

Northern Michigan FruitNet 2016 Northwest Michigan Horticultural Research Center

Weekly Update

FruitNet Report – May 17, 2016

CALENDAR OF EVENTS

- | | |
|-------------------|--|
| 5/3 – 6/28 | Leelanau County IPM Updates, 12PM – 2PM
Jim and Jan Bardenhagen's Farm (details below) |
| 5/3 – 6/28 | Grand Traverse County IPM Updates, 3PM – 5PM
Wunsch Farms (details below) |
| 5/4 – 6/29 | Antrim County IPM Updates, 10AM – 12PM
Jack White Farms (details below) |
| 5/4 – 6/29 | Benzie County IPM Updates, 2PM – 4PM
Blaine Christian Church (details below) |

What's New?

- **Controlling black knot in Michigan**
 - **Potential Damage and Insurance Claims**
 - **Northwest Michigan Fruit Regional Report – May 17, 2016**
 - **Carb Models**
 - **Grape grower's pre-bloom IPM meeting held May 25 in Lawton**
 - **Mealybug and wine grape viruses meeting held June 6 in Berrien Springs**
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Northwest Michigan Fruit Regional Report – May 17, 2016

The NW region is in bloom in sweet and tart cherries and blossoms are opening in apples; the predicted warm weather will improve bee activity and pollination services.

Emily Pochubay and Nikki Rothwell

GROWING DEGREE DAY ACCUMULATIONS AS OF May 16, 2016 AT THE NWMHRC

Year	2016	2015	2014	2013	2012	2011	26 Yr. Avg.
GDD42	353	387	242	340	643	277	398.2
GDD50	144	176	90	181	323	102	184.3

2016 Growth Stages as of 5/16/16

Bartlett Pear – Full bloom

Potomac Pear – Petal fall

Mac – Pink

Gala – Open cluster

Red Delicious – Open cluster

HoneyCrisp – Open cluster

Montmorency – 80% bloom

Balaton – Full bloom

Hedlfingen – Petal fall

Gold – Full bloom

Napolean – Petal fall

Riesling – Late bud swell

Weather and Crop Report

Cool conditions prevailed over the weekend, and nighttime temperatures dipped below freezing in isolated spots across the region. On Saturday night into Sunday morning (14-

15 May), three NW Enviroweather stations had temperatures that fell below the freezing mark: Bear Lake recorded below freezing temperatures for four hours, and the Benzonia and Eastport stations recorded temperatures just below freezing for two hours. We have not yet heard reports of damage from those freezing temperatures. Temperatures dipped down again last night (16-17 May), but most Enviroweather stations did not record below freezing temperatures. However, isolated low spots likely were colder, and frost was evident on cars and house roofs this morning. Frosts fans were running last evening into the morning. We received snow showers over the weekend, but we did not have any accumulation throughout the region.

Bloom has been varied in our tree fruit crops this season. We have been in sweet cherry bloom for the past week, and we are finally at petal fall in Napoleon and Hedelfingen but still in full bloom in Golds. Tart cherry bloom is overlapping with sweet cherries, and we are currently at 80-100% full bloom in Montmorency and Balatons. Tart cherries to the north (~Northport) are still tight and very little white is showing at this time. Apple bloom is also quickly approaching, and bloom is evident in different varieties. Benzie County growers have reported 10-80% bloom in apples. We anticipate Galas to open king blooms today at the NWMHRC. With all of these trees in bloom, we are hoping for warmer temperatures for pollination. The cool and windy conditions over the weekend slowed bee activity in blooming orchards. However, we observed good bee activity in tart cherries yesterday even though temperatures were only in the mid-50s with ample sunshine.

The region is quite dry for so early in the season. The region did receive some rainfall on 12-14 May, but the amount of rain varied between the Enviroweather stations. Bear Lake received 0.5" inches of rain, and the remaining stations received 0.11"-0.26" of rain. In terms of rainfall, the start to this season is almost the exact opposite of last season when we received tremendous amounts of rainfall throughout the early spring. We have accumulated 353GDD base 42 and 144GDD base 50.

There are orchards with some isolated damage, and again, we think that this damage may be a result of the early April cold temperatures. At the NWMHRC, we had five days with nighttime temperatures that ranged between 18.7F-26.3F. Although there may be damage from these cold temperatures, the orchards still have the potential to set a good crop. Most of the buds we cut were low in the trees, and higher buds likely fared much better during that cold snap.

Pest Report

Most of the region received rainfall on Thursday 12 May, and overall accumulations varied between 0.01" to 0.1" depending on location. Enviroweather reported apple scab infection periods throughout the region following 12 May rain in East Leland, Eastport, Kewadin, and Northport. We also had wet conditions on 13 May that initiated infection periods in Bear Lake and Benzonia. Frozen precipitation fell on Saturday and Sunday;

however, temperatures were too cold and the wetting period was too brief for the development of apple scab and cherry leaf spot diseases.

Apple scab spores discharged following 0.01” of rain that that fell at the NWMHRC on 12 May (Table 1). Nearly 0.1” of rain fell on Friday May 13th, and we counted the highest spore discharge of the season following that wetting event: a total of 248 spores. Primary apple scab is ongoing for the northwest region. At the NWMHRC, we set biofix on April 17 and according to the apple scab model, 68% of ascospores are mature and 35% have discharged at this time.

