

Weather Monitoring, Pathogen Biology



and Disease Management for Winegrapes in Connecticut

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Winegrapes are becoming an increasingly important crop in CT

Connecticut Vineyards

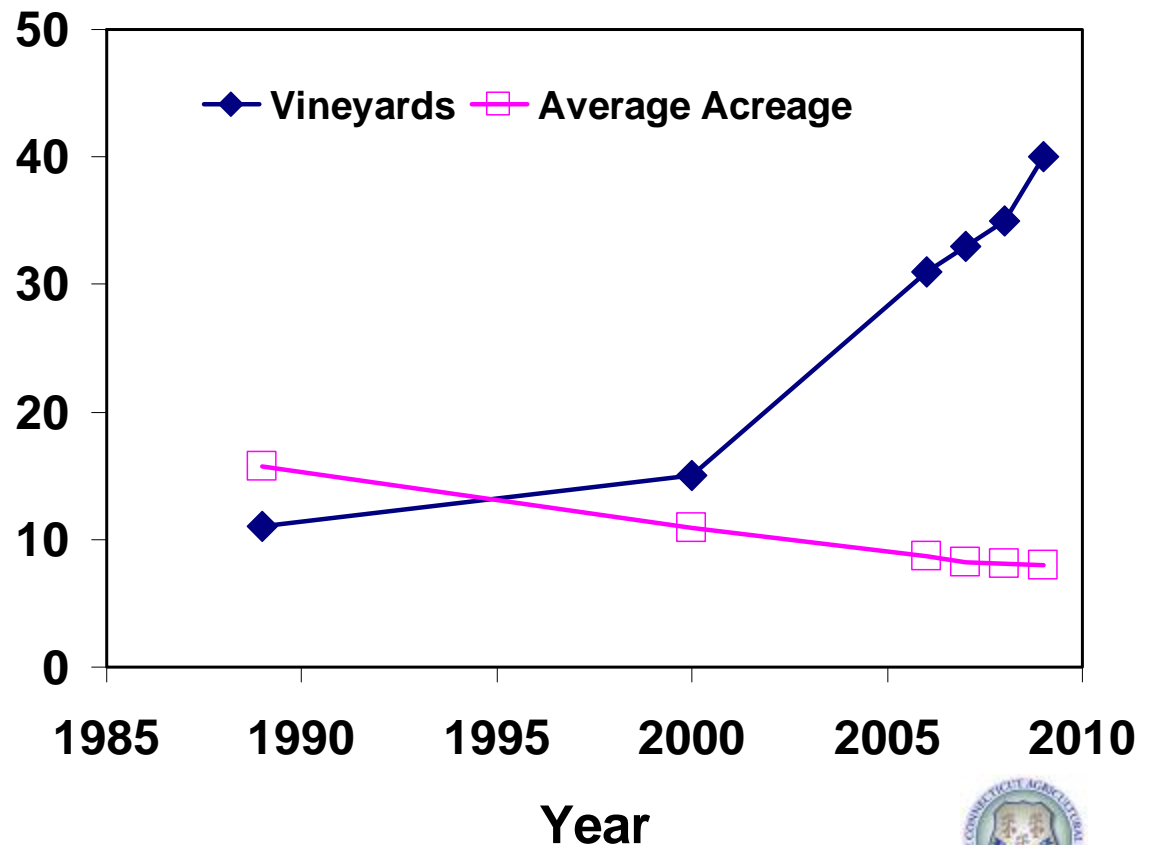
In 2008 the 32 CT wineries produced:

300,000

gallons of wine

Valued at

\$10 million



The unique climate of CT- creates unique problems

- Our climate is considerably wetter and cooler than the climate found in most winegrape growing regions of the world
- How does this impact vineyard management???

