunity cost or "reservation price:"

Labor hired for harvest that would not otherwise be employed on the farm is clearly a variable cost. That cost is straightforward.

Other labor will be family and full-time employees. These hours are likely to be priced on “need to make” at least this much per hour to be worth expending the time.

For our example, Table 2, we charged time at loaded rates of \$14/hour for temporary skilled and \$26.50/ hour for year around skilled based on the MSU 2010 Tart Cherry Cost of Production study. The costs include additional payroll costs such as Social Security, workers’ compensation, unemployment and, in some instances, housing. These rates are likely too high for the current decision context.

Chemical costs, Table 3, will increase if harvest takes place.

Table 3. Chemical costs/acre: Harvest versus no harvest

Harvested Block Program		Un-harvestable Block Program	
Pesticide	\$ per acre	Pesticide	\$ per acre
Bravo Weatherstik x 3	\$51.60	Bravo Weatherstik x 4	\$68.80
Pristine x 2	\$67.20	Pristine x 1	\$33.60
Indar x 1	\$12.00	Total	\$102.40
Ethrel x 1	\$5.60		
Imidacloprid x 2	\$9.20		
Guthion x 1	\$12.40		
Total	\$158.00		
Based on the following rates and prices			
Pesticide	Rate	\$ /ac	
Imidacloprid	8oz	\$4.60	
Pristine	12oz	\$33.60	
Indar	6oz	\$12.00	
Bravo Weatherstik	4pt	\$17.20	
Ethrel		\$5.60	
Guthion	1.lb	\$19.00	

Table 2 is used to estimate variable costs for harvesting. The estimated cash variable cost per acre is \$294/acre in Table 2. That’s about \$165/hour or \$2.50/tree when there are 120 trees/acre.

These variable costs are based upon 1.8 hours/acre or just under a minute/tree with a normal yield. But, “how many minutes does it take to harvest a tree when yields are very low and the harvestable areas are spread across diverse locations?” The time to harvest a tree will probably be less than under normal yields, but will be very dependent on the locations of potentially harvestable trees within blocks. There will be fewer full tanks to drop and empty ones to pick up and less shaking due to the yield load. It’s likely that only one tractor would follow the shaker since it will take a long time to fill one tank. At 0.5 minute/tree and a 10 lb/tree yield, it would take 100 trees or 50 minutes to fill a tank. That performance rate would drop the cost to around \$1.25/tree. This may be optimistic if a significant proportion of the rows have to be covered to get to the target areas.

The costs per pound for shipping, cooling pads and the tart cherry assessment must also be added. Costs for shipping and cooling will be on the order of \$0.03 to \$0.04/lb; assessment costs are \$0.01/lb.

Table 3 provides an example of the potential additional chemical costs that will be incurred if harvest takes place by comparing with and without harvest. All sprays that are the same are eliminated from both programs (e.g., Pro-gibb, trunk sprays, etc.) in making the comparison. The added material cost is \$55.60/acre. That’s about \$0.48 per tree when thinking about harvesting parts of blocks. Variable application costs differences add at least \$20/acre or \$0.17 to \$.20/tree. That gives a total of about \$0.66/tree.

The potential impact of NAP payments, for those participating in NAP, must be taken into account when calculating added returns versus added costs. The comparison is covered in Worksheet 1. Payments, for growers participating in NAP, are reduced by 20 percent when an orchard is left unharvested.

Worksheet 1. Calculation of expected NAP payments (for purposes of harvest decision only; not an official FSA calculator). Example for 10,000 lb/acre APH and 7 lb/tree on 40 trees/acre for 280 lb lb/acre expected yield.