Table 1. Apple scab spore discharge

Date Collected	Time Collected	Rod 1	Rod 2	Avg # Spores
4/21/16	1:30 PM	NA	10	10
4/25/16	9:30 AM	37	50	43.5
4/26/16	8:15 AM	9	4	6.5
5/1/16	1:30 PM	0	0	0
5/5/16	8:00 AM	44	77	60.5
5/12/16	3:00 PM	78	5	41.5
5/14/16	12:00 PM	136	112	124
5/16/16	2:00 PM	0	0	0

Apple bloom is underway in more southerly areas of the northwest and king bloom are open on some early varieties at the station; later varieties are at pink. Currently predicted cool temperatures for today and Wednesday are not conducive for population growth of fire blight bacteria. Additionally, there is no rain in the forecast for the remainder of the week and moisture in the form of rain, heavy dew, fog, etc. is needed to cause fire blight infection. Temperatures are predicted to warm up toward the end of the week, and this warm up will coincide with bloom of several apple varieties. With these predicted warmer conditions, the fire blight bacteria will begin multiplying rapidly, and growers should monitor the fire blight model frequently to determine when to begin managing for this disease. We remind growers to check the model often because the fire blight infection potential can change quickly; this model is based on degree hours rather than degree days. If warm conditions conducive for bacterial growth persist without rain, growers that are producing high value varieties, particularly those that are susceptible to fire blight, may want to consider taking action to keep the bacterial population low. This strategy will help to reduce the difficulty of managing a high level of inoculum and also help to lessen the pressure for shoot blight or in the event of possible trauma blight. We recommend that growers look back at past seasons’ fire blight infections. A more conservative approach to manage fire blight should be considered if fire blight has been problematic in the block.

Most sweet cherries are at later bloom to petal fall and conditions have not been optimal for American brown rot development or infection. In tart cherries, wet and cold conditions over the weekend were optimal for European brown rot infections and most of the region had cherries in bloom. Fortunately, drier and warmer weather are

currently predicted for the later part of the week, and these conditions are not ideal for European brown rot infection if orchards are still in bloom.

Most cherry growers covered bract leaves and the true leaves (where present) in tart cherries prior to last week's rain. Many orchards had significant leaf spot infections last season, and growers are conscious of keeping this disease in check this season. More southerly orchards are at petal fall and as they approach shuck split, we remind growers to check with processors for possible restrictions on the special label for Bravo Weatherstik use past shuck split. Growers who are interested in making applications under this special 24 (c) label need to complete training to receive an affidavit as well as a copy of the indemnified label. Additional instructions on this process and use restrictions under the 24 (c) label are provided in the previously published MSUE News articles, *Where can growers find the special 24 (c) label for using Bravo WeatherStik past shucksplit?* and *Post-shucksplit applications of Bravo WeatherStik for cherry leaf spot control*.

Recent cool temperatures slowed both pollinator and pest activity, but we expect to see more insect activity with the predicted warm conditions. In cherries, American plum borer moths have been active for two weeks with an average of 8 moths per trap. Green fruit worm moth numbers were lower (9 moths per trap), and we expect larvae will be active later this week. Obliquebanded leafroller larvae have been reported and a threshold of two larvae or more and or signs of larvae/feeding damage per 20 clusters per five trees indicate that treatment may be needed. Peak activity of obliquebanded leafroller larvae typically occurs between ~190-250 GDD base 50. In MSU efficacy trials, Belt is rated excellent against codling moth, obliquebanded leafroller (OBLR), and oriental fruit moth. Belt is in the diamide class of insecticides, which also includes Altacor and Exirel, other diamides that also work well against the aforementioned pests. Therefore, in the case of insects that have multiple generations per year, OBLR and codling moth, we recommend using this diamide mode of action in either the first *or* second generations to minimize the potential of resistance development. We do not recommend using diamides targeting both first and second generations. In cherry, anecdotal evidence suggests this insecticide works better early and targeting the overwintering OBLR larvae at the petal fall timing rather than using Belt for second-generation larvae that come out at or near harvest time. Additionally, due to resistance and cross-resistance issues, belt is a good alternative to organophosphates and/or pyrethroids for OBLR.

Low numbers of black cherry aphid have also been reported. We have not received reports of plum curculio activity yet this season; these beetles could also show up when temperatures warm up, but we likely will not see a higher level of activity for another ~10-14 days.

In apples, oriental fruit moth remains undetected at the station at this time. We have received reports that various species of leafroller larvae are active in the region. The first adult spotted tentiform leafminer moths were found this week in low numbers (16 per trap); however, management of this pest is targeted at the larvae and the larvae will not be active until around petal fall timing. Apple flea weevil activity was also detected last week in an organic apple orchard; the apple flea weevil has primarily been a pest in organic orchards. Codling moth traps are up at the station and flight may begin this week if temperatures at dusk remain at 60 degrees F.

Wine Grapes

Duke Elsner

Bud stages are all over the board, from swell to bud burst and even some with first leaves partially expanded—depending on variety and how close the buds are to bare soil. There has been a little activity by climbing cutworm, probably on the few warm nights we had last week before the return of near-freezing evening temperatures. I have not heard of any grape flea beetle activity to this point. There is not enough green tissue showing at this time for powdery mildew to infect, but if the predicted warm weather does come along, we will soon be in a period for potential infection.

