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Using Enviro-weather to assist pest management decisions

Generated for IPM Academy 2014, Ecologically-based fruit pest management session

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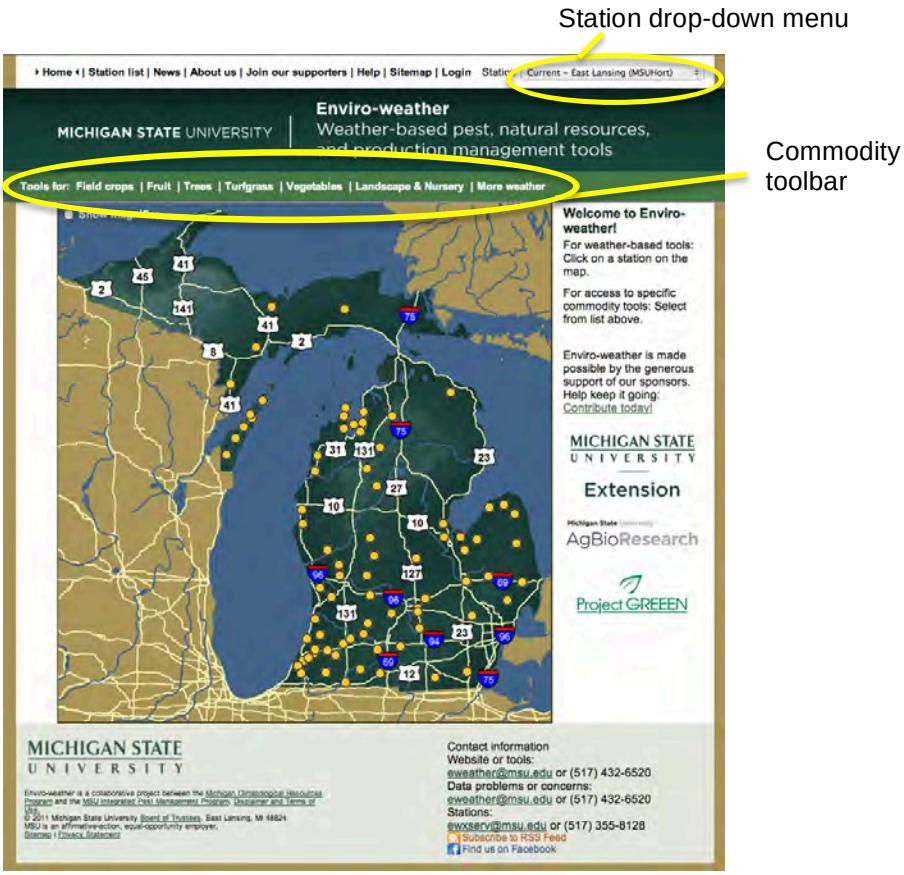
Enviro-weather is an online resource that can be used to monitor weather conditions that influence crop and pest development at various locations in Michigan. Enviro-weather models provide insight on the progress of disease and insect development and predict when management of these pests may be necessary in the current season. Making crop and pest management decisions, however, involves several factors that are not directly related to weather. Therefore, Enviro-weather tools are intended to assist not dictate farm management decisions.

1. Open your internet browser, type enviroweather.msu.edu into the address bar, and press 'enter.'

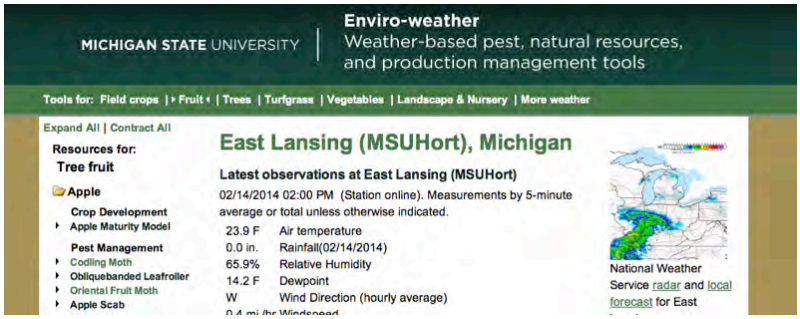
2. Select the weather station from which you would like weather data by selecting a yellow dot on the map or by using the drop-down menu in the upper right corner of the website.

3. Choose a commodity from the green toolbar near the top of the page. For example, to view tools and data relating to fruit crops, select "Fruit." Folders for various fruit crops will appear on the left side of the webpage.