	Your Farm
A. Farm’s NAP average production history (APH)/acre: 10,000 lbs	
B. Payment is based upon 50% of APH: Value A × 0.50: 5,000 lbs/acre	
C. Estimated harvested yield/acre in 2012: 280 lbs/acre (We assume 1/3 of the block, or 40 trees/acre, if harvested in our example)	
D. Pound to receive NAP payment = Value B -Value C: 5,000 – 280 = 4,720 lbs/acre	

E. Payment if harvested = payment rate × payment amount = (\$0.2227 × 0.55) × Value C) = \$0.2227 × (0.55 × 4,720) = \$578.13/acre	
F. Payment if not harvested = Value B × (\$0.2227 × 0.55) × 0.80: = 5,000 × 0.2227 × 0.55 × 0.80 = \$489.94/acre	
G. Difference in NAP payment for harvest versus non-harvest = Value E - Value F: \$578.13 - 489.94 = \$88.19/acre or \$2.20/tree harvested (assuming 40 trees/acre harvested in the example)	

Worksheet 2 summarizes the calculation of added returns vs. added costs including the impact of NAP participation. For the example, we assumed an APH of 10,000 lb/acre (83 lb/tree) and a 7 lb/tree recoverable yield on 1/3 of the orchard, a \$1.00/lb delivered price, and the costs developed in Tables 1 and 2.

Worksheet 2. Compare added returns versus added costs associated with the harvest decision

		Per tree	Per Acre	Your farm
	Added Revenue:			
A.	Added revenue from sales of recoverable yield/tree (Price × yield):			
	= \$1.00/lb × 7 lb/tree (40 trees/acre in example)	\$7.00	\$280.00	
B.	Increased NAP payment from harvesting if farm participates in NAP	\$2.20	\$88.19	
C.	Total added revenue if participating in NAP (Value A + Value B)	\$9.20	\$368.10	
D.	Total added revenue if not participating in NAP (Value A)	\$7.00	\$280.00	
	Added Cost:			
E.	Variable harvest machinery and labor	\$1.25	\$50.00	
F.	Shipping, cooling pads, and the tart cherry assessment	\$0.35	\$14.00	
G.	Chemical costs	\$0.66	\$26.40	
H.	Total added cost	\$2.26	\$90.40	
	Net gain/loss			
I.	Total if participating in NAP (Value C - Value H)	\$6.94	\$277.60	
J.	Total if not participating in NAP (Value D - Value H)	\$4.74	\$189.60	

For the example, there is a net gain for harvest. The amount of the gain depends upon whether or not the farm participated in the NAP program.

The results for a particular farm will be driven by all the variables in the analysis. Machinery and labor costs will very sensitive to how the regions with potentially recoverable yield are located in a block since a row must be completed to get to the next row and there may be multiple areas in a block.

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).

MEETING REMINDERS

July 13 1:00-5:00 PM Shady Lane Cellars, 9580 Shady Lane, Suttons Bay, MI

Vineyard Sprayer Rodeo. 4 RUP credits requested. \$25 registration fee.



Sprayer rodeo: Vineyard sprayer demonstration and setup for full canopy applications using working sprayers. Growers will have an opportunity to bring their sprayers to this program to check and adjust the vertical distribution of their sprayers using a "patternator" – **a limited number of slots available.**

Contact Duke Elsner in advance to arrange. Sprayers brought to the event must be well cleaned.

Speakers:

Mark Ledebuhr, Application Insight
John Stone, MSU IPM Program

August 3 3:00-5:00 PM
\$10 registration.

Location to be announced.

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.

Pre-registration form for in-season grape meetings

Name _____

Address _____

City _____ State _____ Zip _____

Email _____

Phone _____

Please pre- register 1 week in advance of meetings. On-site registration will cost \$5 extra per event.

**Please make checks payable to:
"Parallel 45 Vines & Wines"**

**Return with payment to:
Grand Traverse County MSU Extension
520 W. Front St., Suite A
Traverse City, MI 49684**

July 13th sprayer rodeo \$25 _____
August 3rd meeting \$10 _____

Total enclosed \$ _____

TREVOR NICHOLS RESEARCH CENTER FIELD DAY ON SEPTEMBER 25

MSU Extension will show results of 2012 field research on fruit insects and diseases.

Posted on **June 15, 2012**, **MSU-E News**, by **John Wise**, Michigan State University Extension, Department of Entomology

We will be having a research field day at the [Trevor Nichols Research Center](#) on **Tuesday, September 25 from 1 to 4 p.m.** The field day will focus on insect and disease research and efficacy trials that were carried out this season by MSU's [Larry Gut](#), [Rufus Isaacs](#), [Annemiek Schilder](#), [George Sundin](#), [Mark Whalon](#) and [John Wise](#).