Saskatoons

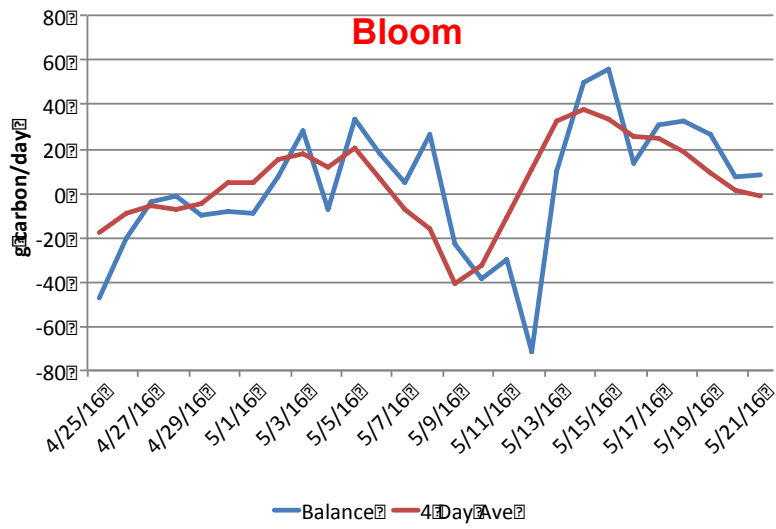
Duke Elsner

The last few warm days pushed plants along to full bloom at the most advanced sites. Insects also responded, with small larvae of saskatoon bud moth and adult saskatoon sawflies being seen in the test planting at the Northwest Michigan Horticultural Research Center. Saskatoon bud moth larvae tied together a number of small leaves with silk and feed inside the tied leaves. Their importance to production in Michigan is uncertain. Saskatoon sawflies lay eggs directly on fruits immediately after fruit set; their larvae feed on developing fruits and they can be significant pests. Unfortunately there are no insecticide sprays that can be applied until after bloom is over, as we must wait for bee activity on the plants to be done.

