

# *NEWA – Tools for IPM*



Juliet Carroll  
Fruit IPM Coordinator  
NYS IPM Program  
Cornell Cooperative Extension



# What is NEWA?

## *Network for Environment & Weather Applications*

- Web-based data from weather stations.
- Weather data & IPM forecast models.
- Automatically calculated and results displayed (i.e. degree day accum's & infection events)

...as a **direct result** of using NEWA pest forecast models, growers could...

- reduce spray costs, on average, by up to \$19,500 per year
- prevent crop losses of, on average, up to \$256,000 per year



Cornell University Search Cornell

New York State Integrated Pest Management Program's  
NEWA Network for Environment and Weather Applications

Search NEWA website  
Enter Search... Search

Weather Data Pest Forecasts Station Pages Crop Management Crop Pages About Weather Stations

National Weather Service Forecast Welcome to the NEWA Home Page

Enter "City, St" or "zip code"  
City, St  
National Weather Service Information

Choose a NEWA weather station home page  
Click on a map marker to go to the weather station's home page.

Map Satellite Terrain

Buffalo Radar Montauque Radar Albany Radar  
Binghamton Radar Upton Radar

Accuracy of the weather data is the responsibility of the owners of the weather station instruments. NEWA is not responsible for accuracy of the weather data collected by instruments in the network. If you notice erroneous or missing weather data, contact NEWA and we will contact the owner of the instrument.

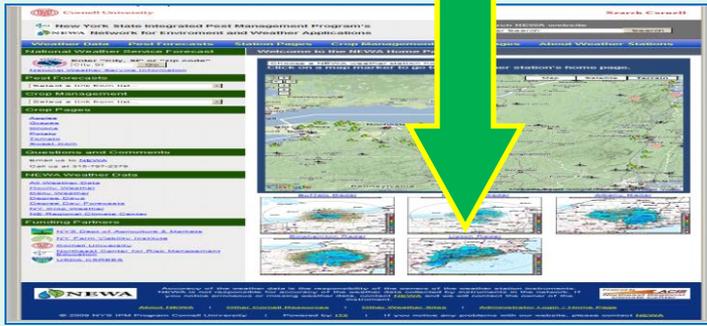
Powered by ACIS  
Northeast Regional Climate Center

About NEWA | Other Cornell Resources | Other Weather Sites | Administrator Login / Home Page

© 2009 NYS IPM Program Cornell University | Powered by ITX | If you notice any problems with our website, please contact NEWA

## NEWA's Home Page

- Easier navigation
- Header menu is on all NEWA web pages
- Footer is on all NEWA web pages



# NEWA's Station Pages

- Quick links
- Current pest forecasts
- Location-specific information

### Weather Data Quick Links

**Daily Summary**  
[Jan](#) | [Feb](#) | [Mar](#) | [Apr](#) | [May](#) | [Jun](#)  
[Jul](#) | [Aug](#) | [Sep](#) | [Oct](#) | [Nov](#) | [Dec](#)

**Hourly Data**  
[Jan](#) | [Feb](#) | [Mar](#) | [Apr](#) | [May](#) | [Jun](#)  
[Jul](#) | [Aug](#) | [Sep](#) | [Oct](#) | [Nov](#) | [Dec](#)

**Growing Degree Days (Base 50F)**  
[Jan](#) | [Feb](#) | [Mar](#) | [Apr](#) | [May](#) | [Jun](#)  
[Jul](#) | [Aug](#) | [Sep](#) | [Oct](#) | [Nov](#) | [Dec](#)

**Growing Degree Days (Base 50F BE)**  
[Jan](#) | [Feb](#) | [Mar](#) | [Apr](#) | [May](#) | [Jun](#)  
[Jul](#) | [Aug](#) | [Sep](#) | [Oct](#) | [Nov](#) | [Dec](#)

**Growing Degree Days (Base 86/50F)**  
[Jan](#) | [Feb](#) | [Mar](#) | [Apr](#) | [May](#) | [Jun](#)  
[Jul](#) | [Aug](#) | [Sep](#) | [Oct](#) | [Nov](#) | [Dec](#)

### National Weather Service Forecast

[This Station's 7-Day Forecast](#)

Enter "City, ST" or "zip code"

[National Weather Service Information](#)

### Helpful Links

**How to Use and Interpret Pest Forecasts**  
 Select a link from list...

**Pest Management Guidelines**  
 Select a link from list...

**Cornell Cooperative Extension Programs**  
 Select a link from list...

### Questions and Comments

Email us at [NEWA](#)

### Shoreham, VT Weather Station Page

These pest forecasts provide current conditions, using [default biofix dates](#), for this location, as of the last download date and time. For prior dates and years, and other locations, choose from Pest Forecasts on the horizontal menu.