The [Trevor Nichols Research Center](#) is located at 6237 124th Ave. in Fennville, Mich. ([see directions](#)).

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

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).

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: 6-19-12

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Farm Mgr, NWMHRC

[Duke Elsner](#)

Agricultural & Regional Viticulture Agent

June 26, 2012

GROWING DEGREE DAY ACCUMULATIONS through June 25th at the NWMHRC

Year	2012	2011	2010	2009	2008	2007	22 yr. Avg.
GDD42	1579	1087	1481	1094	1090	1434	1197.4
GDD50	956	614	867	599	602	782	690.4

Growth Stages at NWMHRC (June 25, 1:00 p.m.)

Apple: Red Delicious – 37 mm fruit

Gala – 35 mm fruit

Yellow Delicious – 38 mm fruit

Pear: Bartlett: 27 mm fruit

Sweet Cherry: Hedelfingen: Harvest

Napoleon: Harvest

Gold: Harvest

Tart Cherry : 22 mm fruit

Balaton: 21 mm fruit

Apricot: 47 mm fruit (new tree)

Grapes: Late bloom

Weather Report

Recent temperatures in northwest Michigan have been extremely pleasant following hot and humid days on 19 and 20 June that reached into the high 80s and low 90s. The last four days recorded daytime temperatures in the mid-70s and overnight temperatures in the mid-60s. Conditions continue to be windy, and Sunday brought fairly high winds. Winds have been problematic for growers to plan cover sprays in the orchard. Thus far this season, we have accumulated 1579 GDD base 42 and 956 GDD base 50. After the rain just over a week ago, conditions have been dry here in the north. Some weather stations recorded just a touch of rain on Sunday morning, but overall conditions have been dry.

Crop Report

Sweet cherry harvest has begun across the region. With the light crop and high heat last week, growers have been modifying their ethephon rates to allow for easily removal of fruit but to prevent phytotoxicity. Overall fruit quality looks good at this time. We have seen bacterial canker on fruit and some cracking with last week's rain, but quality is still fairly high. Conditions have been dry and cool enough, so little American brown rot infection has been reported as we move into the harvest season. The tart cherry crop is extremely small, but a few growers are anticipating shaking isolated orchards or areas within orchards; however, we will actually harvest a minute portion of a typical yield for northwest Michigan. The apple crop continues to look good, and some growers are reporting 40% of a normal crop. Isolated hail hit the region late last week. Strawberry harvest is over in northwest Michigan.

Pest Report

Cherry

Last week, tart cherry blocks had a tremendous amount of yellowing leaves, but with the recent winds, trees have lost those leaves. So the trees 'look' better than they did with the yellow leaves, but lots of leaves have been lost too early in the season. We scouted multiple orchards across the region last Friday, and **cherry leaf spot** (CLS) is not hard to find in any orchard. However, some orchards have better CLS control than others—we are in the process of trying to understand the different levels of control. We welcome input as we tackle this difficult issue. Again, we encourage growers to scout the orchard as a CLS infection this early in the season can result in early defoliation, and set trees up for damage as we head into winter. We did find a few orchards with a severe bacterial canker infection, and this disease was the primary cause of defoliation. Even if canker was the original culprit, CLS control is even more important on the leaves that are remaining on the tree. We are recommending that growers use full covers if their CLS infection is high or if they have already lost lots of leaves this season. If dry weather continues, an alternate row strategy could work only if CLS is under control at this time; this strategy could be problematic as there is a lot of inoculum in orchards throughout the region, even if a particular block looks good at this time. Growers should remember that although

the season seems long, we are still in June and have a considerable amount of time to protect those leaves into later summer and early fall (Please see Save the Leaves article).

If growers are using the 24 (c) with Bravo Weather Stik, applications will need to be discontinued *21 days prior* to harvest. Powdery mildew is evident in most tart cherry orchards, and once the white mycelium is on the leaf, control options will only further protect new foliage; we do not have any products that will eradicate powdery mildew.