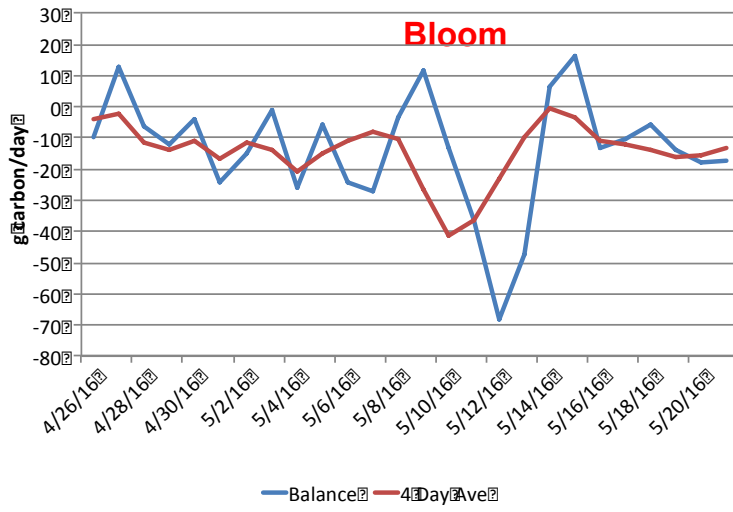


Image: Saskatoon Sawfly

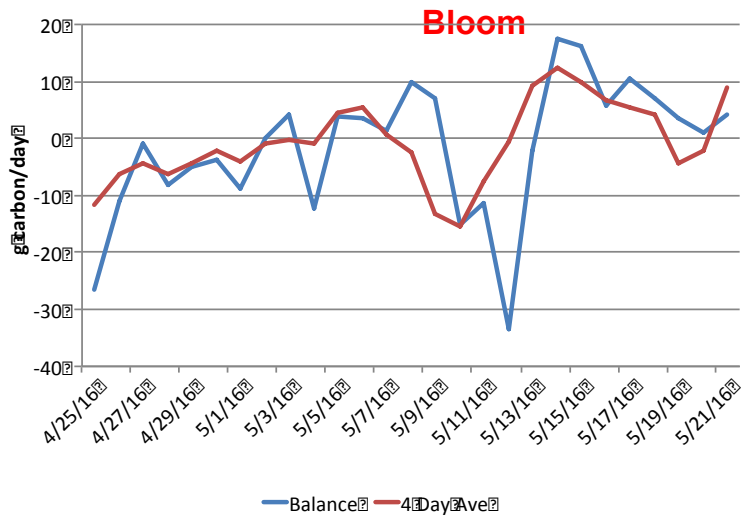
Benton Harbor Carb 2015-16-16



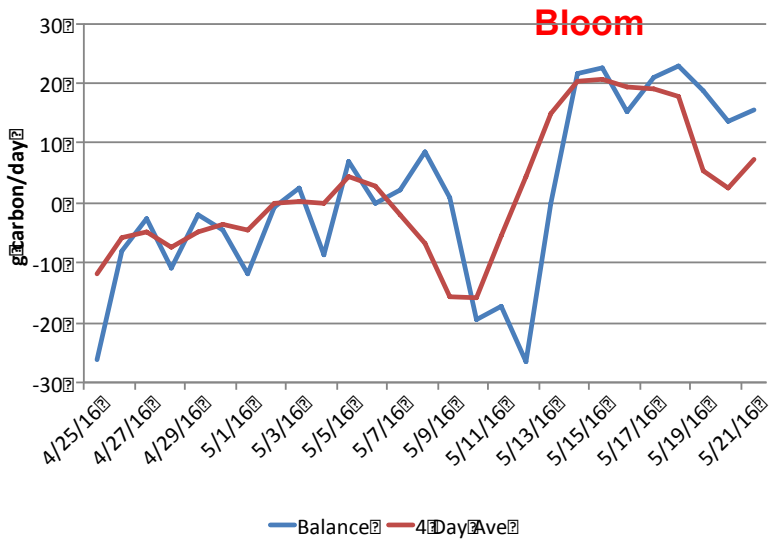
Romeo Carb 2015-16-16



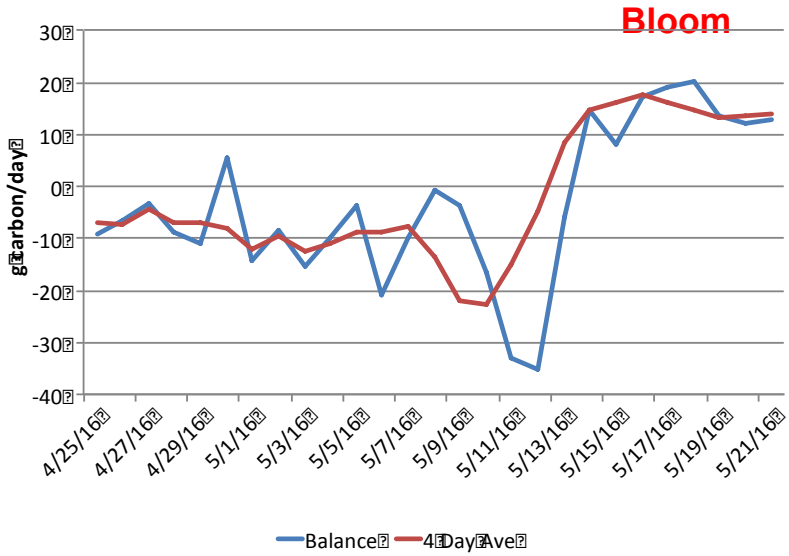
PeachRidge Carb 2015-16-16



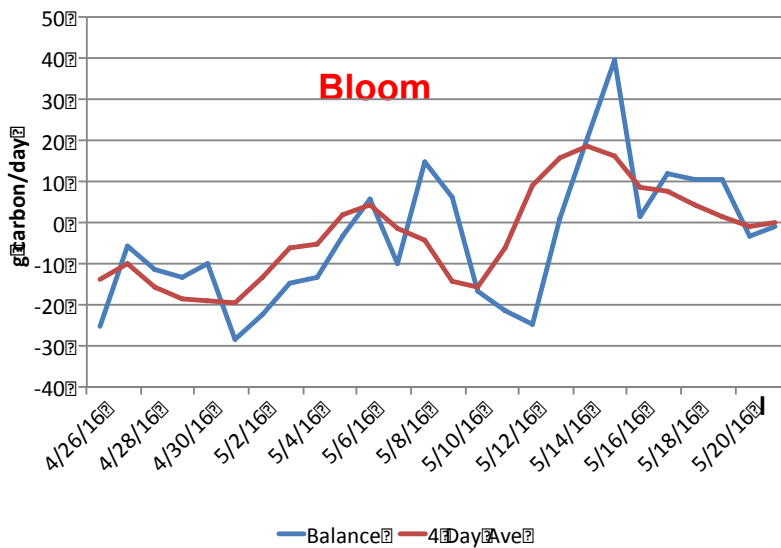
HART Carb 2016-16-16



NWHR Carb 2016-16-16



Deerfield Carbon 2016-16



Potential Damage and Insurance Claims

As we move through bloom this season, we have heard of reports of some damage in different locations throughout the region. We suspect that some of this damage was a result of the cold temperatures at the beginning of April. Some areas also had some cold temperatures on Saturday night into Sunday morning (14-25 May). Even if growers do not know the extent of the damage, they should still call their insurance agent to let them know that there may be potential damage. In the case of a NAP policy, growers should alert their insurance agents within 15 days of the cold event.

Clarifications about Use of the Insecticide Belt

A short article to clear up any confusion about using Belt during the 2016 growing season

Nikki Rothwell, Emily Pochubay, and John Wise

We have received recent calls about using the insecticide Belt in tree fruits. This insecticide is legal to be sold and used according to the Belt label. The U.S. Environmental Protection Agency has asked Bayer Crop Sciences to voluntarily withdraw their registrations for flubendiamide-containing products, which includes the insecticide Belt. Bayer does not agree with the EPA's decision to

withdraw this product; the company has asked for a formal hearing before the EPA's Administrative Law Judge. Bayer anticipates that this decision will be finalized around the beginning of July. While this decision is in review, Belt can continue to be sold and used according to the label.

Belt provides excellent control of larval stages of Lepidopteran pests. Ingestion of Belt's active ingredient causes the larvae to stop feeding and eventually leads to death of the pest. In MSU efficacy trials, Belt is rated excellent against codling moth, obliquebanded leafroller (OBLR), and oriental fruit moth. Belt is in the diamide class of insecticides, which also includes Altacor, another diamide material that also works well against the aforementioned pests. Therefore, in the case of insects that have multiple generations per year, OBLR and codling moth, we recommend using this diamide mode of action in either the first *or* second generations to minimize the potential of resistance development. We do not recommend using diamides targeting both first and second generations. In cherry, anecdotal evidence suggests this insecticide works better early and targeting the overwintering OBLR larvae at the petal fall timing rather than using Belt for second-generation larvae that come out at or near harvest time. Additionally, due to resistance and cross-resistance issues, belt is a good alternative to organophosphates and/or pyrethroids for OBLR.

2016 IPM Update Schedule

Emily Pochubay and Nikki Rothwell
Michigan State University Extension

Tree Fruit IPM Updates beginning the first week of May through mid-July (as needed) will highlight management of the seasons current potential pest challenges dictated by weather and pest biology. Attendees are encouraged to bring examples of pests and damage found on the farm to these workshops for identification and discussion. Workshops will be held weekly in Leelanau and Grand Traverse counties and bi-weekly in Antrim and Benzie counties in May. Beginning in mid-June, we will hold weekly meetings in all four locations. Tree fruit growers are welcome to attend meetings at any of the locations and times that are most convenient (see below). These workshops are free and do not require registration. For more information, please contact Emily Pochubay (pochubay@msu.edu), 231-946-1510.

Leelanau County

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

Dates: May 3, 10, 17, 24, 31; June 7, 14, 21, 28

Time: 12PM – 2PM

Grand Traverse County

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

Dates: May 3, 10, 17, 24, 31; June 7, 14, 21, 28

Time: 3PM – 5PM

Antrim County

Location: Jack White Farms, 10877 US-31, Williamsburg (south of Elk Rapids on the southeast side of US-31)

Dates: May 4, 18; June 1, 15, 22, 29

Time: 10AM – 12PM

Benzie County

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

Dates: May 4, 18; June 1, 15, 22, 29

Time: 2PM – 4PM

2016 MSU Weed Tour to take place June 29

Participants can compare herbicide programs, evaluate weed management strategies and tour MSU research plots.