#### Shoreham, VT Pest Forecasts

<a href="#">Apple Scab</a>	<a href="#">Obliquebanded Leafroller</a>	<a href="#">Onion Disease Forecast</a>
<a href="#">Fire Blight</a>	<a href="#">Apple Maggot</a>	<a href="#">Onion Disease Log</a>
<a href="#">Sooty Blotch/Flaxspeck</a>	<a href="#">Grape Diseases</a>	<a href="#">Onion Blight Alert</a>
<a href="#">Leaf Wetness Events</a>	<a href="#">Grapevine Downy Mildew</a>	<a href="#">Onion Modified Blight Alert</a>
<a href="#">Spotted Tentiform Leafminer</a>	<a href="#">Grape Berry Moth</a>	<a href="#">Potato Early Blight</a>
<a href="#">Oriental Fruit Moth</a>	<a href="#">Alfalfa Weevil</a>	<a href="#">Potato Late Blight Blitecast</a>
<a href="#">Coddling Moth</a>	<a href="#">Cabbage Maggot</a>	<a href="#">Tomato Diseases Tomcast</a>
<a href="#">Plum Curculio</a>	<a href="#">Onion Maggot</a>	<a href="#">Tomato Late Blight Blitecast</a>

#### Station Location

Lat/Lon: 43.89/-73.35  
 Elevation: 351 ft.

#### Last Download

8/28/2010 7 AM

#### Station Sensors

- Temperature
- Leaf Wetness
- Precipitation
- Relative Humidity
- Wind Speed
- Wind Direction
- Solar Radiation

#### Statewide and Regional Pest Forecasts

[Sweet Corn Stewart's Wilt Forecast](#)      [Potato/Tomato Late Blight DSS](#)

[Sweet Corn Stewart's Wilt Map](#)

[Cucurbit Downy Mildew](#)

[Soybean Rust](#)

[Turfgrass Diseases](#)

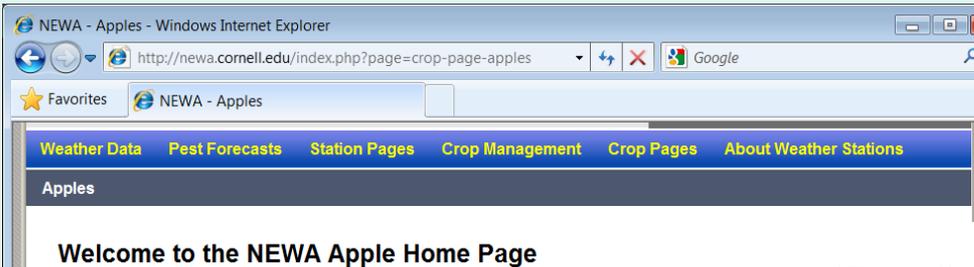
**Disclaimer:** These are theoretical predictions and forecasts. The theoretical models predicting pest development or disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps.

Accuracy of the weather data is the responsibility of the owners of the weather station instruments. NEWA is not responsible for accuracy of the weather data collected by instruments in the network. If you notice erroneous or missing weather data, contact [NEWA](#) and we will contact the owner of the instrument.

[About NEWA](#) | [Other Cornell Resources](#) | [Other Weather Sites](#) | [Administrator Login / Home Page](#)

© 2009 NYS IPM Program Cornell University | Powered by [ITX](#) | If you notice any problems with our website, please contact [NEWA](#)





# NEWA's Crop Pages

## Welcome to the NEWA Apple Home Page

### Apple Scab Disease Risk and Forecasting

[Apple Scab Infection Events and Ascospore Maturity](#)  
[Seasonal Apple Leaf Wetness Log \(per station\)](#)

### Fire Blight Disease Risk and Forecasting

[Fire Blight Model](#)  
[Information about Cougar Blight](#) (Washington State Univ.)

### Sooty Blotch and Flyspeck Risk and Forecasting

[Sooty Blotch and Flyspeck Model](#)  
[Seasonal Apple Leaf Wetness Log \(per station\)](#)

### Apple Insects

[Apple Insect Phenology Models and IPM Forecasts](#)  
[Degree-Day Accumulations Table](#) (Historical dates and degree day periods for tree fruit pest/phenology events)

The following pest phenological models are covered:

Insect	Base T
Codling Moth	50 F
Oriental Fruit Moth	45 F
Plum Curculio	50 F
Spotted Tentiform Leafminer	43 F
Apple Maggot	50 F

### Apple Biofix Table

#### Important Biofix Dates to Track

Pest	Base T	Biofix
Apple Scab	32 F	50% Green Tip Mac's
Fire Blight	65 F	First Blossom Open
Sooty Blotch & Flyspeck	*NA	Estimate based on DD accumulations correlated with historical observations.
Codling Moth	50 F	First Sustained Trap Catch
Oriental Fruit Moth	45 F	First Sustained Trap Catch
Obliquebanded Leafroller 1st summer generation	43 F	First Sustained Trap Catch
Plum Curculio	50 F	Petal Fall
San Jose Scale	50 F	March 1
Spotted Tentiform Leafminer 2nd generation	43 F	First Sustained Trap Catch
Apple Maggot	50 F	January 1

## On-line Resources to Support Monitoring

### Sampling Forms and Decision Support for Scouting and Monitoring Arthropod Pest

These are forms are also available in the Cornell Pest Management Guidelines for Commercial Tree Fruit Production to assist with scouting and monitoring for arthropod pests. They are linked here from the Fruit IPM web site.