As growers move into sweet cherry harvest, **American brown rot** is the disease to watch. The dry weather in the last six days will minimize the growth of this pathogen, but there is considerable ABR showing up across the region. We should be particularly careful if conditions change and become conducive for ABR (wet and warm), this disease can take out an orchard's production in a short amount of time. Additionally, **bacterial canker** on fruit, small cracks, and bird pecks will increase the potential for ABR to get established in an orchard. Growers should take the time to scout their orchards for ABR. If the orchard has this disease present, it should not be difficult to locate fruit with the typical gray-brown fungus on the fruit. Blocks with bacterial canker, bird damage, or problematic orchards should be the first stop in scouting. If ABR is detected, growers should move to an every row spray regime for fungicide applications, particularly if the trees are large. Growers should also slow down the tractor speed to obtain adequate coverage. Efforts should be made to apply fungicide applications with ample water to ensure that the entire tree is properly covered. Controlling **obliquebanded leafroller** (OBLR) is also of utmost importance as we approach harvest. These larvae web cherry clusters together and prevent fungicide penetration inside the cluster. If growers know that they have had a problem in the past with OBLR and did not control them at the overwintering generation timing, they will decidedly need to apply an insecticide for the summer generation as these insects could ultimately impact ABR control at or near harvest. The SIs remain the optimal choice for ABR control, and Indar has routinely provided the best control of that class of chemistries.

Obliquebanded leaf roller (OBLR) trap counts are up this week with an average of 27 moths per trap. These insects are mating, and females are laying eggs at this time. Depending on when certain blocks of sweet (and tart) cherries will be harvested, OBLR larvae could be present at the time of harvest. In the past three years, this insect has become a contaminant pest in tanks of harvested fruit. To ensure these insects are not in the tank at harvest, growers will need to apply an effective material that specifically targets Lepidoptera. Additionally, growers will need to be aware of the pre-harvest intervals (PHIs) as they approach the harvest window. We have three new Lepidopteran materials that work well against OBLR: Delegate (7D PHI), Belt (7D PHI), and Altacor (10D PHI), and all three materials provide excellent control of OBLR. Bts, such as Entrust, will work against OBLR but will be slower acting than the other materials. Sevin and the pyrethroids have a three-day PHI, but older data tell us that these chemistries will not be effective due to cross resistance with the OP's.

Other insects are present in cherry blocks. Plum curculio are still evident in the orchard, and with the limited amount of fruit, they are competing for egg laying sites. We have also caught **cherry fruit flies** (CFF) again this week, and numbers have gone up compared to last week. Growers should be applying an insecticide to control CFF as we head into the harvest season to prevent larvae in the fruit at harvest. As each CFF population is unique to individual farms, growers should be monitoring for these insects with a yellow sticky trap baited with ammonium acetate. Female flies begin to deposit eggs in the fruit 7-10 days after they emerge, and as soon as larvae hatch, they burrow into the ripening fruit to feed. Neonicotinoids, such as Provado or the generics, are rated as good against CFF, but only last for ~7 days in the orchard. If the harvest window is stretched, a new application of this product is warranted. Organophosphates (Guthion and Imidan) last longer but Guthion's PHI is 15D and Imidan's PHI is 7D. Imidan cannot be used in sweet cherry.

Sap beetles have been found in ripening sweet cherries. These insects overwinter as adults in protected places such as decaying vegetation, debris or fruit buried in the ground. In the spring, adults come out of hibernation and mate. Egg-laying begins in May and June, and females lay near decomposing plant material. Larvae develop in food material in contact with the soil, and full-grown larvae leave their food when mature, wander through the soil and molt into the pupal stage. Adults emerge in June and July, and there is usually only one generation per year.

Sap beetle can be a problem in cherry if branches are low hanging and the fruit comes in contact with the ground or tall grass in the row middles. However, we first had high populations of sap beetles in 2010 where these insects were problematic even on trees with branches pruned up high--since that time, we have observed these insects more consistently in cherry orchards across the northwest. This pest may be one that needs to be controlled annually.

Growers should be on the lookout for sap beetles in fruit that is ripening or damaged as they are attracted to ripe or overly ripe fruit. Control of these insects will likely be difficult as the adult beetles burrow into fruit to feed. Additionally, we are at or approaching harvest, so growers will need to pay special attention to the PHI's of the materials. Pyrethroids have good knockdown and short PHI's, Sevin and malathion also have 3-day PHI's. Danitol has been reported to be effective against sap beetles by area scouts.