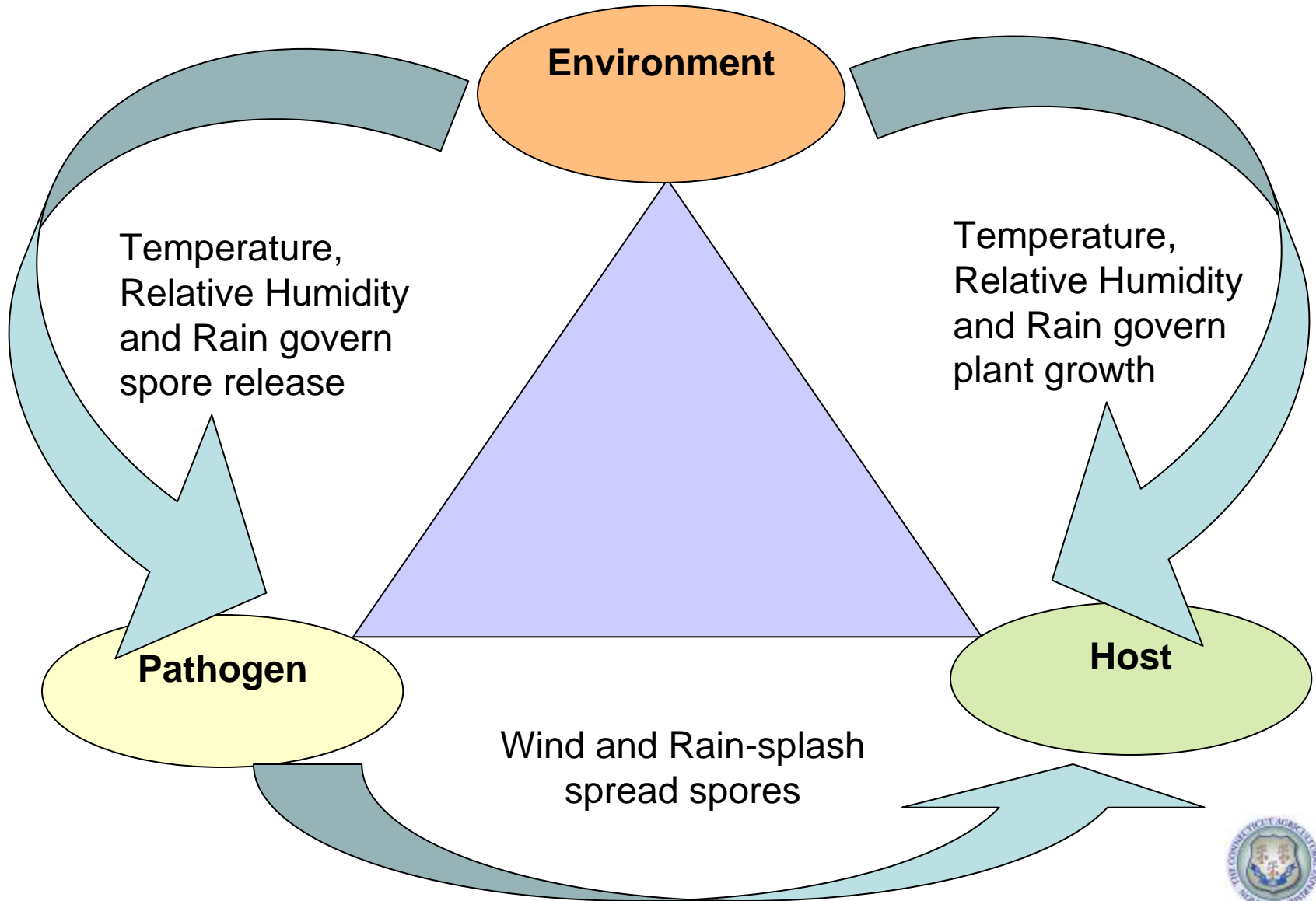


Plant Disease Epidemics

- Spread by spores released from infected host tissue
 - Primary inoculum must survive the winter
 - Secondary inoculum moves from leaf to leaf
- Susceptibility of host depends on age
- Both of the above processes depend on the environmental conditions