Posted by **Christy Sprague**, Michigan State University Extension, Department of Plant, Soil and Microbial Sciences, and Bernie Zandstra, MSU Department of Horticulture, MSUE News

Michigan State University Extension invites you to the annual MSU Weed Tour, Wednesday, June 29, 2016, beginning at the MSU Plant Pathology Field Lab on College Road north of Jolly Road, 3735 N. College Road, Lansing, MI. Registration begins at 8:30 a.m. with the field tour kicking off at 9:30 a.m. The tour will provide ample opportunity to look at research plots and participate in some short field presentations – be sure to bring a hat and sun screen! Participants can compare their favorite corn and soybean herbicide programs to other commercial programs and check out some of the new herbicide-resistant crops and how these crops fit with overall weed management strategies. The morning tour ends with lunch.

The afternoon tours begin at 1 p.m. with two concurrent tours: The Weed Control in Horticultural Crops Tour, located at the MSU Horticulture Farm on College Road south of Jolly Road, and the Non-GMO Soybean Weed Control Tour, located at the MSU Plant

Pathology Field Lab.

Pre-registration for the Weed Tour is \$25 per person, which includes a tour booklet and lunch. On-site registration is \$35. You can register online at: [MSU Weed Tour](#).

If you have any questions or would like additional information, visit the [MSU Weed Science](#) website or contact Sandie Litchfield at 517-353-0104 or litchfi9@msu.edu. We hope to see you there!

Drs. Sprague and Zandstra's work is funded in part by [MSU's AqBioResearch](#).

Controlling black knot in Michigan

Plum growers need to keep on top of black knot, a disfiguring disease that can quickly destroy a tree.

Posted by [Mark Longstroth](#), Michigan State University Extension, MSUE News



Black knot causes a distinctive black swelling on the branches of susceptible trees in the genus *Prunus*, mainly plums and cherries. All photos by Mark Longstroth, MSU Extension.

Black knot (*Apiosporina morbosa*), is a striking disease and a major disease of plum trees in Michigan. Black knot appears on the woody parts of the tree including twigs, limbs and sometimes the trunks. Black knot attacks plums, wild cherries and some ornamental cherries. Cultivated sweet and sour cherry trees are seldom attacked in Michigan. Black

knot is found throughout Michigan in commercial and home orchards and in wild plum and cherry thickets.

The common name “black knot” describes the main symptom of the disease. The initial symptoms are small, light brown swellings at the base of leaves, on the fruit spurs and terminal shoots. These swellings appear the year after infection. The swellings enlarge and develop an olive-green color. The green color disappears and the knots become black and hard. The knots vary in size, location and shape. Over time they coalesce to form larger knots on the branch. The knots are attractive to wood boring insects.



Black knot on Stanley prune. This knot is infested with American plum borer, which is the cause of the gummosis on this knot.

The black knot fungus infects new shoot growth and infections can occur from the green cluster stage of early bud development in the spring, until shoot growth ceases in June. At green cluster, the terminal and lateral leaf buds show 0.25-0.5 inch of new growth and the blossom buds are exposed but tightly packed.



Green cluster bud stage in plums occurs soon after bud break.

Rains and temperatures above 60 degrees Fahrenheit are necessary for infection. After infection, the fungus grows very slowly. A light brown swelling develops at the infection site later that year or the following season. The swelling turns olive green and produces spores within one to two years after infection. Fungal fruiting bodies develop on the surface of the knot and spores are mature when tree growth resumes in the spring. During rainy weather, spores are discharged into the air and carried to the new growth. If the green tissue remains wet long enough, infection may occur. Spore discharge occurs from the prebloom stage to two or three weeks after bloom. Spore discharge can continue through early June. Later in the growing season, the knots expands. New masses of spores are produced every year.



This expanding knot shows the older black knot and the expanding infection enlarging the knot. The expanding portion will release spores next spring.

Control

Because the knots are easily visible and localized, removing infected twigs and knots from branches is an important part of disease control. This should be done during the winter dormant period when the knots are easily visible. Cuts should be made several inches (4 to 6 inches) below any visible signs of the knot. Cuts can also be made during the growing season if you see knots expanding, but make doubly sure you cut well past any swelling. Burn all infected knotted prunings before the trees break dormancy in the spring. Spores can develop and spread from knots left on the ground or in brush piles. On large, main branches and trunks, knots should be cut out with a knife or chisel. At least 1 inch of healthy bark around the knot should be removed with these cuts. Taper the cuts to a point at upper and lower ends to promote regrowth of the bark over the wound. If possible, nearby wild plum and cherry trees showing black knots should be destroyed.

Commercial plum growers routinely spray and focus on removing black knots on infected twigs and branches in the winter. Fungicides are applied starting at green cluster and repeated at seven- to 10-day intervals until shoot growth ends around mid-June. Fungicides containing chlorothalonil (FRAC Group M5) are the standard treatment to control this disease. Chlorothalonil sprays are applied during the prebloom and bloom period and also control blossom brown rot. Chlorothalonil cannot be used after shuck split on exposed fruit if that fruit is going to be harvested for human consumption. Chlorothalonil can be used after bloom on ornamental trees where there is no fruit harvest. Fungicide choices for commercial fruit growers after shuck split include Indar

(fenbuconazole, FRAC Group 3) and Topsin-M (thiophanate methyl, FRAC Group 1). Sulfur is not an effective control material for this disease. See [Michigan State University Extension](#) bulletin E0154, "[Michigan Fruit Management Guide](#)," for any changes and current commercial recommendations.