We caught an average of 19 lesser **peachtree borers** this week and an average of four **peachtree borers**. Borers still need to be controlled even if there is no fruit in a block.

Apple

No **apple scab** infection periods were reported since 18 June. Based on the 3/20 biofix (McIntosh green tip), we have called an end to primary scab. If growers were not able to control scab in this primary season, they need to keep fruit protected from this pathogen as we move through the season. Growers should be aware of the 77-day PHI for the EBDCs as we are approaching that date depending on variety and time of harvest. 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.

Powdery mildew (PM) is evident in area orchards, and other areas of the state are reporting severe PM infections.

Unfortunately, **fireblight** strikes are evident in all blocks across the region. We hypothesize that these infections were the result of tag bloom or the long lasting bloom in apples coupled with the right weather conditions. We are currently testing for streptomycin resistance in the **fireblight** bacteria in all counties in northwest Michigan.

Codling moth (CM) trap counts are still very low here at the NWMHRC. However, scouts are reporting very high trap counts in commercial blocks in northwest Michigan. We recommend that growers be monitoring for this pest in their own orchards as there is variability in the pest population from block to block; the degree day accumulation is HIGHLY dependent on the biofix date (the first date of sustained codling moth trap catch) for each apple block. Growers should track the progress on their farms using the Enviroweather codling moth model and on-farm trap catch data.

Obliquebanded leafroller numbers remain constant in apple, and we caught an average of 15 moths per trap this week. The summer generation larvae will begin showing up in regional orchards in the coming weeks, and fruit should remain protected from these hatching larvae. **Rose chafers** are still evident in area orchards, but the populations are markedly down from last week.

Armyworms, an unusual pest of tree fruit, have been observed feeding on apples in regional orchards. This insect is native to North America, and their name comes from their behavior of moving across fields in an army-like fashion. As larvae (Figure 1) consume available food sources, they migrate as an army to new host plants. They feed primarily on grasses (oats, wheat, fall rye, corn, barley, and forage grasses), and they have devastated sod centers in some orchards in the region. Although this insect has caused feeding damage to apples (Figure 2), the larvae are difficult to find at this time. The feeding is a large hole that is 1/4" deep, and may be confused with rose chafer feeding. However, rose chafer damage is much more superficial than these deeper feeding holes left by the armyworm. We believe that the population was high over the past week or so, but has rapidly declined as a result of virus and potentially parasitic flies. Unless populations are still high at this time, growers should not need to treat for this insect.



Figure 1. Armyworm larva in Leelanau County (Courtesy of Matt Montgomery, Univ. of Illinois Extension)



Figure 2. Armyworm feeding damage in apple

Grapes

Very nice weather during bloom has resulted in a good looking berry set in the area.

Rose chafer numbers have dropped off to minimal levels, and their damage was of no concern in most sites. Potato leafhopper adults and nymphs are very plentiful in the area. Many vineyards are showing leaf deformity and shortened internodes. Three-banded leafhopper and related stippling leafhoppers are now quite numerous on wild vines in the edges of woodlots; these will rarely move into commercial vineyards, and if they do, their injury is typically not important.

The first foliar galls of grape phylloxera are developing on susceptible cultivars. Whiteflies were found on a few vines this week. This is the first time we have seen these on vines in NW Michigan, so we know very little about their potential to injure grapevines.

Powdery mildew is still very hard to find in the area. Even if scouting reveals no infections at the moment, it is advisable to keep vines protected during this time to protect the newly set berries.

Saskatoons

Some fruit has reached maturity and harvest is probably underway in the more advanced sites. Bird depredation is underway- cedar waxwings seem to be particularly fond of fruit in the Northport area. Rose chafer injury has essentially ended. Potato leafhoppers are fairly plentiful, but their injury seems to be minimal to saskatoons. A few egg laying scars of plum curculio have been seen on fruits. The main disease problem seen this week has been rust disease on fruits and stems.

CHERRY LEAF SPOT: SAVE THE LEAVES!

The current cherry leaf spot epidemic in northwest Michigan necessitates the frequent use of fungicides to protect remaining, healthy leaves to prevent an unprecedented early defoliation event.