4. Click on the desired folder for a drop-down menu of tools for that fruit crop. Depending on the selected fruit crop, tools related to crop development and pest management and additional resources may be available.



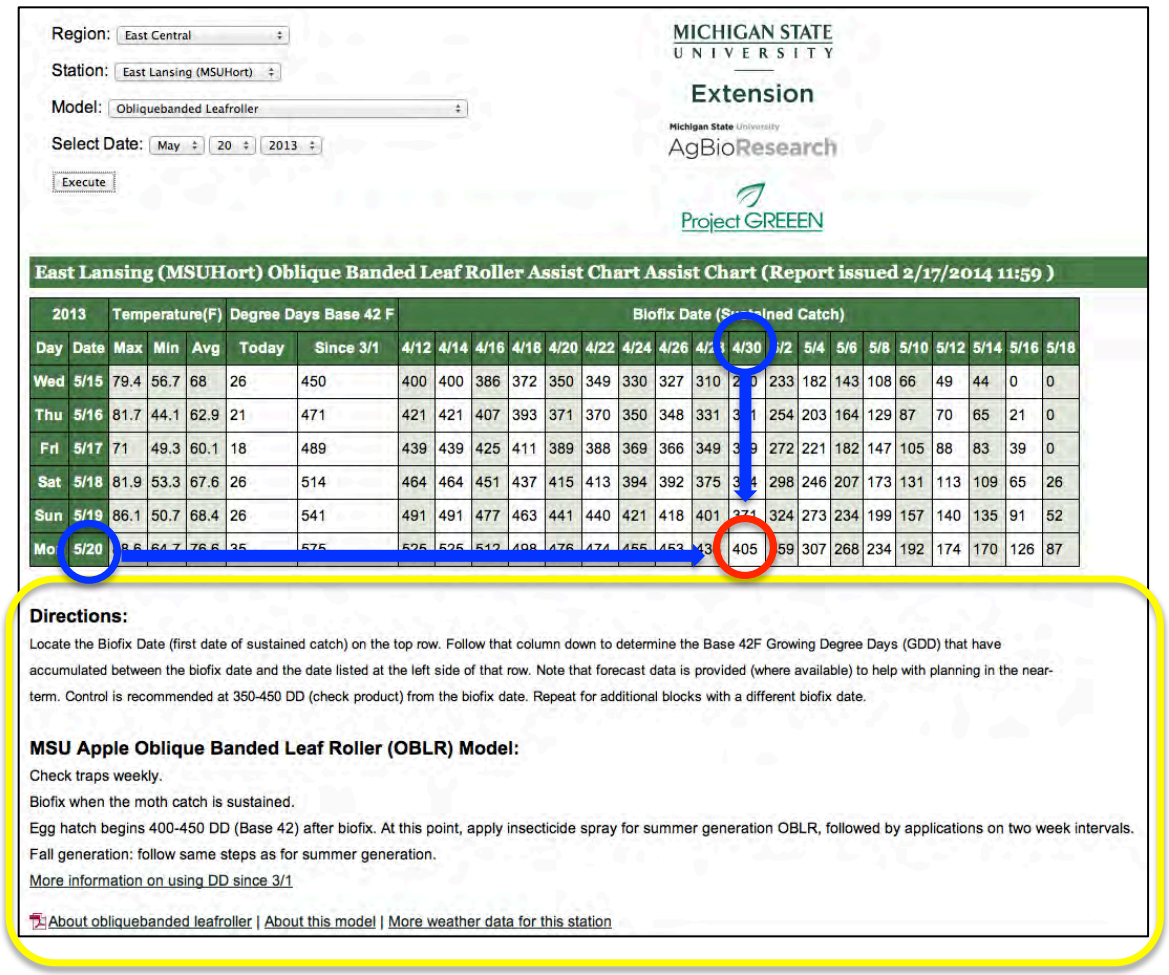
5. Here are a few examples of what is available for apples.
   a. Using Enviro-weather to track degree days for Obliquebanded Leafroller development in apples.
      i. Select 'Obliquebanded Leafroller' under the apple folder.



ii. Double-check that the correct station and model are selected. Enter the current date and click “Execute.” In this scenario, we will use data from last year (2013). Please note that an output from the current year will look different and will include forecasted or predicted data.

iii. Locate the column with the appropriate Biofix date. Under the Biofix date are the numbers of accumulated degree days for each corresponding date. For example, if the Biofix is 4/30 and the current date is 5/20, there have been 405 accumulated degree days since 4/30 (circled in red).

iv. Additional information (highlighted in yellow) on how to interpret the output and use the model, and pest management recommendations are also available for this model.



