

Northern Michigan FruitNet 2015

Northwest Michigan Horticultural Research Center

Special Update

Special FruitNet - May 15, 2015

CALENDAR OF EVENTS

2015

- | | |
|-----------------|---|
| 5/5-7/14 | Leelanau County IPM Updates
Bardenhagen Farm |
| 5/5-7/14 | Grand Traverse County IPM Updates
Wunsch Farm |
| 5/6-7/15 | Antrim County IPM Updates
Jack White Farms |
| 5/6-7/15 | Benzie County IPM Updates
Blaine Christian Church |
| 5/28 | Hazardous Waste and Pesticide Collection for Grand Traverse County |
| 5/30 | Hazardous Waste and Pesticide Collection for Leelanau County |
| 6/1 | Producers Need to Certify Conservation Compliance by June 1 |
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Fire blight, apple scab, and cherry leaf spot disease update

E. Pochubay and N. Rothwell

We were grateful to have warmth and sunshine on Wednesday and Thursday, and we observed many bees visiting cherry flowers on those two days while we were collecting data for the pollination project. Growers throughout the region took advantage of the dry weather and protected flowers and leaves from potential disease infections. On Thursday, we observed some damage to unopened cherry buds and blossoms due to overnight cold temperatures in Leelanau County. While this damage was primarily found in low-lying areas within orchards and in trees along orchard edges, we did notice some damage in trees on good fruit sites north of the research station; if orchards had good pollination, we anticipate a normal crop in these blocks. Overnight (15 May) temperatures were warmer in the upper 40s and 50s, but wet conditions returned early this morning. Currently, temperatures are predicted to continue to

warm up on Saturday and Sunday, and although there is no rain in the forecast for Saturday, there is a chance of rain on Sunday.

The Maryblyt model on Enviro-weather (Figure 1) is showing that with the exception of the Northport weather station, there is a high risk of fire blight infection of apple blossoms on Monday 18 May (EIP>100), and moderate to high risk on Sunday 17 May and Tuesday 19 May (75<EIP>100) throughout the northwest region. If apples in Northport are in bloom, there is currently a low to moderate risk of fire blight blossom infection on those days. Currently, warm temperatures are in the forecast for the weekend, and these conditions will favor the growth of the fire blight pathogen that are spread to open flowers by pollinators. In addition to warm temperatures, there is a chance of rain on Sunday and Monday. Free moisture carries fire blight bacteria present on flowers into the flowers' nectaries and cause infection. Please review the two articles by Dr. George Sundin regarding recommendations for fire blight management and additional information on Kasumin, which is now labeled and registered for use in pome fruit in Michigan.

Traverse City (NWMHRS) Fire Blight Assist Chart(Report issued 5/15/2015 9:59)

Directions for assist chart:

Locate the Biofix Date (the date bloom opened or the date a spray was applied to control Fireblight) on the top row. Follow that column down to determine Epiphytic Infection Potential for that block on each date in the left column. If this number is greater than 100, and the average temperature is greater than or equal to 60°F, this area will be highlighted, and rain, or trauma (high winds or hail) is all that is needed for infection. Repeat for additional blocks that bloomed or were sprayed on a different date.

2015		Temperature(F)			Rain		EIP for Biofix Date: (Bloom or spray date)															
Day	Date	Max	Min	Avg	in.	Chance of rain	5/9	5/10	5/11	5/12	5/13	5/14	5/15	5/16	5/17	5/18	5/19	5/20	5/21			
Sunday	5/10	56.6	42.6	49.6	0.03	--	0	0														
Monday	5/11	64.1	44.1	54.1	0.13	--	0	0	0													
Tuesday	5/12	53.5	36.7	45.1	0.06	--	0	0	0	0												
Wednesday	5/13	57.7	35.6	46.6	0	--	0	0	0	0	0											
Thursday	5/14	66	35.7	50.9	0	--	0	0	0	0	0	0										
Today's data:																						
Note: Last time reported by station is (9:25-9:30AM)																						
Friday	5/15	Forecast: 61	Actual (5:20-5:25AM): 45.5	53.25	0.31	100%	0	0	0	0	0	0	0									
Forecast Data																						
Saturday	5/16	74	47	60.5	--	9%	25	25	25	25	25	25	25	25								
Sunday	5/17	81	57	69	--	50%	98	98	98	98	98	98	98	98	74							
Monday	5/18	73	61	67	--	57%	135	135	135	135	135	135	135	135	111	37						
Tuesday	5/19	52	42	47	--	33%	90	90	90	90	90	90	90	90	74	25	0					
Wednesday	5/20	61	35	48	--	22%	45	45	45	45	45	45	45	45	37	12	0	0				
Thursday	5/21	66	39	52.5	--	27%	37	37	37	37	37	37	37	37	37	12	0	0	0			

