

Northern Michigan FruitNet 2013

Northwest Michigan Horticultural Research Center

Special Update

May 17, 2013

IMPORTANT FIREBLIGHT INFORMATION FOR GROWERS WITH OPEN BLOOM AS WE HEAD INTO THE WEEKEND, MAY 18-19, 2013

Just to remind growers that have opening apple blooms, the two articles below on fireblight by Dr. Sundin are excellent and should be read as we head into a weekend with a high potential for fireblight infection.

The MaryBlight model on Enviroweather (www.enviroweather.msu.edu) predicts that the NW Station weather station's epiphytic infection potential (EIP) will reach into the high 90's on Sunday and almost to 200 by Monday, May 20th (Figure 1). The forecast is also calling for a 75%+ chance of rain on Monday and Tuesday. The fireblight bacteria (*Erwinia amylovora*) will build up on open apple flowers during the warm weekend, and the rain will wash those bacteria down into the flower on Monday—the perfect scenario for a fireblight infection. If there is bloom open, growers need to be covered going into this rain on Monday! As we have not detected streptomycin resistant *E. amylovora* in Benzie or Manistee, so they should follow Dr. Sundin's advice in the first article below since Kasumin is not available in those two counties.

For Antrim, Leelanau, and Grand Traverse Counties, growers are able to use Kasumin, and Dr. Sundin's second article is a must-read if apple blooms will be opening on your farm this weekend.

2013		Temperature(F)			Rain		EIP for Biofix Date: (Bloom or spray date)																
Day	Date	Max	Min	Avg	in.	Chance of rain	5/11	5/12	5/13	5/14	5/15	5/16	5/17	5/18	5/19	5/20	5/21	5/22	5/23	5/24			
Sunday	5/12	38.4	32.3	35.4	0.03	—	0	0															
Monday	5/13	49.9	31.7	40.6	0	—	0	0	0														
Tuesday	5/14	65	39.7	52.3	0	—	0	0	0	0													
Wednesday	5/15	72.4	51.9	62.1	0	—	16	16	16	16	16												
Thursday	5/16	65.2	47.1	56.1	0	—	16	16	16	16	16	0											
Today's data:																							
Note: Last time reported by station is (8:55-9:00AM)																							
Friday	5/17	Forecast: 64	Actual (3:45-3:50AM): 41.9	52.95	0	11%	10	10	10	10	10	0	0										
Forecast Data																							
Saturday	5/18	71	45	58	—	36%	23	23	23	23	23	12	12	12									
Sunday	5/19	82	49	65.5	—	25%	97	97	97	97	97	86	86	86	74								
Monday	5/20	81	50	70.5	—	78%	172	172	172	172	172	172	172	172	180	85							
Tuesday	5/21	78	57	67.5	—	79%	222	222	222	222	222	222	222	222	222	222	148	62					
Wednesday	5/22	71	54	62.5	—	63%	172	172	172	172	172	172	172	172	172	172	172	86	25				
Thursday	5/23	67	45	57.5	—	44%	172	172	172	172	172	172	172	172	172	172	172	86	25	0			
Friday	5/24	65	44	54.5	—	23%	86	86	86	86	86	86	86	86	86	86	86	86	25	0			

FIRE BLIGHT RISK INCREASING THIS WEEK: TREATMENT OPTIONS IN EASTERN MICHIGAN AND THE BENZIE-MANISTEE

The risk for blossom blight infection is extreme this week as of May 14, 2013. Streptomycin is the best material available for control in orchards in regions in counties not currently impacted by streptomycin resistance.

Posted on **May 14, 2013** by **George Sundin**, Michigan State University Extension, Department of Plant, Soil, and Microbial Sciences

This article is written for growers in those counties where Kasumin is not available for use such as locations in eastern Michigan and in the Benzie-Manistee region, central Michigan, and in northern counties such as Charlevoix County, etc. The contents of this article also apply to pear growers since the Section 18 for Kasumin does not allow use on pear.