Posted on **June 26, 2012, MSU-E News**, by **George Sundin**, and **Nikki Rothwell**, Michigan State University Extension, Department of Plant Pathology

A major cherry leaf spot epidemic is currently underway in northwest Michigan. Drive-by scanning of tart cherry orchards in Leelanau, Grand Traverse and Antrim counties conducted last week in addition to orchard scouting indicated significant numbers of yellow, cherry leaf spot-infected leaves with additional still-green, cherry leaf spot-infected leaves. This situation would be a concern in mid-August, but since this is only late June, we are at a critical stage for cherry leaf spot control and, ultimately, tree health.

The yellow leaves infected with cherry leaf spot will defoliate relatively soon or already have dropped. The more recent leaves with cherry leaf spot will turn yellow soon and also drop from the trees. However, trees are still producing new leaves and will likely produce more flushes of leaves in response to this early defoliation. These new leaves and uninfected leaves *must* be adequately protected with fungicides in the coming two months in order to maintain any type of foliage into late August and September.

With the current situation, there will be a tremendous amount of inoculum in orchards as spores are produced and disseminated from every cherry leaf spot lesion on all currently infected leaves. With all of this inoculum out there, growers will be challenged to protect new leaves, and the ultimate goal is to protect uninfected leaves.

Full-cover spray applications are needed to ensure the best leaf coverage. Spray intervals should be reduced to seven to

eight days if there are intervening rains. Without rain, the interval can be lengthened, but the next protective application must be on prior to the next rain event.

The best (most efficacious) fungicide combinations for cherry leaf spot control at this time (June 2012) are as follows:

Chlorothalonil – Bravo Weather Stik at 4 pints/A

Copper at 1.2 lbs metallic copper per acre. Only use copper if high temperatures are predicted below 80 degrees Fahrenheit for the next several days.

Syllit at 24-27 fl. oz./A + **Captan 50WP** at 4 lbs/A

Luna Sensation at 5 fl oz/A + **Captan 50WP** at 4 lbs/A

Note: These four possible treatments are not listed in any particular order. Any of them should provide equivalent levels of disease control.

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

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).

NASS Tart and Sweet Cherry Rotational Survey Results Released

The [Tart Cherry Survey](#) and [Sweet Cherry Survey](#) can be seen by clicking on their respective links

NW Michigan Orchard and Vineyard Sprayer Rodeo - July 13th, 1 - 5 p.m.

Click here for [brochure and registration information](#)

ASEV-ES WINE GRAPE MEETING

Paul Jenkins, Grape & Wine Integrator, MSU

If you are planning to attend this year's ASEV-ES meeting in Traverse City, please be reminded that the registration **deadline is July 2** to avoid paying a \$100 late fee.

A great conference has been planned, and we are very excited to be the host state for this annual conference. Here is a quick outline of the agenda:

Sunday, July 15 6-8PM Welcome reception

Monday, July 16 8AM-9PM Vineyard and Winery tour

Tuesday, July 17 Viticulture and Enology presentations; Grazing dinner with wines of the East

Wednesday, July 18 Viticulture and Enology presentations; Banquet dinner

Thursday, July 19 Symposium on Sparkling Wine Production, featuring US and international speakers.

Events are priced a la carte, so you can only register for the events that interest you. In particular, the symposium on Thursday, July 19 has been designed for vineyard managers and winemakers. Whether you are already growing grapes for sparkling varieties, producing sparklers or just thinking about it - this is an event not to miss.

The hotel group rate (\$118/night) ended last Friday, June 15, and you should call the hotel (231-941-0208) ASAP if you plan to stay there. As of today, rooms have been released for general reservations, but you still may be able to book a room at the conference hotel if you act quickly.

All information, including how to register can be found here: <http://www.asev-es.org/>

CLEAN SWEEP PESTICIDE/HAZARDOUS WASTE COLLECTION DAY

The Conservation Districts in Oceana, Mason, and Manistee counties are sponsoring a pesticide and household hazardous waste collection day on August 18, 9:00-2:00. They can take any amounts and any quantities plus they will be able to take used motor oil, hydraulic oil, anti-freeze, etc.

WEBSITES OF INTEREST

[CIAB Weekly Harvest Report Week 1](#)

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>

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Please send any comments or suggestions regarding this site to:

Bill Klein, kleinw@msu.edu

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