Start of wetting period	End of wetting period	Avg. spores discharged/rod	Infection period
5/9 2-3 AM	5/9 Noon-1PM	112.5	No
5/10 9-10 PM	5/12 3-4	33	Yes

Primary apple scab is ongoing, and we

	PM		
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remind growers that coming rain could trigger a scab infection period. The research stations biofix or 'green tip' on McIntosh for primary apple scab is 20 April and based on this biofix, 48% of scab ascospores are mature and 20% of these ascospores have discharged at this time. The primary scab period ends when 100% of ascospores have been discharged. The last scab infection period occurred 10 May – 12 May, and few spores were discharged during this wetting period. There was a higher discharge following rain on 9 May and fortunately weather conditions were not favorable for an infection period on that date. As of 10:30 AM this morning, the rain that started at 2-3 AM today has stopped and the scab model on Enviro-weather is showing 51% progress toward infection. Hopefully, today's rain is done for the day, and this wetting event will not result in an infection period. Substantial green tissue is present on apples, and this tissue should be protected prior to possible rain on Sunday.

Traverse City (NWMHRS) Apple Scab Report (Report issued 5/15/2015 10:34)

Wetting periods start with rainfall (at least 0.01 inch) and continue until the start of at least eight hours without moisture (rainfall, leaf wetness, high relative humidity). Wetting periods are classified as "ongoing" until eight consecutive dry hours have passed. After that, the official end of the wetting period is recorded (the start of the 8 hour dry period).

McIntosh Green Tip for Traverse City (NWMHRS) estimated as 4/17/2015 (110 DD Base 42 after 1/1).

No missing degree day data.

Time period assessed for wetting events: 4/17 to 5/15/2015.

Select leaf wetness sensor for analysis:

Wet Period	Station	Start of wetting period	End of wetting period	Duration (Hrs.)	Avg temp (F)	Rainfall (in.)	Apple Scab (leaf)	Wet hrs @ avg temp for 1st infection	Progress toward infection
1	Traverse City (NWMHRS)	5/4 5-6AM	5/4 10-11AM	Wet: 6 Span: 6	54.7	0.09	None	11.5	52%
2	Traverse City (NWMHRS)	5/9 2-3AM	5/9 Noon-1PM	Wet: 10 Span: 11	46.1	0.07	None	16	60%
3	Traverse City (NWMHRS)	5/10 9-10PM	5/12 3-4PM	Wet: 33 Span: 43	49.7	0.22	Heavy (Symptoms appear: 5/25)	14.5	232%
4	Traverse City (NWMHRS)	5/15 2-3AM	Ongoing. Last hour with moisture: 5/15 9-10AM	Wet: 8 Span: 8	47.4	0.33	None	15	51%

There is also potential for cherry leaf spot infections in the predicted warm and wet conditions. Currently, there is 25 % progress toward cherry leaf spot infection during today's wetting period. Again, hopefully we will not receive more rain and this wetting period will not result in an infection period. The last possible cherry leaf spot infection period occurred 9-10 May through 12 May across the northwest region.

Traverse City (NWMHRS) Cherry Leaf Spot Report (Report issued 5/15/2015 10:56)

Wetting periods start with rainfall (at least 0.01 inch) and continue until the start of at least eight hours without moisture (rainfall, leaf wetness, high relative humidity). Wetting periods are classified as "ongoing" until eight consecutive dry hours have passed. After that, the official end of the wetting period is recorded (the start of the 8 hour dry period).

Montmorency bloom for Traverse City (NWMHRS) estimated as 5/10/2015 (320 DD Base 42 after 1/1).

No missing degree day data.