With predicted temperatures in the high 70s to low 80s for most of Michigan for the next seven days, this will be a critical period for potential [fire blight](#) infection. We have not experienced these types of temperatures for this duration during bloom in many years. **Temperatures in the high 70s to low 80s are optimal for growth of the fire blight pathogen on apple flower stigmas.** At these temperatures, populations of the pathogen can double in size every 30 to 45 minutes on stigmas. Pollinators are also quite active as well, and will also increase the movement of the pathogen around in orchards and facilitate colonization of new flowers.

Last week, conditions were present for a fire blight infection in most regions of the state; however, these fire blight-conducive conditions were quickly followed by the freeze event in the morning of Monday, May 13. After a freeze, the [MaryBlyt fire blight model](#) resets the EIP value to zero because cold temperatures are inhibitory to growth of the pathogen. Also, since this possible infection was relatively early in the bloom period for most, there was likely not a strong buildup of pathogen cells in most orchards.

What typically happens when temperatures get cold is that the pathogen cells remain on flowers, but do not grow. As the open flower ages to five to six days after opening, the flower reaches a state where the pathogen cannot infect it. Thus, we can escape infection of that flower. However, those pathogen cells do not disappear; they remain on the flower and can serve as inoculum for subsequent infection if they are disseminated to newer recently-opened flowers.

Therefore, I think our risk in this coming week (May 15-22) may actually be higher than we think because of the potential that more inoculum is present in orchards from the buildup of last week.

Be sure to use the [fire blight model](#) on the [MSU Enviro-weather](#) website to see what the EIP values are as predicted from the weather station closest to your orchard. The current predicted MaryBlyt EIP values for later this week are very high in most regions, ranging up to 200. These numbers change every day as predicted high temperatures change. They have increased for most stations from yesterday. EIP values around 200 are higher than [Michigan State University Extension](#) has seen during bloom for a number of years. **This indicates the risk of blossom blight infection will be at a critical point later this week.** Any rain that occurs during this period (as little as 0.01 inch of rain) will trigger a fire blight infection event.

The higher the EIP value gets, the higher the risk of infection. When the number reaches 100, this indicates the potential for significant infection. At an EIP of 200, the risk is extreme. For historical reference, during the last significant fire blight year we had in 2005, EIP values peaked at 255 for Bainbridge, Mich., and 182 in Sparta, Mich. Of course, weather will play an important role in the

potential for fire blight epidemics and subsequent shoot blight infection, but we do know that the occurrence of blossom blight puts trees at significant risk for further infection events of shoots during the summer.

What is the relationship between EIP values and choices for blossom blight control? The main choices we have are streptomycin (Agri-Mycin, FireWall), oxytetracycline (Mycoshield, FireLine), and the biological control Serenade MAX. Of these, streptomycin is by far the superior choice in terms of disease control efficacy.

In general, if EIP values are less than 50, any of the three would be effective as we would be under low fire blight pressure. For EIP values ranging from 50 to 90, either oxytetracycline or streptomycin would be a good choice. Remember that oxytetracycline inhibits growth of the pathogen and must be applied in advance of rains. For EIP values greater than 90, streptomycin is the best choice as our field data indicates that streptomycin has better efficacy than oxytetracycline under high disease pressure.

For this upcoming week, the warm-up is slated to begin Wednesday, May 15. The best strategy would be to protect trees with streptomycin prior to any rain event. Streptomycin is also partially systemic in the flower which further increases the protective capability. The interval between the first streptomycin application and the next one should be tight (two to three days) as this will be a period of rapid pathogen growth and new flowers will continue to open that were not protected with the first streptomycin application. The streptomycin rate is 8 ounces per 100 gallons, making a 100 ppm solution.

There may be some value in tank-mixing streptomycin with oxytetracycline for resistance management purposes. However, the reality is that streptomycin is the better material and there is no evidence available suggesting that if we limit our use of streptomycin to the bloom period (three to four applications max per year) that resistance will develop. In addition, oxytetracycline is degraded rapidly by sunlight and would not last too long on flowers anyway under warm, sunny conditions. If you do tank-mix streptomycin and oxytetracycline, do not reduce the rates of either material, **USE FULL RATES** of both.