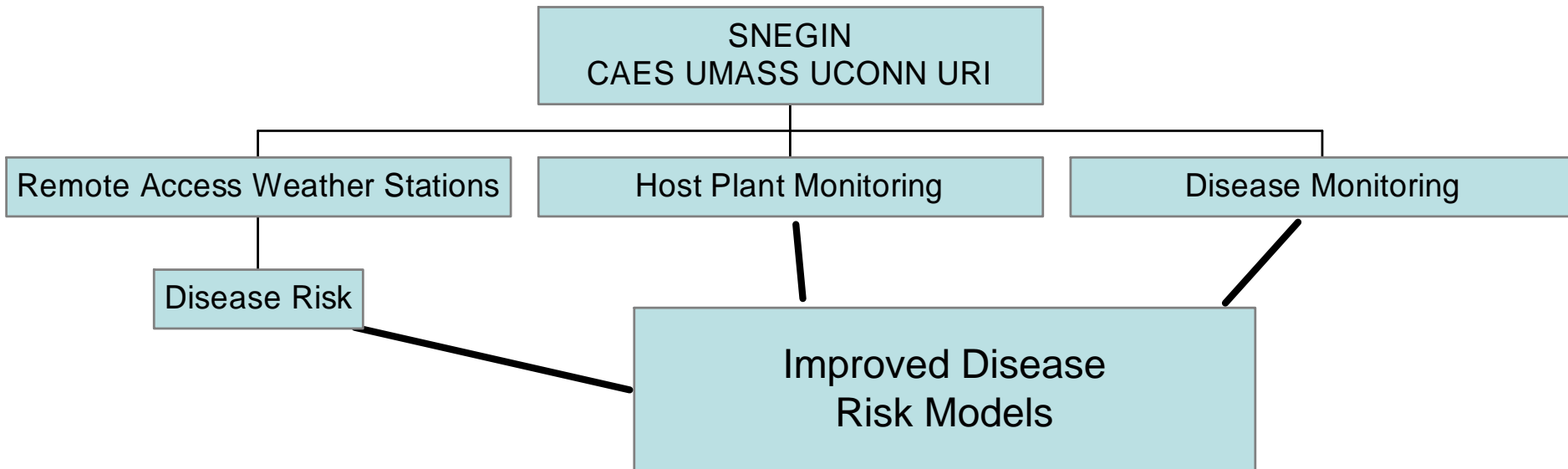


The Disease Triangle