[Download](#)  [Acrobat Reader](#) to view pdf documents.

### Spotted Tentiform Leafminer (STLM)

Pink bud or early bloom stage scouting for [STLM eggs](#)(pdf)  
 Petal fall stage scouting for [STLM sap-feeding mines](#) (pdf)  
 Summer scouting for [second generation STLM](#)(pdf)

### Obliquebanded Leafroller (OBLR)

Begin OBLR scouting on July 5 in WNY (5-7 days earlier in E NY or Long Island) or begin approximately 600 degree days Base 43 F after the first moth flight begins, first sustained moth catches in pheromone traps.  
[3% OBLR infestation threshold](#) (pdf)

### Mites

[2.5 mites/leaf threshold](#) scouting in June (pdf)  
[5 mites/leaf threshold](#) scouting in July (pdf)  
[7.5 mites/leaf threshold](#) scouting August 1 to 15 (pdf)

[Apple Maggot \(AM\)](#) scouting form (pdf)

[Scouting and Monitoring Summary Form](#) (pdf)

## For Further Information:

[Fruit IPM Fact Sheets](#) information on many insect pests, mites, and diseases of tree fruit.

[Pest Management Guidelines for Commercial Tree-Fruit Production](#) contains the current year's tree fruit management information compiled by Cornell University extension faculty, including useful apple scab and fire blight information and scouting and monitoring forms for arthropod pests.

[Scaffolds: Fruit Journal](#) Weekly extension newsletter produced by Art Agnello, Entomology Dept, Cornell University, Geneva, during the growing season. Contact [Art Agnello](#) for subscription information.

For more information on tree fruit pest management. [Fruit IPM Resources](#)

[Cornell Fruit Resources, tree fruit IPM](#)



Accuracy of the weather data is the responsibility of the owners of the weather station instruments. NEWA is not responsible for accuracy of the weather data collected by instruments in the network. If you notice erroneous or missing weather data, contact [NEWA](#) and we will contact the owner of the instrument.



[About NEWA](#) | [Other Cornell Resources](#) | [Other Weather Sites](#) | [Administrator Login / Home Page](#)

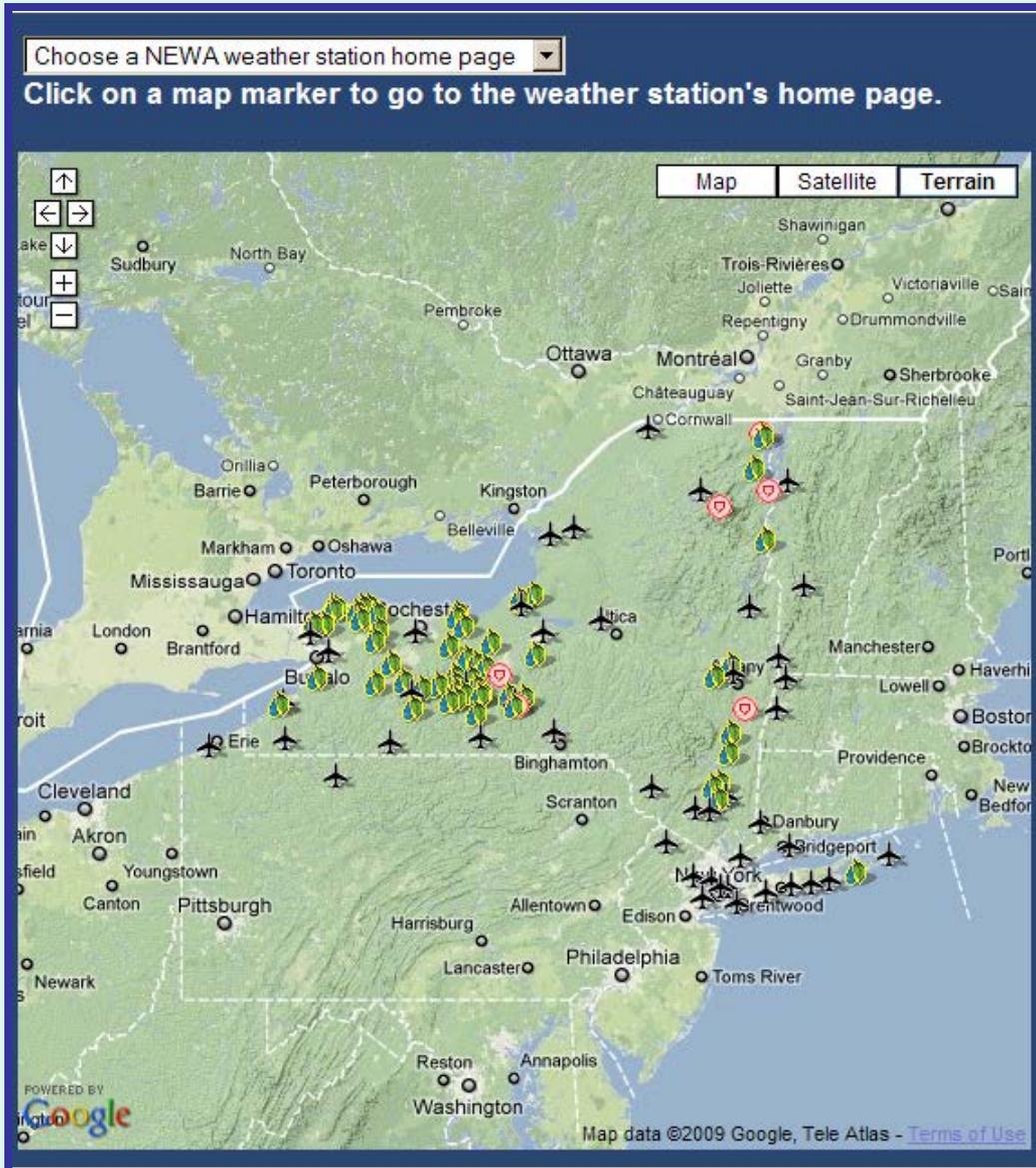
© 2009 NYS IPM Program Cornell University | Powered by [ITX](#) | If you notice any problems with our website, please contact [NEWA](#)