Most people do not notice black knot on their trees until the knots become obvious, which is usually two to three years after the initial infection. All knots should be pruned out the winter you notice them on the tree. Remember that these infections are at least a year old and you will see another round of infection next year from infections that occurred the previous spring. Begin a spring spray program to reduce the spread of the disease. If you put off pruning and spraying, the tree will quickly be covered with knots and will need to be destroyed. Managing black knot in an orchard showing symptoms is at least a two-year project.



Stanley plum tree with many large black knots. Removing these knots would destroy the structure of the tree. Even with a spray program existing knots will continue to expand if they are not controlled.

More information

- [Your plum trees versus black knot](#)
- [Black knot in nurseries: Check for galls in March](#)
- [Odd and unusual growths on trees and shrubs](#)

Orchard Diversion Staff - Message from the CIAB

Dear all,

As you all know, harvest is not that much farther down the road. We are trying to get ready for orchard and at-plant diversion should growers and handlers in NW MI wish to do them.

We are looking to increase the numbers of field staffers for our orchard diversion activities. The NASS, the group that we use to do our orchard diversions, has lost some employees in NW MI. They do not have terribly many available for orchard diversion field work this year due to attrition of workers for whom replacements have not been found.

We certainly do not want to find ourselves in a situation where we are in need of field workers for orchard or at-plant diversions and we do not have enough to people cover the needs in NW MI. Growers and handlers will want to be able to exercise their choices to do diversion if that is what is needed. Not having enough field staff would be a bad and unfortunate situation in which to find ourselves.

Your help is requested. You know the people in your areas who might be available to do this field work and might interested in helping out the industry. I would very much appreciate it if you would ask around to see if there is anyone that you know who might be interested in serving as a orchard diversion field worker this Summer. Please pass their names and contact information on to me and I will contact them to discuss this in more detail.

Thank you.

Respectfully,

Perry M. Hedin
Exec. Dir.

You can contact Perry Hedin at: hedin@ciab.comcastbiz.net

2016 Fruit insecticides under EPA Regulatory Action

Lorsban, Belt, Closer and Calypso fruit insecticides are under EPA Regulatory Action in 2016.

Posted by **John Wise**, Michigan State University Extension, Department of Entomology
MSUE News

The following are fruit insecticides under [EPA Regulatory Action](#). [Michigan State University Extension](#) bulletin E0154, "[Michigan Fruit Management Guide](#)," product numbers are in parenthesis ().

Lorsban (32) (chlorpyrifos). There are a number of actions on-going that are impacting the future of Lorsban, including review by the EPA [Scientific Advisory Panel](#). Dow AgroSciences expects that chlorpyrifos products will continue to be utilized and sold under the existing labels and tolerances through at least 2017. If EPA actions are taken such that chlorpyrifos becomes immediately unable to be sold, Dow will work with growers and distributors to manage inventory of DAS chlorpyrifos at that time.

Belt (89) (flubendiamide). EPA requested Bayer CropScience to voluntarily withdraw registrations for flubendiamide-containing products. Bayer refused that request and have asked for a formal hearing before the EPA's Administrative Law Judge, which is expected to be finalized by July 2016. The Administrative Law Judge agreed to a 22-day extension of the before mentioned 75-day deadline for the Administrative Law Hearing regarding BELT Insecticide and has now communicated the "Order Scheduling the Hearing and Prehearing Procedures." With this extension we now expect a final decision about the future path forward for the registration of flubendiamide on or about July 6, 2016. While under review, farmers and retailers can continue to buy, sell and use the product in their operations.

Closer (8) (sulfoxaflor). On Nov. 12, 2015, EPA cancelled the registrations of sulfoxaflor-containing products as required in a Sept. 10, 2015, decision by the Ninth Circuit Court of Appeals. The cancellation affects Transform WG, Closer SC and Seeker insecticide products, which contain sulfoxaflor. It is our understanding that Dow AgroSciences is working with EPA to achieve new registrations, and submitted new labels for consideration to EPA in late 2015. In addition, it is our understanding that several states are now in the process of submitting or developing Section 18 applications for the 2016 use season. According to the terms of the existing stocks provision of the cancellation order, any Transform, Closer or Seeker that have been in the grower's possession since Nov. 12, 2015, may be used according to the previously approved labeling. There is no deadline for this product to be applied by the grower. The product in grower's hands may also be used for any Section 18 Emergency Exemption that may be granted.

Calypso (62) (thiacloprid). Bayer CropScience notified EPA of a voluntary cancellation of the Calypso insecticide registration, including the technical registration of thiacloprid. This decision has to do with EPA's registration review process and the new water model, adopted by EPA in early 2013. Bayer CropScience has notified states and requested that Calypso be allowed for use through the existing stocks provision. Bayer CropScience will plan to maintain the state registrations through 2016.

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

Fungicide Efficacy Update for Cherry Leaf Spot Management

A review of 2015 cherry leaf spot infection and fungicide efficacy for management in 2016

Emily Pochubay, Dr. Nikki Rothwell, and Dr. George Sundin

Cherry Leaf Spot Infection in 2015

In 2015, spring and early summer conditions were cool and wet in northwest Michigan, and these conditions were favorable for early cherry leaf spot (CLS) development. CLS infections can occur as soon as bract leaves with open stomata are present, which in some areas of NW MI was during the first week of May in 2015. While bract leaf infection is the first opportunity for CLS infection to occur, there were 12 'official' CLS infection periods recorded by the Enviro-weather station and CLS model for the NWMHRC between May 10th and the end of July (Table 1). Several of these infection periods were long, and in general, conditions were wet between many of the 'official' infection periods which likely prolonged the wet conditions and contributed to the overall very high potential for disease. In particular, periods of frequent rain events from the end of May into mid-June was a difficult time during the season because many growers were not able to apply fungicides due to poor spray conditions. Furthermore, when ideal spraying weather occurred, the window for spraying was short and growers

Table 1. Cherry leaf spot disease report from Enviro-weather May 10 – August 23, 2015