2013		Temperature(F)			Degree Days Base 42 F		Biofix Date (Sustained Catch)																			
Day	Date	Max	Min	Avg	Today	Since 3/1	4/12	4/14	4/16	4/18	4/20	4/22	4/24	4/26	4/28	4/30	5/2	5/4	5/6	5/8	5/10	5/12	5/14	5/16	5/18
Wed	5/15	79.4	56.7	68	26	450	400	400	386	372	350	349	330	327	310	[illegible]	233	182	143	108	66	49	44	0	0
Thu	5/16	81.7	44.1	62.9	21	471	421	421	407	393	371	370	350	348	331	[illegible]	254	203	164	129	87	70	65	21	0
Fri	5/17	71	49.3	60.1	18	489	439	439	425	411	389	388	369	366	349	[illegible]	272	221	182	147	105	88	83	39	0
Sat	5/18	81.9	53.3	67.6	26	514	464	464	451	437	415	413	394	392	375	[illegible]	298	246	207	173	131	113	109	65	26
Sun	5/19	86.1	50.7	68.4	26	541	491	491	477	463	441	440	421	418	401	[illegible]	324	273	234	199	157	140	135	91	52
Mo	5/20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	405	[illegible]	307	268	234	192	174	170	126	87

b. Using Enviro-weather to track the risk of Fire Blight infection in apple blossoms.

i. Select ‘Fire Blight of apple blossoms’ under the apple folder.

ii. Double-check that the correct station and model are selected. Enter the current date and click “Execute.” In this scenario, we will look at a ‘real-time’ output from last year (2013).

iii. Select the Biofix date that best corresponds to the first day that blossoms opened in your orchard or the date that the most recent spray for fire blight was applied. Under the Biofix date are the numbers representing Epiphytic Infection Potential (EIP) for respective dates in the column on the left. For example, if blossoms opened on 5/23, the risk of fire blight infection is low (58) on the current date (5/29). However, due to the nature of the model, the EIP for fire blight can change drastically and quickly (see 5/30 where EIP is 156). When EIP reaches 100 or more, rain, strong wind, or hail will initiate infection of blossoms. Therefore, orchards need to be protected against fire blight bacteria.

2013		Temperature(F)			Rain		EIP for Biofix Date: (Bloom or spray date)													
Day	Date	Max	Min	Avg	in.	Chance of rain	5/23	5/24	5/25	5/26	5/27	5/28	5/29	5/30	5/31	6/1	6/2	6/3	6/4	6/5
Friday	5/24	57.1	33.9	45.5	0	--	0	0												
Saturday	5/25	65	34.6	49.8	0	--	0	0	0											
Sunday	5/26	68.9	37.8	53.4	0	--	2	2	2	2										
Monday	5/27	71.5	43.2	57.3	0	--	14	14	14	14	12									
Tuesday	5/28	60.3	52.7	56.5	0.26	--	9	9	9	9	8	0								
Today's data: **Note: Last time reported by station is (8:55-9:00AM)**																				
Wednesday	5/29	Forecast: 79	Actual (6:30-6:35AM): 50.8	64.9	0	43%	58	58	58	58	57	49	49							
Forecast Data																				
Thursday	5/30	83	62	72.5	--	55%	156	156	156	156	156	148	148	98						
Friday	5/31	82	63	72.5	--	64%	246	246	246	246	246	246	246	197	98					
Saturday	6/1	79	64	71.5	--	80%	283	283	283	283	283	283	283	283	185	86				
Sunday	6/2	68	52	60	--	68%	197	197	197	197	197	197	197	197	197	98	12			
Monday	6/3	66	47	56.5	--	24%	197	197	197	197	197	197	197	197	197	98	12	0		
Tuesday	6/4	71	44	57.5	--	14%	111	111	111	111	111	111	111	111	111	111	25	12	12	
Wednesday	6/5	75	49	62	--	29%	148	148	148	148	148	148	148	148	148	148	62	49	49	37

iv. Additional information on fire blight, how EIP is calculated, and conditions that impact the model outcomes are also available for this model.