<http://newa.cornell.edu>



# NEWA weather station locations



~108 stations

 NEWA growers

 Cornell CSS research farms

 Airports

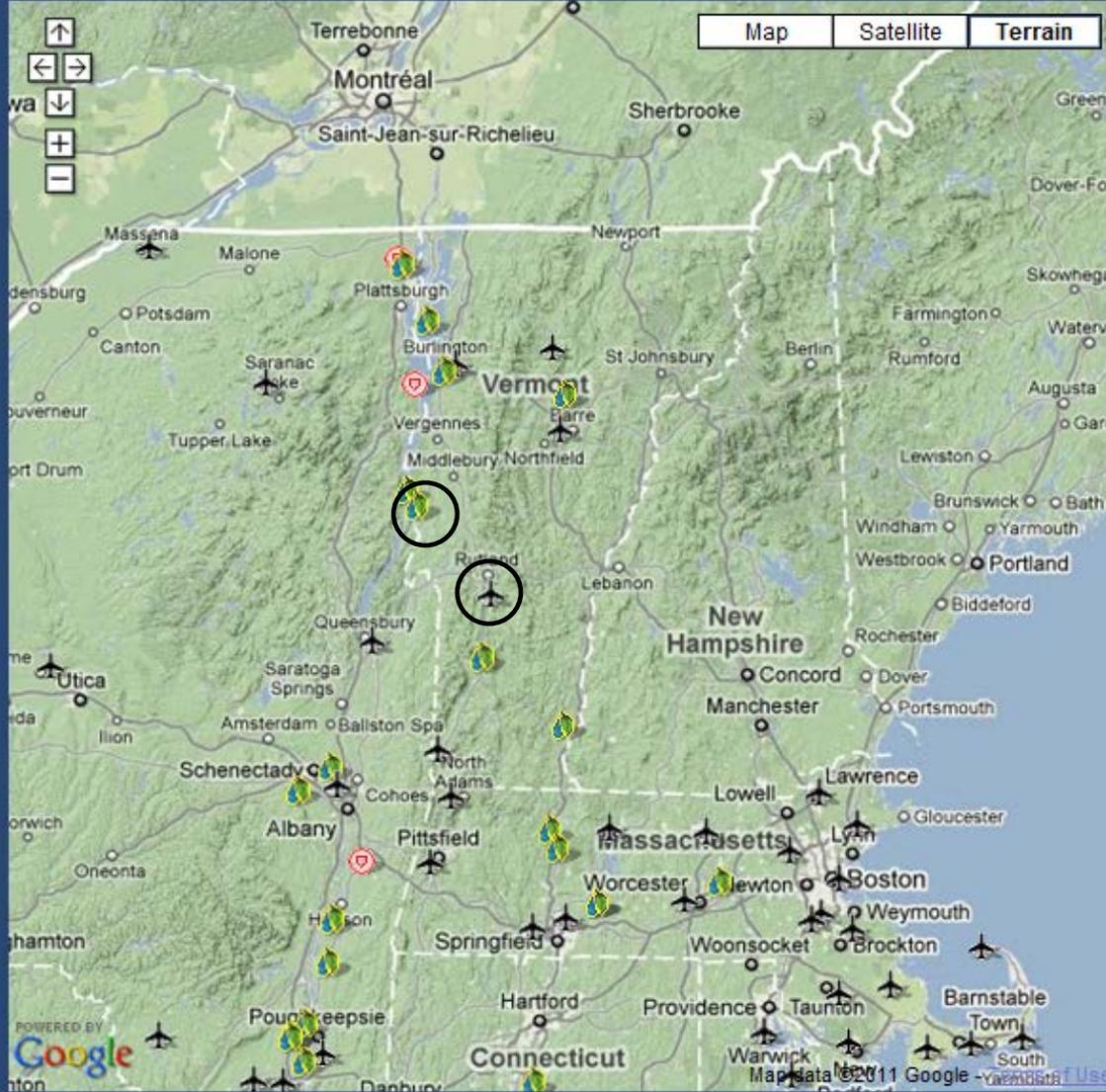
NEWA collaborates with the Northeast Regional Climate Center for additional weather locations.