Start of wetting period	End of wetting period	Duration (Hrs.)	Avg Temp (degrees F)	Rainfall (in.)	Cherry Leaf Spot	Progress towards infection
5/10 9-10PM	5/12 3-4PM	Wet: 33; Span: 43	49.7	0.22	Moderate	178%
5/15 2-3AM	5/16 9-10AM	Wet: 29; Span: 32	48.9	0.35	Low	121%
5/17 6-7PM	5/17 8-9PM	Wet: 3; Span: 3	72.9	0.32	None	40%
5/24 8-9PM	5/25 2-3PM	Wet: 17; Span: 19	59.6	1.6	Moderate	214%
5/26 Midnight-1AM	5/26 3-4AM	Wet: 4; Span: 4	63.2	0.06	None	77%
5/26 5-6PM	5/27 11PM - Midnight	Wet: 7; Span: 7	65.5	0.31	Low	137%
5/27 Noon-1PM	5/27 3-4PM	Wet: 4; Span: 4	57.5	0.03	None	45%
5/29 Noon-1PM	5/30 3-4PM	Wet: 21; Span: 28	54.8	0.36	Moderate	180%
6/7 8-9AM	6/9 11AM-Noon	Wet: 39; Span: 52	57.4	0.6	High	439%
6/11 4-5PM	6/12 11AM-Noon	Wet: 20; Span: 20	55.4	0.55	Moderate	182%
6/13 5-6PM	6/15 10-11AM	Wet: 32; Span: 42	63.9	0.27	High	590%
6/18 3-4PM	6/18 4-5PM	Wet: 2; Span: 2	60.6	0.03	None	31%
6/22 2-3PM	6/22 4-5PM	Wet: 3; Span: 3	71	0.07	None	48%
6/30 8-9AM	7/1 11AM-Noon	Wet: 24; Span: 28	52	0.01	Moderate	169%
7/6 10-11PM	7/7 8-9AM	Wet: 11; Span: 11	59.3	0.41	Low	109%
7/13 10-11PM	7/14 1-2PM	Wet: 16; Span: 16	64.7	0.22	Moderate	308%
7/17 4-5AM	7/17 2-3PM	Wet: 11; Span: 11	64.6	0.03	Low	207%
7/18 10-11AM	7/18 11AM-Noon	Wet: 2; Span: 2	67.6	0.03	None	40%
8/2 11AM-Noon	8/3 9-10AM	Wet: 22; Span: 23	63.1	1.19	High	348%
8/7 6-7PM	8/8 8-9AM	Wet: 15; Span: 15	63.6	0.11	Moderate	280%
8/13 6-7PM	8/14 8-9AM	Wet: 9; Span: 15	69.8	0.3	Low	158%
8/18 7-8PM	8/19 Noon-1PM	Wet: 14; Span: 18	69.5	0.33	Moderate	259%
8/20 5-6PM	8/20 6-7PM	Wet: 2; Span: 2	61	0.02	None	31%
8/23 Noon-1PM	8/23 3-4PM	Wet: 4; Span: 4	67	0.31	None	80%

were faced with prioritizing sprays. Leaf spot took a foothold during this time, and because pressure was so high, control was difficult. Unfortunately, the 2015 season was unforgiving for delayed or missed fungicide applications. We also received reports that some growers had higher levels of CLS in blocks where alternate row middle applications were made and in lower priority/non-bearing orchards.

Fungicide Efficacy 2015 Results

If there is an upside to such a challenging leaf spot year, it is possibly that last season's conditions were ideal for assessing CLS fungicide efficacy on Montmorency tart cherries at the NWMHRC. In this trial, Bravo Weather Stik (4 pt/ac) was applied to all treatment trees for the first and second applications of the season. The following applications of four treatments were as follows: Treatment 1: *Luna Sensation* 5 fl. oz. +R56 0.125% , Treatment 2: *Luna Sensation* 5 fl. oz. + R56 0.125% + *Captan 80 WDG* 2.5 lb, Treatment 3: *Merivon* 5.5 fl. oz. + *Sylgard* 0.03%, Treatment 4: *Captan 80 WDG* 2.5 lb, and an Untreated Control (UTC). Applications were made every 9-10 days with a handgun (300 gal/ ac), and data on the percentage of leaves on terminals with infection and percentage of terminal defoliation was collected on 20 July 2015 and 9 September 2015. While growers should not be applying four consecutive applications of fungicides such as *Luna Sensation* or *Merivon* due to the risks of fungicide resistance, we need to study fungicide efficacy in this manner on a small scale to most effectively compare compounds.

We found that all of the treatments were significantly more effective for preventing infection and defoliation compared with the UTC (Table 2). Treatments 2 and 4 that contained Captan were the most efficacious against CLS. Furthermore, the efficacy of *Luna Sensation* was improved by adding Captan. Although the percent defoliation numbers are high on 9 September in this experiment, it should be noted that there are unsprayed control trees in the block and so the disease pressure was consistently high all season. We also found that mildew incidence was significantly lower on trees treated with either *Luna Sensation* or *Merivon* compared with the UTC. These results indicate that even during seasons with extremely high CLS pressure, these materials are still providing good CLS control.

Table 2. Cherry leaf spot fungicide efficacy results, 2015

Treatment	Timing	% Infection	% Defoliation 20 July 2015	% Defoliation 9 Sept 2015	% Mildew Infection 20 July 2015
1. Bravo Weather Stik 4 pt <i>Luna Sensation</i> 5 fl. oz. + R56 0.125%	AB CDEF	62.1 bc	7.3 b	82.2 bc	0.8 c
2. Bravo Weather Stik 4 pt <i>Luna Sensation</i> 5 fl. oz. +	AB CDEF	42.5 d	5.2 b	66.8 cd	1.0 c

R56 0.125% + Captan 80 WDG 2.5 lb					
3. Bravo Weather Stik 4 pt Merivon 5.5 fl oz + Sylgard (0.03%)	AB CDEF	53.6 bcd	11.3 b	63.4 d	0.0 c
4. Bravo Weather Stik 4 pt Captan 80 WDG 2.5 lb	AB CDEF	45.2 cd	3.5 b	53.0 d	9.7 ab
Untreated Control		95.5 a	31.2 a	99.7 a	23.9 a

Preventing early leaf spot infections will help to minimize the risk of a CLS epidemic in the 2016 season.