Finally, as we approach king bloom petal fall, I strongly suggest that you incorporate Apogee into your spray to initiate your shoot blight protection program. Please see two previous articles on Apogee from 2012: "[Use of Apogee for shoot blight control in 2012](#)" discussing fire blight control, and "[Applying Apogee in 2012](#)" discussing timing and rates. **Treat 2013 as a severe risk year** and consider increasing the rate for your first application to 150 percent of a split rate.

FIRE BLIGHT RISK INCREASING: TREATMENT OPTIONS IN COUNTIES AFFECTED BY SECTION 18 FOR KASUMIN

The risk for blossom blight infection is extreme this week as of May 14, 2013. Kasumin is the best material available for control in orchards in regions affected by streptomycin resistance in the fire blight pathogen.

Posted on **May 14, 2013** by **George Sundin**, Michigan State University Extension, Department of Plant, Soil, and Microbial Sciences

With predicted temperatures in the high 70s to low 80s for most of Michigan for the next seven days (as of May 14, 2013), this will be a critical period for potential [fire blight](#) infection. We have not experienced these types of temperatures for this duration during bloom in many years. **Temperatures in the high 70s to low 80s are optimal for growth of the fire blight pathogen on apple flower stigmas.** At these temperatures, populations of the pathogen can double in size every 30 to 45 minutes on stigmas. Pollinators are also quite active as well, and will also increase the movement of the pathogen around in orchards and facilitate colonization of new flowers.

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Be sure to use the [fire blight model](#) on the [MSU Enviro-weather](#) website to see what the EIP values are as predicted from the weather station closest to your orchard. The current predicted MaryBlyt EIP values for later this week are very high in most regions, ranging up to 200. These numbers change every day as predicted high temperatures change. They have increased for most stations from yesterday. EIP values around 200 are higher than [Michigan State University Extension](#) has seen during bloom for a number of years. **This indicates the risk of blossom blight infection will be at a critical point later this week.** Any rain that occurs during this period (as little as 0.01 inch of rain) will trigger a fire blight infection event.

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What is the relationship between EIP values and choices for blossom blight control? The main choices we have are streptomycin (Agri-Mycin, FireWall), oxytetracycline (Mycoshield, FireLine), Kasumin and

the biological control Serenade MAX. Remember, streptomycin resistance is widespread in southwest Michigan, the Fruit Ridge, and Oceana County. Streptomycin-resistant strains of the fire blight pathogen are beginning to be spread more widely in northwest Michigan. Thus, streptomycin should not be used in these areas, leaving our choices as oxytetracycline, Kasumin, and Serenade MAX.

In general, if EIP values are less than 50, any of the three would be effective as we would be under low fire blight pressure. For EIP values ranging from 50 to 90, oxytetracycline would be a good choice because the disease pressure is moderate and due to the high costs of Kasumin. Remember that this material inhibits growth of the pathogen and must be applied in advance of rains. For EIP values greater than 90, Kasumin is the best choice as our field data indicates Kasumin has better efficacy than oxytetracycline under high disease pressure.

For this upcoming week, the warm-up is slated to begin Wednesday, May 15. The best strategy would be to protect trees with Kasumin prior to any rain event. The interval between the first Kasumin application and the next one should be tight (two to three days) as this will be a period of rapid pathogen growth and new flowers will continue to open that were not protected with the first Kasumin application. Thus, Kasumin should be applied again prior to predicted rains during the weekend. The Kasumin rate is 2 quarts per acre in a maximum of 100 gallons. With such a high likelihood of infection, tank-mixing Kasumin with oxytetracycline would have limited value because of the reduced efficacy of oxytetracycline and also because oxytetracycline is degraded rapidly by sunlight and thus would not last too long on flowers anyway.

As mentioned in the above article, once we approach king bloom petal fall, I strongly suggest that you incorporate Apogee into your spray to initiate your shoot blight protection program. Please see two previous articles on Apogee from 2012: "[Use of Apogee for shoot blight control in 2012](#)" discussing fire blight control, and "[Applying Apogee in 2012](#)" discussing timing and rates. **Treat 2013 as a severe risk year** and consider increasing the rate for your first application to 150 percent of a split rate.

WEBSITES OF INTEREST

Insect and disease predictive information is available at:

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

60 Hour Forecast

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

Information on cherries is available at the new cherry website:

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

Fruit CAT Alert Reports have moved to MSU News

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