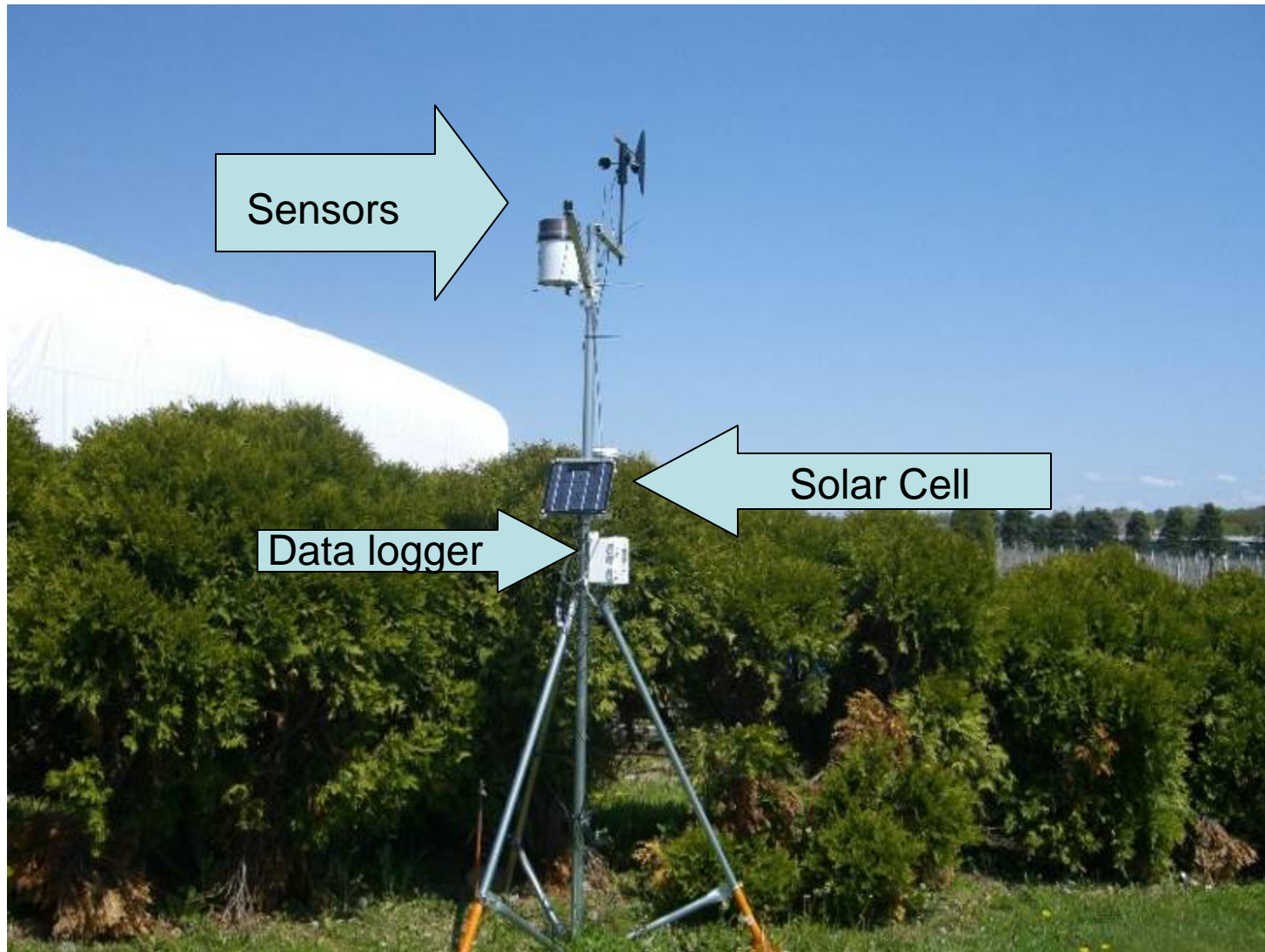


On-site measurement of Epidemiological Parameters