This strategy is particularly important for trees stressed by early leaf loss last season; potentially two years of early defoliation will contribute to poor tree health and mortality especially if we have another hard winter. Furthermore, many orchards have a high level of inoculum as we head into the 2016 season due to severe infections last year, and there is the potential for a very high discharge of CLS spores during this week's predicted rain and temperatures above 60 degrees F. Therefore, we would like to encourage growers to protect orchards that have open bract leaves and/or true leaves from infection prior to rain. If retreatment is needed before the 10 day retreatment interval for chlorothalonil is met, Captan 80 WDG (2.5 lb/acre) is a good alternative for CLS.

Mealybug and wine grape viruses meeting held June 6 in Berrien Springs

Michigan grape growers will learn about identifying, life cycle, symptoms and treatments of grape mealybug, tobacco and tomato ringspot virus and grape leafroll virus.

Posted by [Brad Baughman](#), Michigan State University Extension, MSUE News

Michigan State University Extension is hosting a special meeting to discuss the grape mealybug pest issue, tobacco and tomato ringspot viruses and grape leafroll virus. This Mealybug and Virus for Wine Grape Growers meeting will be held at Lemon Creek Winery on June 2, 2016, at 3 p.m. at 533 E. Lemon Creek Rd., Berrien Springs, MI 49103.

MSU Extension grape disease and insect pest experts Rufus Isaacs and Annemiek Schilder will be joining us. They will be discussing the identification, life cycle, symptoms and treatment of the mealybug and leafroll virus in southwest Michigan wine grape

vineyards. We will also be discussing the symptoms, prevention and causative organism of the tobacco and tomato ringspot virus. Discussion will follow each speaker, so growers are encouraged to bring questions and observations.

Two restricted use pesticide recertification credits have been requested for this meeting. While there is no charge, we do request growers who plan to attend to please call or email me, Brad Baughman, at 269-927-5674 ext. 4012 or baughm30@anr.msu.edu.

Accommodations for persons with disabilities may be requested by contacting MSU Extension at 269-927-5674 ext. 4011 by May 19, 2016. Requests received after this date will be fulfilled when possible.

Grape grower's pre-bloom IPM meeting held May 25 in Lawton

MSU Extension is hosting several in-season integrated pest management meetings in 2016 for all grape growers and any other individuals interested in juice or wine grape production.

Posted on by [Brad Baughman](#), Michigan State University Extension, MSUE News

The Southwest Grape Pre-Bloom Integrated Pest Management (IPM) meeting will be May 25, 2016, at 3 p.m. at Cronenwett Farms, 70121 28th St., Lawton, MI 49065. Rufus Isaacs and Annemiek Schilder, Michigan State University Extension experts on disease and insect pests in grapevines, will be joining us. They will be discussing the impact of current weather conditions on pest management, recent research and information related to new disease control products. Discussion will follow each speaker, so growers are encouraged to bring questions or samples for identification. A light dinner of sandwiches and chips will be served after the educational presentations at 5 p.m.

Two restricted use pesticide recertification credits have been requested for this meeting. Registration includes dinner and is \$10 per person. Pre-registration is encouraged to make sure the organizers order enough food. Checks should be made out to Michigan State University and mailed, along with a note of the name and preferred contact information of registrants, to:

Jamie Styburski
MSU Extension
1737 Hillandale Rd.
Benton Harbor, MI 49022

For more information about the meeting, call the Berrien County MSU Extension office at 269-927-5674. IPM meetings are sponsored in part by the [Michigan Wine and Grape Industry Council](#).

Accommodations for persons with disabilities may be requested by contacting MSU Extension at 269-927-5674 ext. 4011 by May 19, 2016. Requests received after this date will be fulfilled when possible.

Nature Change: Conversations about Conservation and Climate - A New Multimedia Magazine

Northern Michigan's heritage landscapes are changing as invasive species, urban development and climate change alter, damage or destroy familiar plant and animal communities. These are big challenges to volunteer conservationists, natural resource professionals and the organizations working to manage, protect and preserve the forests, uplands, wetlands and streams of Northwest Lower Michigan. As observers of the natural world, they know that our region's renowned natural beauty and most productive ecosystems are at risk.

Nature Change is a new multimedia magazine developed by the [Conservation Resource Alliance](#) (CRA) as a cooperative venture for regional nonprofit organizations involved in protecting and managing the lands and waters of Northwest Lower Michigan. Our mission is to inform a regional public discussion about options for the sustainable management of natural resources during this time of increasingly rapid change. We want to build conservation literacy among citizens and local officials to inform the choices we all must make in preserving, protecting, adapting and re-locating both plant and animal species.

Recently, Dr. Nikki Rothwell was interviewed and featured in a Nature Change publication on Spotted Wing Drosophila. You can view the short write up and video here:

<http://naturechange.org/2016/05/09/game-changer-a-new-fruit-fly-puts-northern-michigans-orchards-at-risk/>

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WEB SITES OF INTEREST:

Insect and disease predictive information is available at:

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

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

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

60-Hour Forecast:

<http://www.agweather.geo.msu.edu/agwx/forecasts/fcst.asp?fileid=fous46ktvc>

Information on cherries:

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

Information on apples:

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

Information on grapes:

<http://grapes.msu.edu>

Fruit CAT Alert Reports:

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