<http://newa.cornell.edu>



Choose a NEWA weather station home page

Click on a map marker to go to the weather station's home page.



# Stations in Vermont

## Six on apple farms

- Calais
- East Dorset
- Putney
- Shoreham
- South Burlington
- South Hero

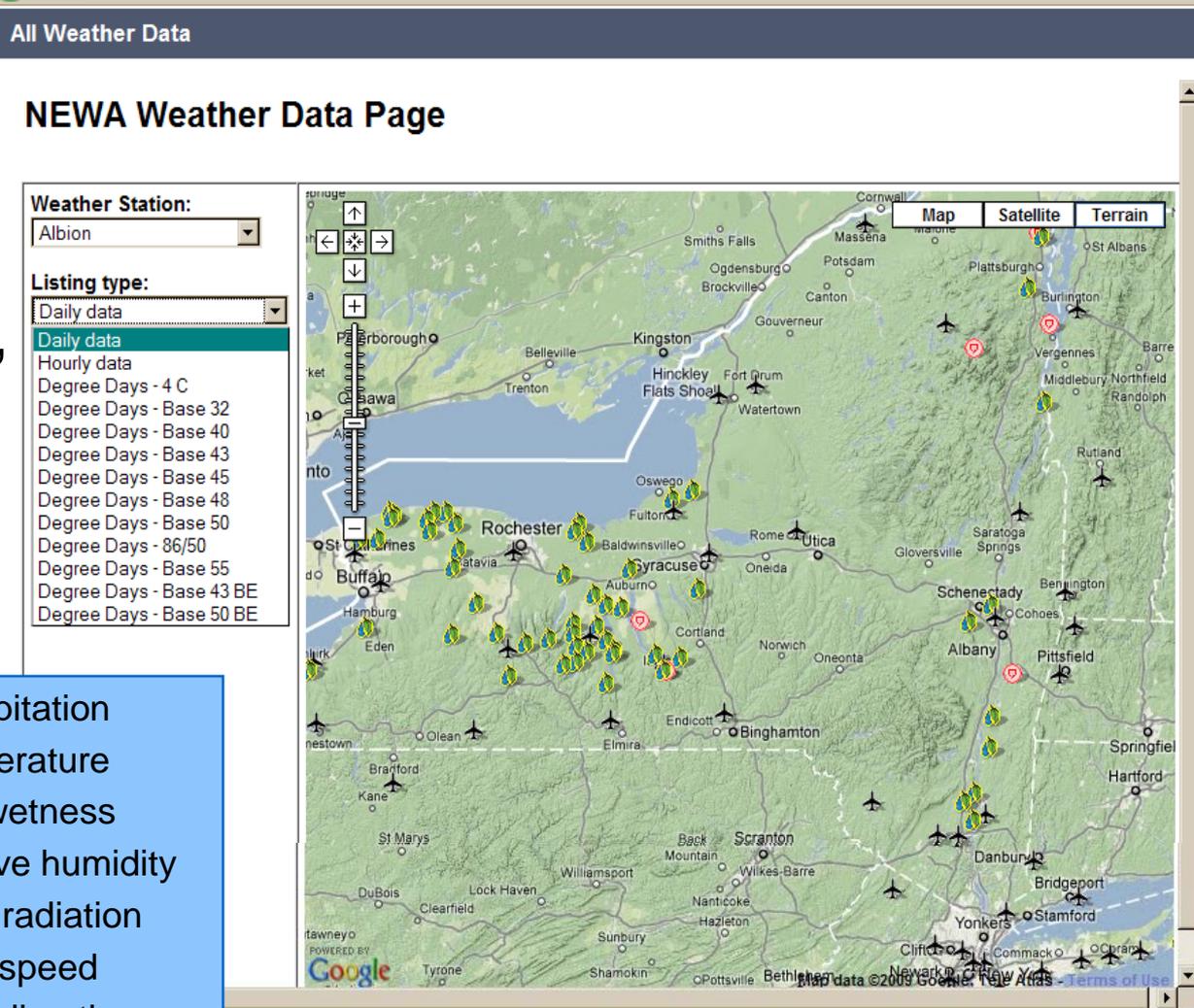
## Five on airports (NWS)

- Bennington
- Burlington
- Montpelier
- Morrisville
- Rutland



# Weather information available

- Hourly data
- Daily summary
- Degree days
  - base 4C, 32, 40, 43, 45, 48, 50, 55 & 86/50 F