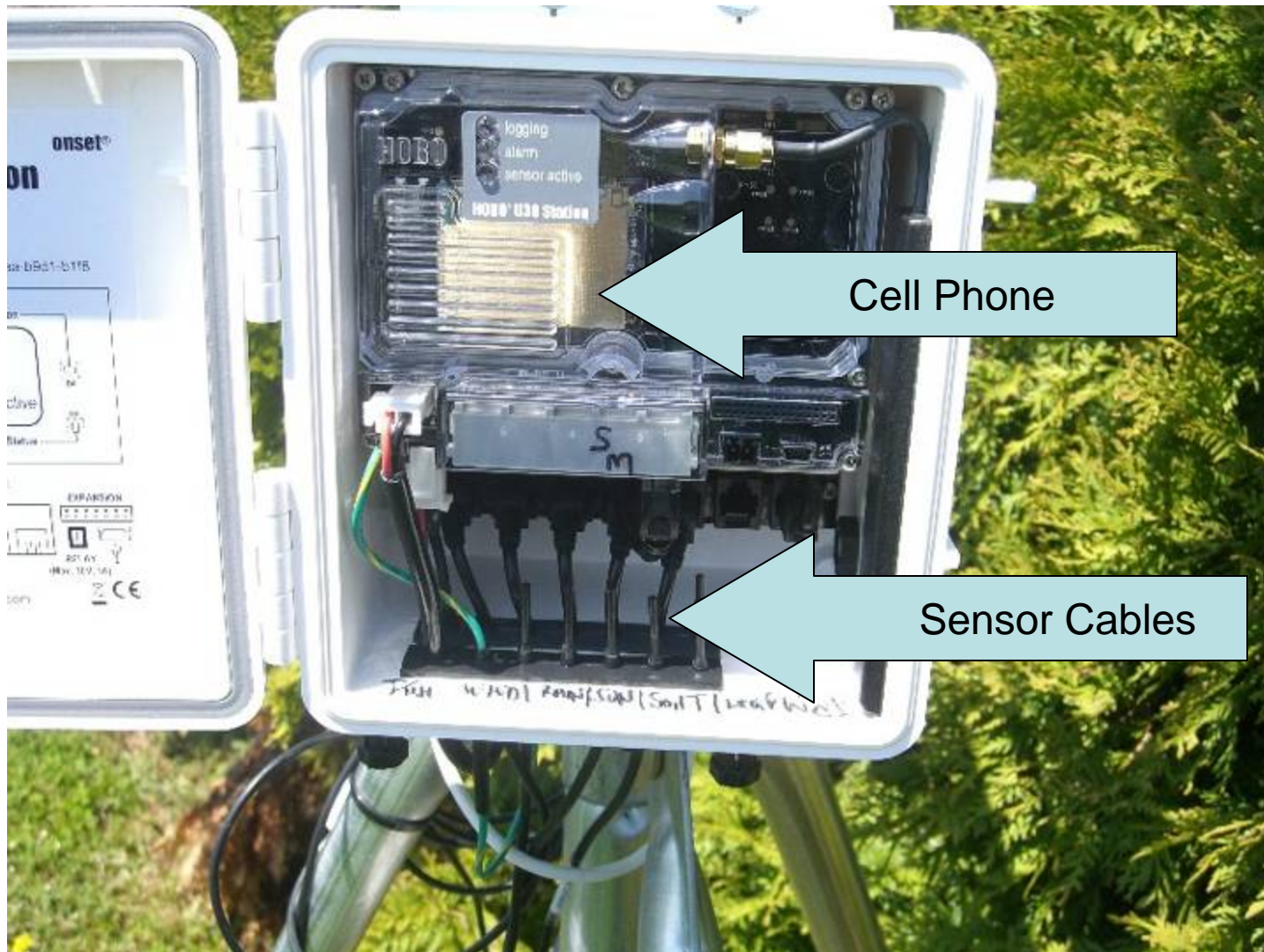
Southern New England Grape Information Network



