

West Virginia Hazelnut News #18 - - - The Blight Fight

Friends,

I know this is supposed to be hazel news, but many of us nut nuts also have fruit trees that are a joy not to be found at Kroger's. Besides, there is such a thing as bacterial blight that attacks hazels. If I told you anything about it, I would have to make it up. Getting back to our fruit, anything that good is also bound to be a favorite of a host of scoundrels. Of all the enemies attacking our fruit, most are just cosmetic. But "cosmetic" is not trivial. Kroger will not abide blemished fruit in their produce department. All that said, bacterial blights, like fire blight, are in a class worse than cosmetic. They will kill our trees.

Like our hazel EFB fight, the first and best organic approach is a breeding solution. Blight resistant fruit varieties tend to be rather new – not the names we remember from childhood. What about flavor? We visited a peach breeding program a few years ago and their objective was shelf life – gag! We don't want plastic fruit. When you were a hungry little kid did you go to your aunt's house and she had a bowl of beautiful wax fruit? Aaaargh! That horrible memory comes back when I walk into the produce department.



I know that a tree ripened Santa Rosa plum is drop dead delicious, but our trees have cankers all over them. Later we bought blight resistant AURosa (the AU is Auburn University) – no cankers and no plums yet. We are still hopeful about the flavor.

To keep our old flavorful favorites alive we may have no choice but to fight back against fire blight. I came across a wonderful program called “Maryblyt”. Among the nice things in Maryblyt is a 48 page “Users Manual”. This is not really an instruction manual, because the Maryblyt program is easy to use. The document is also a superb info guide to the nature of fire blight. You need to understand the pest and treatments if you hope to win the battle. First the basis of the approach, then I will tell about how the Maryblyt program works.



Just like EFB, fire blight is an American gift to the world. Also like EFB and *Corylus Americana*, the native American crab apple is fire blight immune, and the basis for breeding resistance (but a long way from a Fuji). Oops, back to business!

During the winter there are some feeble activities and treatments to reduce the fire blight bacteria inoculum. Sometimes in the spring when weather conditions and moisture are just right (wrong) there will be a bacterial population explosion. These explosions are the problem. Some years there can be multiple explosions - some years none. A tree’s perimeter defenses seem to work well, but injuries create entry points. Blossoms are another entry point and pollinators make sure the bacteria get a ride. So a population explosion during blossom time or hail damage is as bad as it gets. Once the bacteria make it inside the tree’s defenses they have

it made, and we are out of bullets. The trick is to see the explosion coming 3 days ahead and get bactericide on the tree. Nothing retroactive will work.

The Maryblyt program has the smarts to understand the explosive conditions. The user enters the weather forecast (not the current weather) a few days into the future, and then the program computes the population effects and warns when action is needed. The program wants 4 items of information entered: the predicted high and low temperatures; the stage of the tree's buds; and if the trees are wet sometime during the day. We usually have a morning fog, so I predict that our trees get wet every day. Also enter if you spray. That resets the population to some low value.

The program wants to know if it is dealing with apples or pears. I'm not sure why. I use apples and if warned, spray both – and stone fruit too. We only have a few assorted trees for our own use. A serious grower would need to unravel these differences.



Maryblyt version 7.1.1 can be downloaded from: <http://grapepathology.org/maryblyt>