## Hourly data – South Burlington

Date/Time	Temp (F)	LW (minutes)	Rain (inches)	RH %	Dewpoint (F)	Wind Spd (mph)	Wind Dir (degrees)	Solar Rad (w/m2)
01/24/2011 22:00	-2.0	0	0.00	65	-11	4.0	180	0
01/24/2011 21:00	-3.0	0	0.00	67	-11	2.0	135	0
01/24/2011 20:00	-4.0	0	0.00	64	-13	5.0	112	0
01/24/2011 19:00	-5.0	0	0.00	66	-13	3.0	112	0
01/24/2011 18:00	-7.0	0	0.00	73	-13	3.0	157	0
01/24/2011 17:00	-4.0	0	0.00	65	-13	2.0	157	0
01/24/2011 16:00	-1.0	0	0.00	55	-13	4.0	157	240
01/24/2011 15:00	2.0	0	0.00	54	-11	0.0	67	440
01/24/2011 14:00	-0.5	0	0.00	60	-11	3.5	0	385
01/24/2011 13:00	-3.0	0	0.00	66	-11	7.0	135	330
01/24/2011 12:00	-3.0	0	0.00	67	-11	1.0	67	590
01/24/2011 11:00	-5.0	0	0.00	70	-12	6.0	247	450
01/24/2011 10:00	-7.0	0	0.00	68	-15	3.0	90	450
01/24/2011 09:00	-11.0	0	0.00	76	-16	7.0	90	250
01/24/2011 08:00	-17.0	0	0.00	91	-19	5.0	67	60
01/24/2011 07:00	-18.0	0	0.00	93	-19	2.0	67	0
01/24/2011 06:00	-17.0	0	0.00	95	-18	10.0	67	0
01/24/2011 05:00	-16.0	0	0.00	98	-16	6.0	67	0
01/24/2011 04:00	-13.0	0	0.00	87	-16	4.0	67	0
01/24/2011 03:00	-11.0	0	0.00	82	-15	7.0	22	0
01/24/2011 02:00	-11.0	0	0.00	80	-15	7.0	22	0
01/24/2011 01:00	-9.0	0	0.00	81	-13	5.0	337	0
01/24/2011 00:00	-9.0	0	0.00	78	-14	9.0	315	0
01/23/2011 23:00	-9.0	0	0.00	76	-14	6.0	45	0
01/23/2011 22:00	-7.0	0	0.00	78	-12	4.0	292	0

Date	Avg Temp (F)	Max Temp (F)	Min Temp (F)	LW Hours	Total Rain (in)	RH Hrs >= 90%	Avg Wind Speed (mph)	Solar Rad (w/m2)
South Burlington - Daily Data Summary								
1/1/2011	44.2	51.0	36.0	21	0.01	3	4.4	840
1/2/2011	39.6	49.0	29.0	12	0.17	6	6.0	510
1/3/2011	27.2	29.0	24.0	0	0.00	0	6.8	770
1/4/2011	25.5	28.0	21.0	0	0.00	8	4.8	850
1/5/2011	24.5	29.0	21.0	5	0.02	11	5.0	2070
1/6/2011	18.8	24.0	13.0	0	0.00	4	4.4	1480
1/7/2011	21.1	29.0	13.0	0	0.01	9	3.0	1400
1/8/2011	22.2	25.0	21.0	4	0.00	22	4.0	1200
1/9/2011	23.8	27.0	20.0	0	0.00	3	8.5	640
1/10/2011	18.2	24.0	14.0	0	0.00	2	6.5	1420
1/11/2011	17.4	22.0	13.0	0	0.00	9	4.8	1430
1/12/2011	16.4	21.0	10.0	0	0.00	24	7.3	220
1/13/2011	18.5	21.0	15.0	0	0.00	4	8.8	930
1/14/2011	14.2	19.0	8.0	0	0.00	8	2.7	680
1/15/2011	13.7	23.0	3.0	0	0.00	22	6.2	1270
1/16/2011	19.2	25.0	8.0	0	0.02	6	4.8	2670
1/17/2011	3.8	12.0	-5.0	0	0.00	4	4.6	3440
1/18/2011	21.5	30.0	7.0	2	0.00	16	6.5	740
1/19/2011	20.9	30.0	16.0	17	0.00	24	6.8	650
1/20/2011	17.6	27.0	13.0	7	0.08	17	1.5	1600
1/21/2011	16.3	20.0	13.0	3	0.00	12	5.3	2890
1/22/2011	8.8	16.0	2.0	0	0.00	6	4.1	550
1/23/2011	-1.4	5.0	-9.0	0	0.01	0	8.6	1290
1/24/2011	-7.3	2.0	-18.0	0	0.00	4	4.5	3195
1/25/2011	14.0	22.0	1.0	0	0.00	10	7.2	710
1/26/2011	24.0	33.0	15.0	0	0.03	14	2.2	1470
1/27/2011	20.5	31.0	14.0	3	0.00	16	3.8	2890

# Weather data summaries

Degree days - Also available using the Baskerville Emin formula (BE) and a max/min 86/50 formula.