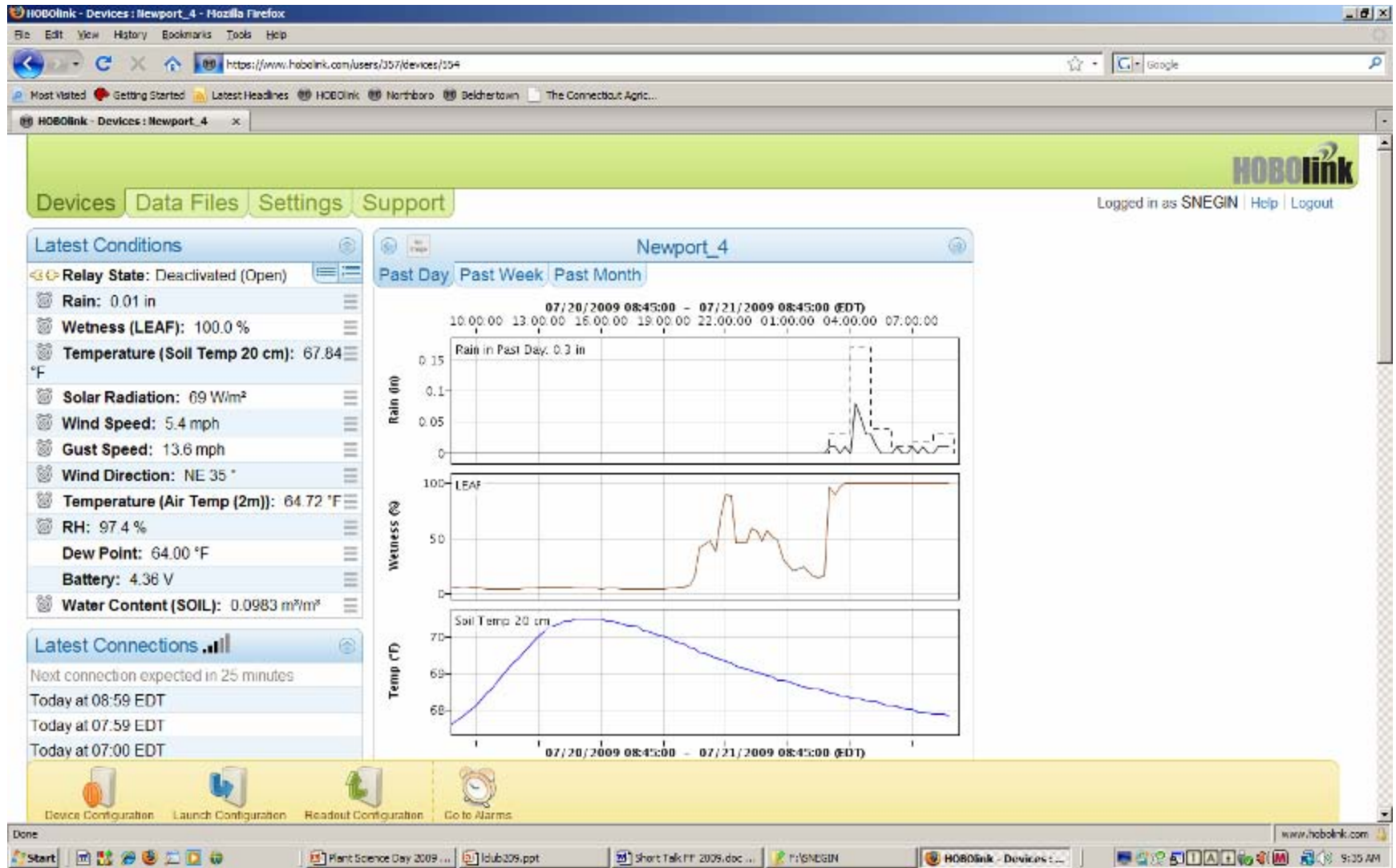
Remote Weather Station



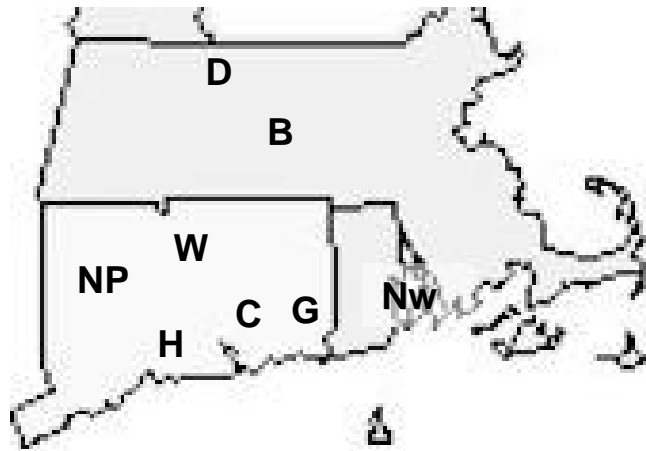
Cell Phone Based Datalogger



Weather data are web-accessible



There are 8 Remote Weather Stations



Deerfield, MA	D
Belchertown, MA	B
Windsor, CT	W
Hamden, CT	H
Griswold, CT	G
Colchester, CT	C
New Preston, CT	NP
Newport, RI	Nw

Weather Data are used to calculate disease-risk warnings.