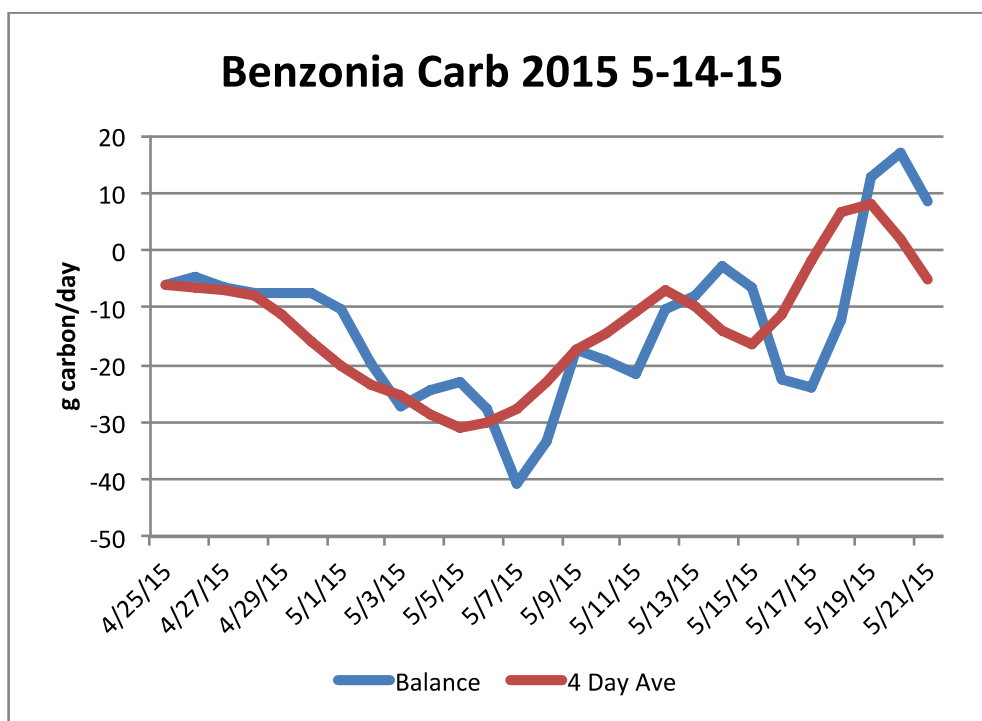
Time period assessed for wetting events: 5/10 to 5/15/2015.

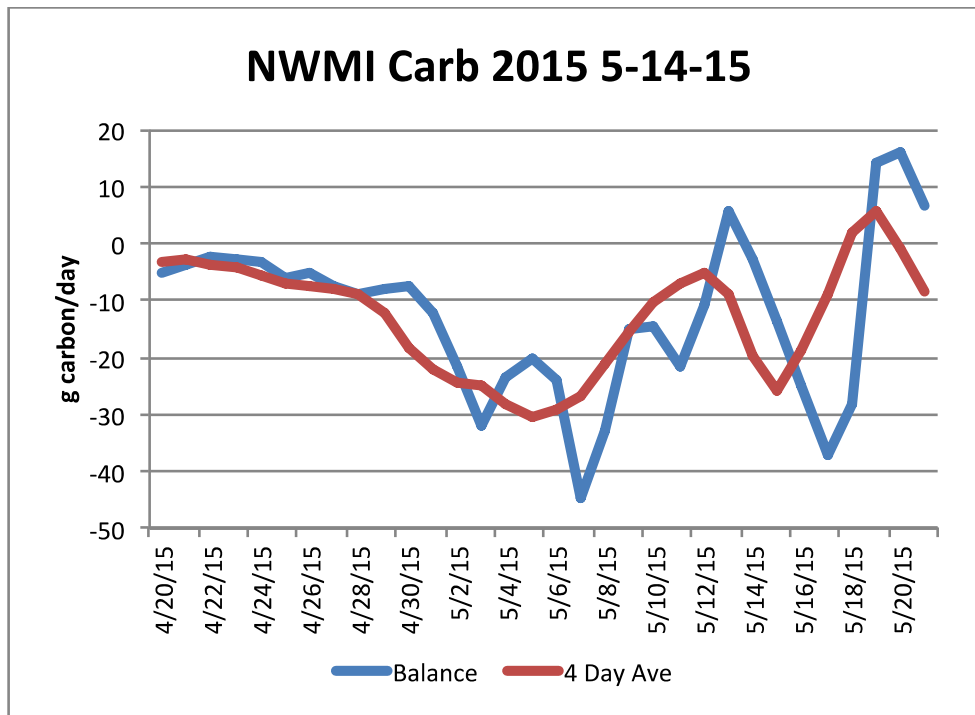
Select leaf wetness sensor for analysis:

Wet Period	Station	Start of wetting period	End of wetting period	Duration (Hrs.)	Avg temp (F)	Rainfall (in.)	Cherry Leaf Spot	Progress toward infection
1	Traverse City (NWMHRS)	5/10 9-10PM	5/12 3-4PM	Wet: 33 Span: 43	49.7	0.22	Moderate	178%
2	Traverse City (NWMHRS)	5/15 2-3AM	Ongoing. Last hour with moisture: 5/15 9-10AM	Wet: 8 Span: 8	47.4	0.33	None	25%

Carbohydrate model and thinning update

As growers in the northwest are approaching bloom in apples, the carbohydrate model is indicating mild stress over the weekend for orchards near Benzonia and the research station. With this level of mild stress, thinners applied during bloom should reduce crop load by ~0-10%. Therefore, normal rates for thinning during bloom are recommended at this time. Additional information on the carbohydrate model, rates, and thinning recommendations is below. This information can also be found at apples.msu.edu - select "Horticulture," scroll to the thinning section, and download the document, "PGRs and Thinning Strategies."





A primer for Streptomycin, Kasumin, and Oxytetracycline use for fire blight management

Streptomycin, Kasumin and oxytetracycline are registered for bloom blight control on pome fruit. Informational summaries and use patterns are explained.

Posted on **May 6, 2015** MSUE News, by [George Sundin](#), Michigan State University Extension, Department of Plant, Soil, and Microbial Sciences

The apple or pear flower is a critical site for multiplication of the fire blight pathogen *Erwinia amylovora*. When temperatures are conducive for growth (70s to low 80s optimal), *E. amylovora* populations can grow to one million cells per flower within one to two days. As these populations grow, remember they will also be very quickly disseminated among flowers by pollinators. Thus, warm and sunny days during bloom can very quickly lead to high percentages of flowers colonized with incredibly large fire blight populations.

The fire blight pathogen only grows well on flower stigmas, not on other flower parts. These bacteria do not need rain to grow on the stigma. They do, however, require free moisture, as little as 0.01 inch rain, to move from the stigma tip down the outside of the style to the base of the flower where infection occurs through the nectaries. Blossom blight infection can really kick

start a fire blight epidemic because these infected flower clusters will ooze more inoculum out and bacteria will be spreading internally through the tree.

With the [full registration of Kasumin](#) by the [Environmental Protection Agency](#) (EPA) last fall, we now have three antibiotics available for fire blight management during bloom. Below is information about these antibiotics and suggestions for best use. These suggestions will differ based on the occurrence of streptomycin resistance in the fire blight pathogen in your orchard or region.

Streptomycin

Streptomycin is an **excellent** fire blight material and provides forward control for two to four days prior to rain events and will be effective for blossom blight control if applied within 12-24 hours after a rain event. Streptomycin is used at a rate of 24 ounces per acre and should be applied with a non-ionic surfactant such as Regulaid (1 pint per 100 gallons). The use of the surfactant enhances deposition of the antibiotic on flowers and increases the chances that the critical stigma targets will be hit.

Note: If streptomycin is reapplied within three to four days after a previous application, Regulaid can be omitted to avoid phytotoxicity – usually viewed as yellowing of leaf margins.

Streptomycin is partially systemic and can reach fire blight bacteria that have entered flower nectaries.

Kasumin

Kasugamycin is an antibiotic related to streptomycin. There is no cross-resistance between Kasumin and streptomycin as Kasumin controls streptomycin-resistant strains of *E. amylovora*. Kasumin is an **excellent** fire blight material and provides forward control for two to four days prior to rain events and will be effective for blossom blight control if applied within 12 hours after a rain event. Kasumin is used at a rate of 2 quarts (64 fluid ounces) per acre in 100 gallons of water per acre and should be applied with a non-ionic surfactant such as Regulaid (1 pint per 100 gallons). Read the Kasumin label carefully as there are some specifications, including:

- Do not apply Kasumin in orchards in which the soil has been fertilized with animal manure.
- Do not apply after petal fall.
- Do not use alternate row applications.

The main difference between Kasumin and streptomycin is that Kasumin is not partially systemic like streptomycin is. Thus, Kasumin will not penetrate into the nectaries and will not be able to control an infection once the fire blight pathogen reaches the nectaries.