Date	Max Temp	Min Temp	Daily DD Base 50	Accumulation Since			
				Jan 1	Mar 1	Apr 1	May 1
Calais - Daily Degree Day Summary							
9/1/2010	90.0	63.0	26.5	1795.5	1795.5	1795.5	1737.0
9/2/2010	87.0	64.0	25.5	1821.0	1821.0	1821.0	1762.5
9/3/2010	84.0	65.0	24.5	1845.5	1845.5	1845.5	1787.0
9/4/2010	72.0	56.0	14.0	1859.5	1859.5	1859.5	1801.0
9/5/2010	62.0	48.0	5.0	1864.5	1864.5	1864.5	1806.0
9/6/2010	71.0	46.0	8.5	1873.0	1873.0	1873.0	1814.5
9/7/2010	79.0	55.0	17.0	1890.0	1890.0	1890.0	1831.5
9/8/2010	67.0	55.0	11.0	1901.0	1901.0	1901.0	1842.5
9/9/2010	56.0	51.0	3.5	1904.5	1904.5	1904.5	1846.0
9/10/2010	64.0	48.0	6.0	1910.5	1910.5	1910.5	1852.0
9/11/2010	77.0	46.0	11.5	1922.0	1922.0	1922.0	1863.5
9/12/2010	59.0	49.0	4.0	1926.0	1926.0	1926.0	1867.5
9/13/2010	66.0	49.0	7.5	1933.5	1933.5	1933.5	1875.0
9/14/2010	61.0	46.0	3.5	1937.0	1937.0	1937.0	1878.5
9/15/2010	54.0	44.0	0.0	1937.0	1937.0	1937.0	1878.5
9/16/2010	62.0	41.0	1.5	1938.5	1938.5	1938.5	1880.0
9/17/2010	57.0	42.0	0.0	1938.5	1938.5	1938.5	1880.0
9/18/2010	66.0	35.0	0.5	1939.0	1939.0	1939.0	1880.5
9/19/2010	70.0	46.0	8.0	1947.0	1947.0	1947.0	1888.5
9/20/2010	62.0	35.0	0.0	1947.0	1947.0	1947.0	1888.5
9/21/2010	63.0	34.0	0.0	1947.0	1947.0	1947.0	1888.5
9/22/2010	70.0	56.0	13.0	1960.0	1960.0	1960.0	1901.5
9/23/2010	65.0	45.0	5.0	1965.0	1965.0	1965.0	1906.5
9/24/2010	81.0	51.0	16.0	1981.0	1981.0	1981.0	1922.5
9/25/2010	75.0	54.0	14.5	1995.5	1995.5	1995.5	1937.0
9/26/2010	62.0	50.0	6.0	2001.5	2001.5	2001.5	1943.0

Values in brown italics include estimated data. [More information](#) is available on the estimation technique.

...growing degree days are base 50.



# Apple disease models

- Apple scab
  - Ascospore maturity
  - Infection events
  - Leaf wetness events
- Fire blight
  - Cougar blight
  - Shoot blight symptoms



These models provide 5-day future forecasts.  
They are interactive.



NEWA - Apple Diseases - Windows Internet Explorer

http://newa.cornell.edu/index.php?page=apple-diseases

NEWA - Apple Diseases

### NEWA Apple Disease Models

Select a disease: Apple Scab

Weather Station: Calais, VT

Date of Interest: 05/05/2010

	Past	Past	Current	5-Day Forecast				Forecast Details
	May 3	May 4	May 5	May 6	May 7	May 8	May 9	
Ascospore Maturity	61%	67%	72%	-	-	-	-	
Infection Events	No	No	Yes					
Days to Symptoms	NA	NA	16					

Wetness Events								
Rain Amount	0.00	0.57	0.00	NA	NA	NA	NA	NA
Rain Prob (%) Night/Day ?			- -	- -	- -	- -	- -	- -
Dew ?	No	No	Yes	NA	NA	NA	NA	NA
Leaf Wetness (hours)	3	9	11					

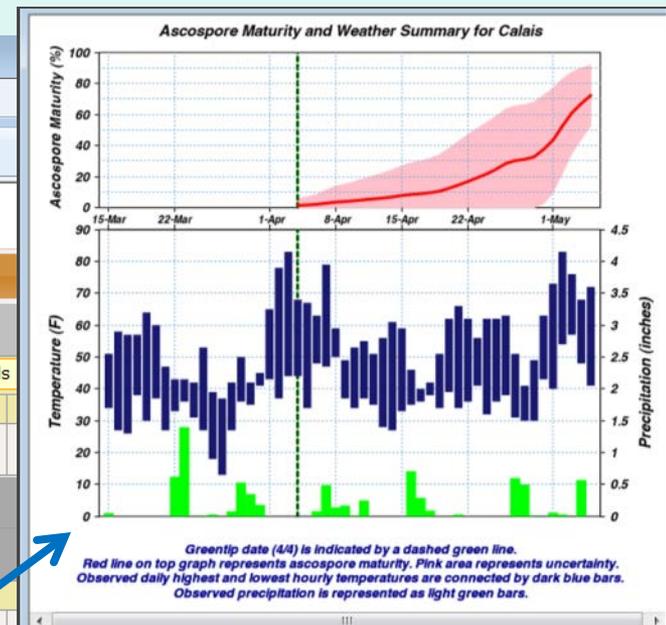
NA - not applicable

[Ascospore Maturity Graphs](#) Download Time: 5/5/2010 23:0

An apple scab infection period has been predicted and ascospores are mature. Ensure that young leaves and fruit are protected. [Click here](#) for pesticide information.