These are posted on the web and Emailed to growers.

New Preston, CT Black Rot - Grape From 2009-06-01 To 2009-06-26

Date	High Temp	Low Temp	Wet Hours	Daily Risk	Warning
06/01	66.8	39.5		0.00	
06/02	74.1	53.1	7.3	0.32	
06/03	66.3	52.8	8.0	0.46	
06/04	70.6	52.0	12.3	0.96	
06/05	59.4	51.5	21.5	1.72	Infection Risk
06/06	75.7	51.6	10.8	2.22	Infection Risk
06/07	78.3	56.0	8.0	0.78	
06/08	76.2	57.8	7.0	1.36	Infection Risk
06/09	60.0	54.4	24.0	1.87	Infection Risk
06/10	67.6	54.0	17.0	3.44	Infection Risk
06/11	63.3	57.5	24.0	5.92	Infection Risk



Plant and Disease Sampling

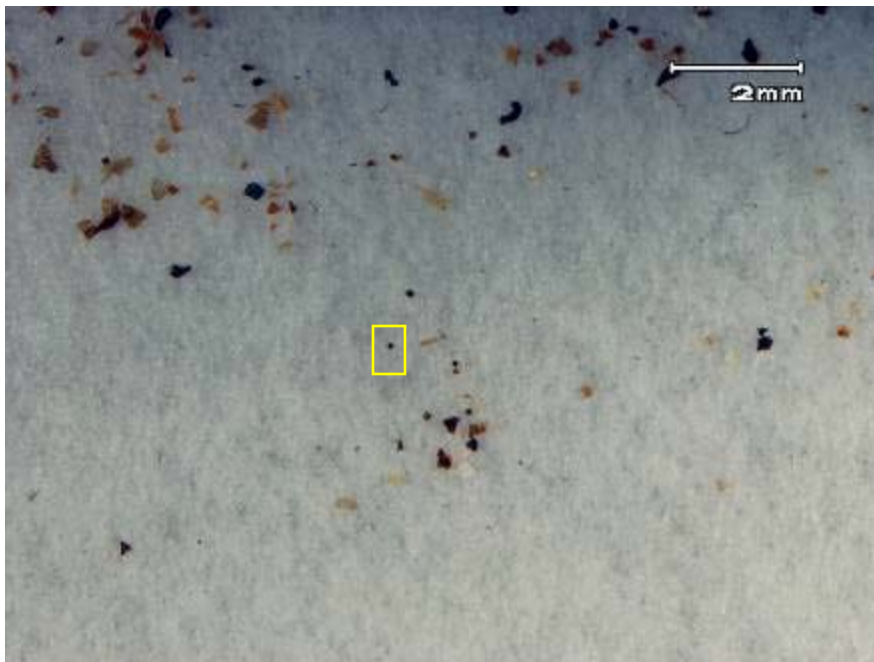
- Primary inoculum over-wintering on woody vines
- Plant growth
- Airborne inoculum
- Disease symptoms



The bark of a grape vine has many
nooks and crannies.



Powdery mildew produces overwintering structures called chasmothecia on infected leaves.