Oxytetracycline

Oxytetracycline is a **good** fire blight material and should be applied within one day prior to a rain event for best results. Oxytetracycline is bacteriostatic and does not kill fire blight bacteria, it only inhibits their growth. Thus, it has to be applied prior to rains where it can prevent growth on stigmas, but it can't eliminate existing populations. Oxytetracycline is also highly sensitive to degradation by sunlight and much of the activity is lost within one to two days after application. Oxytetracycline is best used as a 200 ppm solution (1 pound per 100 gallons) and should be applied with a non-ionic surfactant such as Regulaid (1 pint per 100 gallons). Per the label, a maximum of 1.5 pounds per acre can be applied, using 150 gallons water in this case.

Two slightly different formulations of oxytetracycline are sold: Mycoshield (OxyTc-calcium complex) and FireLine (OxyTc-hydrochloride). The FireLine formulation is a bit more soluble than Mycoshield and has performed slightly better for blossom blight control in head-to-head comparisons.

Antibiotic use for blossom blight management

Fire blight predictive models such as MaryBlyt or Cougar Blight should be used as guides for timing management decisions. The output of the MaryBlyt model, for example, is the epiphytic infection potential (EIP) number, which is an estimator of the risk of blossom blight infection. The higher the number, the larger the infection risk. I would place forecasted EIP numbers into four categories of risk:

1. Low to moderate ($50 < \text{EIP} < 75$)
2. Moderate to high ($75 < \text{EIP} < 100$)
3. High ($\text{EIP} > 100$)
4. Epidemic potential ($\text{EIP} > 200$)

When the infection risk is moderate to high, high or of epidemic potential, only streptomycin or Kasumin can be expected to provide adequate blossom blight control. These two antibiotics provide the best blossom blight control and also reduce or eliminate most of the fire blight inoculum from flowers. During these types of high-risk conditions, the spray interval for streptomycin or Kasumin is usually predicated by the occurrence of rainfall. Very high EIPs (greater 200) also necessitate additional antibiotic applications at shorter intervals. Finally, remember the overall risk increases as bloom progresses as the fire blight pathogen is building up populations on flowers over time. In addition, the more open flowers there are increases fire blight risk, provides more sites for pathogen growth and increases the number of unprotected flowers (flowers opening since the last spray).

Firstly, when the EIP is high (greater than 100) but conditions are dry for several days, remember inoculum is building up rapidly on flower stigmas. Growers should apply streptomycin or Kasumin strategically in the middle of a period such as this to reduce inoculum potential. The outcome of enabling several days of population buildup by doing nothing will make blossom blight much more difficult to control if rain events follow. Controlling diseases under high inoculum situations is always more difficult than controlling diseases in a lower inoculum situation.

When the EIP is high and rain events are forecasted, the application of streptomycin or Kasumin would be best about 24 hours before the rain event and then followed up about one to two days after the rain event. Subsequent spray applications will be based on current and future conditions. For example, if temperatures cool significantly and EIPs are reduced to low to moderate risk values, sprays can be held off. If EIPs remain high, a third application should be made within two to four days based on the occurrence of wet or dry conditions.

Oxytetracycline is best used when the infection risk is low to moderate (EIP less than 75). Under warmer conditions when *E. amylovora* is capable of very rapid growth on flower stigmas, oxytetracycline can be overwhelmed by the pathogen and fail to provide adequate control. In addition, the incidence of shoot blight infection is typically higher in oxytetracycline-treated trees compared to streptomycin- or Kasumin-treated trees because the innate activity of this antibiotic is the lowest of the three and its effect on inoculum reduction is the lowest.

In the absence of streptomycin resistance, streptomycin is the best choice for fire blight management. While the effectiveness of streptomycin and Kasumin are essentially equivalent in the inoculated blossom blight control tests that I have conducted over a seven-year period, the partial systemic nature of streptomycin gives it an advantage in that it can reach internal populations of *E. amylovora* that Kasumin cannot. Streptomycin is also significantly cheaper than Kasumin. Long-term evidence from around the Midwest and eastern United States suggests that if streptomycin use is limited to a maximum of three to four applications per season, and only used during the bloom period, then the chances of streptomycin resistance development are very low.