Maryblyt 7.1.1 D:\DataJFK\Fruit\FireBlight\2019\MaryBlyt Output 2019a.mb7									
File Edit Options Help									
Save Print Copy Paste Save Screen as Image View Graph									
Inputs									
Date	Phenology	Max Temp	Min Temp (F)	Wetness (in)	Notes	Avg Temp (F)	EIP	BHWTR	
3/19/2019	GT	55.0	21.0	0.10	Frost	38.0	-	-	
3/20/2019	GT	64.0	26.0	0.10	Frost	45.0	-	-	
3/21/2019	PK	52.0	40.0	0.10		46.0	-	-	
3/22/2019	PK	50.0	37.0	0.04		43.5	-	-	
3/23/2019	B1	58.0	27.0	0.10	Frost	42.5	-	+ - + - M	
3/24/2019	B	71.0	26.0	0.01	Frost	48.5	-	+ - + - M	
3/25/2019	B	51.0	38.0	0.21		44.5	-	+ - + - M	
3/26/2019	B	55.0	28.0	0.00	Frost	41.5	-	+ - + - M	
3/27/2019	B	65.0	23.0	0.10	Frost	44.0	-	+ - + - M	
3/28/2019	B	71.0	32.0	0.10		51.5	12	+ - + - M	
3/29/2019	B	71.0	49.0	0.00		60.0	24	+ - + + H	
3/30/2019	B	81.0	47.0	0.41		64.0	85	+ - + + H	
3/31/2019	BB	47.0	27.0	0.10	Frost	37.0	-	+ - + - M	
4/1/2019	BB	50.0	21.0	0.10	Frost	35.5	-	+ - + - M	
4/2/2019	BB	61.0	26.0	0.00	Frost	43.5	-	+ - + - M	
4/3/2019	BB	69.0	33.0	0.10		51.0	12	+ - + - M	
4/4/2019	BB	75.0	36.0	0.00		55.5	36	+ - + - M	
4/5/2019	BB	67.0	48.0	0.10		57.5	36	+ - + - M	
4/6/2019	BB	75.0	49.0	0.10		62.0	73	+ - + + H	
4/7/2019	BB	75.0	42.0	0.10		58.5	97	+ - + - M	

Here is a sample from last year. My entered data is on the left. I forget the phenology codes just now, but “PK” is pink and any “B” surely means some stage of “blossom”. The “EIP” column is like bacterial population. Notice that cold weather resets the population. The “BHWTR” column refers to 4 conditions also necessary for an infection. So, if EIP is above 100 and BHWTR is + + + +, it is bad news.

4/26/2019	BB	63.0	42.0	1.19		52.5	80	+ - + - M
4/27/2019	BB	71.0	38.0	0.10		54.5	93	+ - + - M
4/28/2019	BB	62.0	41.0	0.10		51.5	46	+ - + - M
4/29/2019	BB	82.0	39.0	0.10		60.5	107	++++I
4/30/2019	B	86.0	58.0	0.10		72.0	178	++++I
5/1/2019	B	91.0	56.0	0.10		73.5	291	++++I
5/2/2019	B2	87.0	62.0	0.28		74.5	352	++++I
5/3/2019	B2	78.0	62.0	0.57		70.0	315	++++I
5/4/2019	B2	76.0	59.0	0.31		67.5	242	++++I
5/5/2019	PF	65.0	54.0	0.30		59.5	-	-
5/6/2019	PF	80.0	49.0	0.10		64.5	-	-
5/7/2019	PF	84.0	49.0	0.10		66.5	-	-

On April 29 trouble arises. The EIP goes to 107 and the BHWTR is +++. The average temperature going into the 60s and 70s set off the population explosion. If you saw this coming the smart play would be a preventive spray on 4/26. What finally stopped the attack on 5/5 was the phenology going to “PF”, which stands for Petal Fall. In other words the blossom entry point was closed. After 5/5 the entry risks are over for the season, unless there is a hail storm. Like an idiot, I didn’t react, and a couple of weeks later the first signs of infection showed up starting at the closed blossoms – perfectly predicted! In retrospect a single well timed bactericide application would have been adequate for the whole year of 2019.



I thought this was a good time to show this program. A nasty day in March is a good time to download and get up to speed entering your local forecast data. Every few days I get both www.weather.com/10day forecast and Maryblyt on my screen at the same time and enter the forecast data.

The Maryblyt program is great. You spray precisely when needed and some years not at all. It will not help fruit cosmetics, but it can save our trees. You will need to read the manual to find the best preventive action to do. The Maryblyt program will tell you when.

I had a hard time finding a song exactly about fire blight. In the video you will need some imagination to guess who are the pollinators, who is the saving Maryblyt program, and who plays the bacteria.

<https://www.youtube.com/watch?v=DIR7iv8DVW8>

Regards,

jfk