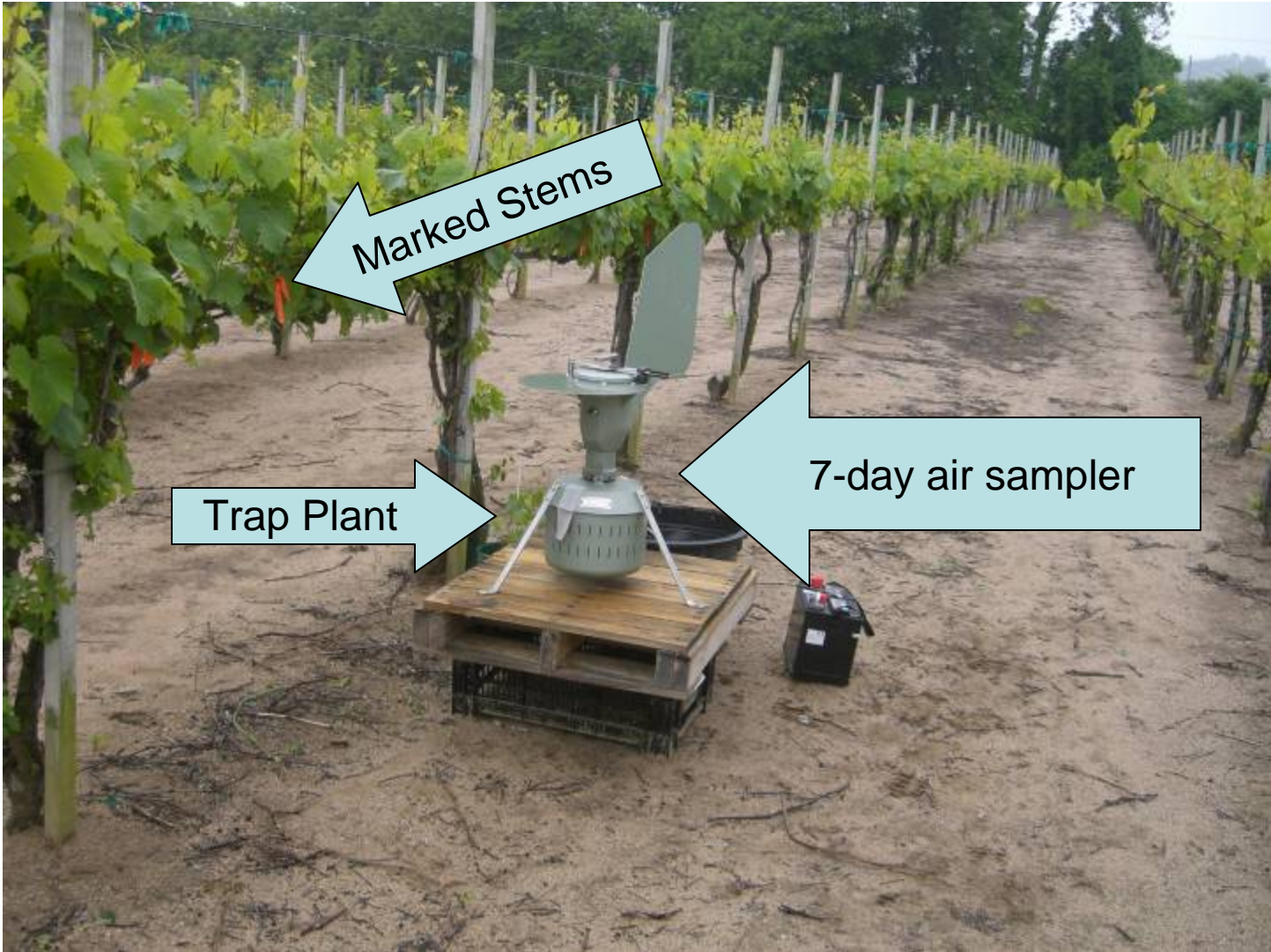
These structures get caught on the bark where they survive the winter and cause disease problems in the spring.



Collecting Grape Bark at Hopkins Vineyard



Host and Pathogen are monitored



Work in Progress

- Data from this year will be analyzed to verify existing plant disease models.
- Measurement of initial inoculum levels will be used to relate climate to the onset of disease.
- This information will be delivered at an annual growers' meeting to obtain helpful feedback.



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