The main risk factor for streptomycin resistance development is an increased number of applications per season above four and regular use during the summer for shoot blight control. This use pattern increases the chances of mutation of the fire blight pathogen to streptomycin resistance or acquisition of a streptomycin-resistance gene from the indigenous microflora in orchards.

A resistance management strategy for streptomycin can be used; the best strategy would be to alternate applications of streptomycin and Kasumin. [Michigan State University Extension](#) advises that a tank-mix strategy of using streptomycin and oxytetracycline is not a resistance management strategy. Since the oxytetracycline is not killing bacterial cells, it would not kill any streptomycin-resistant cells that might arise; it would only temporarily prevent their growth.

In streptomycin-resistance situations, Kasumin is the antibiotic of choice and is best used in advance of moderate to high risk conditions. This is because where we have detected streptomycin resistance in orchards in Michigan, the incidence of resistant bacterial pathogen strains is usually very high to 100 percent. Thus, streptomycin should not be used in these situations because it will have no effect on the pathogen. If the disease risk is low to moderate, oxytetracycline is also an effective substitute for streptomycin in orchards where streptomycin resistance occurs.

Summary of antibiotic use for fire blight management

The target of antibiotic sprays for fire blight control is the stigma surface, style and base of the flower. Adding a non-ionic surfactant such as Regulaid to antibiotic sprays increases the chances of deposition on target surfaces. The best timing for all antibiotics is to arrive prior to the arrival of fire blight bacteria because these arriving populations are typically small and can be readily controlled if the antibiotic is already present. However, streptomycin and Kasumin can be used effectively after *E. amylovora* cells have arrived and started growing on stigmas. When EIPs predict potential high risk to epidemic conditions, only streptomycin or Kasumin will be effective for blossom blight control. Under these conditions, the two most important considerations are very tight spray intervals and excellent spray coverage.

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

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New label for Kasumin is slightly different than the Section 18 label

Kasumin 2L is fully registered on pome fruit for fire blight control. It provides excellent blossom blight control and is critically needed, especially in orchards impacted by streptomycin resistance.

Posted on **May 6, 2015** MSUE News, by [George Sundin](#), Michigan State University Extension, Department of Plant, Soil, and Microbial Sciences

Kasumin 2L was registered by the [Environmental Protection Agency](#) (EPA) last fall for [fire blight control on pome fruit crops](#) in the United States and is available in Michigan for the 2015 season. The new label has a few changes in it from what we were used to with the Section 18 label.

1. There is no requirement for a first fire blight spray of other registered materials. Kasumin can be the first material applied during bloom.
2. Kasumin 2L can be used throughout Michigan, i.e., use is not restricted to counties with streptomycin resistance.
3. There is no longer a requirement for state experts to indicate potential epidemic conditions for fire blight prior to an application.

These are all great changes that will make your life easier in using this material for fire blight management. A few important components of the label remain the same as they always have been regarding Kasumin use in Michigan. These three points are important for antibiotic resistance management:

1. Do not apply Kasumin in orchards in which the soil has been fertilized with animal manure.
2. Do not apply after petal fall.
3. Do not use alternate row applications.

Finally, the new label states a maximum of four applications of Kasumin per year. My hope is that you can limit Kasumin use to a maximum of two to three applications per season, depending on fire blight conditions of course. In Michigan regions where we have streptomycin resistance, Kasumin is the most important alternative material and must be protected for the future against resistance development.

For more information, see "[Kasumin registered by EPA for fire blight control on pome fruit](#)," posted Sept. 24, 2014 by [Michigan State University Extension](#).

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

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Chlorothalonil Use for Pre-Shuck Split CLS Control

N. Rothwell, E. Pochubay, and G. Sundin

Chlorothalonil is recommended for CLS control early in the season, but under the current wet conditions this spring, growers need to maintain the 10-day retreatment interval between chlorothalonil applications.

The goal of early cherry leaf spot (CLS) sprays is to prevent or delay initial infection events. Based on our previous observations, CLS infection levels can rise to epidemic proportions under weather conditions that are both conducive and optimal for rapid disease development and infection. We have found that orchards with lower levels of infection early in the season have less inoculum in the tree for subsequent infections, which makes control of CLS more easily achieved when conditions favor CLS development.

Keeping inoculum low early in the season helps to minimize the potential difficulty of disease control prior to harvest and in some years, after harvest. Additionally, early season CLS control helps trees hold leaves into the fall because if infection becomes severe during the season, early defoliation of leaves can occur. Sufficient healthy leaves on the trees are critical to ripen fruit evenly, and early defoliation can impact winter hardiness of trees.

At the open bract leaf stage, trees must be covered to prevent infection prior to rain events that could trigger a CLS infection. Prior to shuck split, the recommended fungicide for cherry leaf spot management is chlorothalonil (Bravo and generics). This fungicide is a multi-site protectant that is excellent for leaf spot control and not at risk for fungicide resistance development.

Thus far this spring, we have experienced wet conditions, and forecasts predict more wet weather this weekend and into early next week (15-18 May). Warm and wet favor the development of CLS, and growers will be challenged to keep open leaves covered in these conditions. As stated above, chlorothalonil is the optimal fungicide at this time; however, growers need to be sure that applications of this material do not fall short of the 10-day re-application interval. **All chlorothalonil labels indicate that applications of this chemistry must be spaced at least 10 days apart, and this directive holds true for full cover sprays and alternate row middle applications.** Captan is another efficacious fungicide for CLS and can be rotated with chlorothalonil applications to provide good early season control.

Important Crop Insurance Deadline Near for Illinois, Indiana, Michigan, and Ohio Producers

Producers Need to Certify Conservation Compliance by June 1

The 2014 Farm Bill requires insureds to comply with highly erodible land conservation (HELC) and wetland conservation (WC) provisions to be eligible for crop insurance premium subsidies beginning with the 2016 reinsurance year. In 2014, FCIC paid approximately 62% of the producers premium cost. Producers that are not in compliance with WC and HELC provisions could see their premium cost double. **Simply stated, by June 1, 2015, insureds must have an AD-1026 [Highly Erodible Land Conservation and Wetland Conservation Certification Form](#) on file with FSA in the same name and taxpayer identification number you use when you purchase your crop insurance policy to retain the premium subsidy.** To accommodate

growers with only orchard, bush and vine crops, the new AD-1026 doesn't require the establishment of detailed farm records with FSA, only the full tax identification number to establish and record compliance is met. To ensure producers are aware of the change, the Risk Management Agency sent letters in November and again in April to producers that have crop insurance, but FSA records indicate no AD-1026 is on file.

It is also important to note that **insureds with catastrophic coverage (CAT) are still required to sign an AD-1026 to be eligible for the premium subsidy**. Even though they only pay an administrative fee, there is a premium associated with CAT coverage and the producer will be responsible for the full premium if they don't comply with Conservation Compliance.

To continue to be eligible for premium subsidy on any Federal crop insurance policy, including specialty crops, livestock, and pasture, a form AD-1026 must be filed with FSA by June 1, 2015. If you do not have form AD-1026 on file with FSA by June 1, 2015, or are not in compliance with the requirements as outlined on the form, you will not be eligible for premium subsidy on any Federal crop insurance policy that has a sales closing date on or after July 1, 2015. This means you may still be eligible for insurance but you will have to pay the full premium.

You can find your local FSA office at <http://offices.sc.egov.usda.gov/locator/app>. Additional information about Federal crop insurance and the HELC and WC provisions is available at the RMA website at www.rma.usda.gov and NRCS's [Conservation Compliance webpage](#)

HOUSEHOLD HAZARDOUS WASTE AND PESTICIDE COLLECTIONS:

[Leelanau County](#) : upcoming collection on May 30

[Antrim County](#) : upcoming collection on May 9

Grand Traverse County : upcoming collection May 28, 2015

**Reservations are required; every county has different requirements for materials they will take back.

Information on Grand Traverse County Hazardous Waste and Pesticide Collection:

GRAND TRAVERSE COUNTY RESOURCE RECOVERY DEPARTMENT (RecycleSmart) will conduct a Household Hazardous Waste (HHW) & Pesticide collection on Thursday, May 28, 2015.

The online scheduling system is a convenient and the recommended tool to secure an appointment.

An appointment is required and can be made at www.RecycleSmart.info or by calling the RecycleSmart Hotline at 941.5555.

This service is provided to Grand Traverse County residents at no cost, (up to 150 lbs., \$1.30 lb. thereafter). Accepted material includes cleaning products, pesticides, mercury, moth balls, motor oil, pool chemicals, oil based paint, latex paint, CFL bulbs and more...

Latex paint is accepted.

For more information visit www.RecycleSmart.info or call the RecycleSmart Hotline at 941.5555

Clean Boats Clean Waters Needs Heroes

By Beth Clawson, Michigan State University Extension

Join the fight; boaters against aquatic invasive species. Aquatic invasive species (AIS) prevention is a priority in the state. Learn how to help prevent the spread of aquatic invasive species.

[Clean Boats, Clean Waters \(CBCW\)](#) program hero volunteers make a big difference at their local lakes. They are helping to prevent the spread of unwanted aquatic hitchhikers on boats, trailers, sporting equipment and other watercraft through boater education activities. Michigan says that it is unlawful to put any watercraft and carrying trailer into a body of water or to travel on public roadways if there is visible vegetation clinging to it. This helps the spread but there is more that can be done. Organisms of concern in Michigan include plants and animals such as: Eurasian water milfoil, curly leaf pondweed, zebra mussel, spiny water flea, rusty crayfish, and more.

The CBCW volunteer leader train the trainer schedule through [Michigan State University Extension](#) has planned six trainings throughout the state in 2015. There are slated yet for this year: 1. May 23 at the Cass County MSUE Office in Cassopolis; 2. June 11 at the Northwest Horticulture Station in Traverse City; and 3. July 9 at the Chippewa Tribal Center in Sault St Marie. Registration is available online at <http://events.anr.msu.edu/cbcw>. You can also download a flier listing all locations and times. If you need more information contact Beth Clawson at clawsonb@anr.msu.edu or call 269-330-5554.

A CBCW volunteer hero is a person who cares Michigan's waters and is passionate about maintaining the highest water quality of their lake or river. Through sharing that knowledge and passion with others volunteers invest in helping boat owners inspect their own watercraft before and after enter the water. They encourage prevention of the introduction of AIS into new locations through working together bringing the fight to them..

For more information about invasive aquatic plants contact [Beth Clawson](#), MSU Extension Educator. To learn more about invasive organisms and invasive aquatic plants contact [Michigan State University Extension](#) Natural Resources educators who are working across Michigan to provide aquatic invasive species educational programming and assistance. You can contact an educator through MSU Extension's "[Find an Expert](#)" search tool using the keywords "Natural Resources Water Quality."

A Tweetable summary: #CleanBoatsCleanWaters

Categories: Natural resources, Water Quality, clean boats clean waters

Photo: (optional)



Student volunteer heroes for Clean Boats, Clean Waters portable boat wash demonstration.

2015 Tree Fruit IPM Update Series

Emily Pochubay and Nikki Rothwell
Michigan State University Extension

Tree Fruit IPM Updates beginning the first week of May through mid-July (as needed) will highlight management of the season's current potential pest challenges dictated by weather and pest biology. Attendees are encouraged to bring examples of pests and damage found on the farm to these workshops for identification and discussion. Workshops will be held weekly in Leelanau and Grand Traverse counties and bi-weekly in Antrim and Benzie Counties. Tree fruit growers are welcome to attend meetings at any of the locations and times that are most convenient (see below). These workshops are free and do not require registration. Certified crop advisor continued education credits (two per meeting) and pesticide recertification credits (two per meeting) will be available. We are looking forward to seeing you in a few weeks! For more information, please contact Emily Pochubay (pochubay@msu.edu), 231-946-1510.

IPM Update Dates, Times, and Locations

Leelanau County

Location: Jim and Jan Bardenhagen, 7881 Pertner Rd, Suttons Bay
Dates: May: 12, 19, 26; June: 2, 9, 16, 23, 30; July: 14
Time: 12PM – 2PM

Grand Traverse County

Location: Wunsch Farms, Phelps Road Packing Shed, Old Mission
Dates: May: 12, 19, 26; June: 2, 9, 16, 23, 30; July: 14
Time: 3PM – 5PM

Antrim County

Location: Jack White Farms, 10877 US-31, Williamsburg (is not correct in Google Maps) *North of Camelot Inn and South of Elk Rapids on the southeast side of US-31*
May: 20; June: 3, 17; July: 1, 15
Time: 10AM – 12PM

Benzie County

Location: Blaine Christian Church, 7018 Putney Rd, Arcadia, MI 49613
May: 20; June: 3, 17; July: 1, 15
Time: 2PM – 4PM

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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 is available at the new cherry website:

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

Information on apples:

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

Fruit CAT Alert Reports has moved to MSU News

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