The Ascospore Maturity degree day model begins at 50% green tip on McIntosh flower buds. To recalculate ascospore maturity for your orchard, enter your green tip date:

Green Tip Date:



**Apple scab –  
Ascospore maturity  
and infection events**



## Apple scab – infection events table

newa.cornell.edu/index.php?page=apple-diseases

VA - Apple Diseases

### Apple Scab Infection Events (March 1 - May 5)

Start Date & Time	End Date & Time	Wet Hours	Temp Avg. (F)	Rain (in.)	Days to Symptoms	Combined Event
May 4 12:01 PM	May 5 10:00 AM	18	50	0.50	16	Yes
May 1 8:01 PM	May 2 10:00 AM	14	57	0.09	12-13	

Dry conditions last 13 hours at download

Download Time: 5/5/2010 23:00

Ascospores, which cause primary scab, discharge during rain. Both ascospores and conidia, which cause secondary scab, infect at similar rates. A single set of conditions, the [Revised Mills Table](#), can be used for determining infection events for both primary and secondary infections.

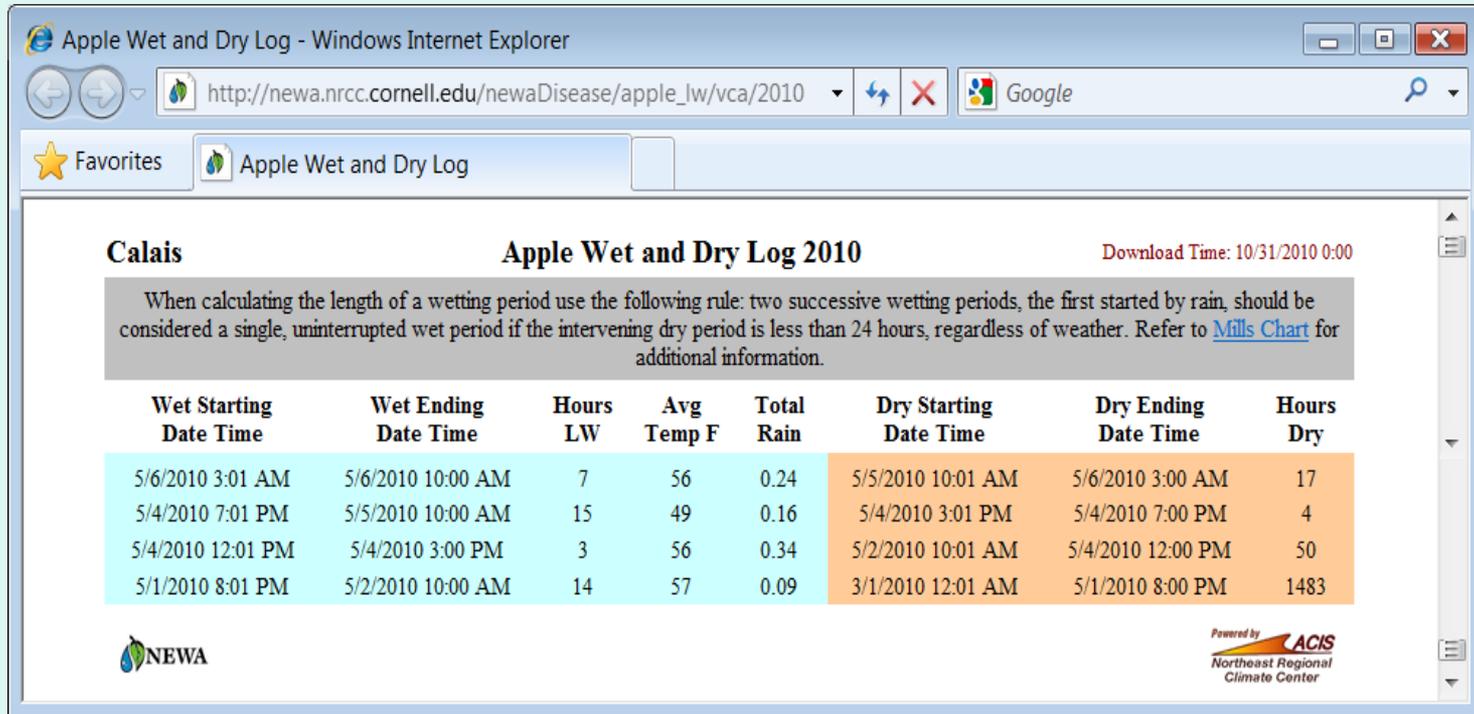
Longer wetting, beyond the minimum times for a given temperature specified in the [Revised Mills Table](#), often results in more disease. Apple scab infection events are calculated beginning with 0.01 inch of rain. Two successive wetting periods are considered a single, uninterrupted wetting period if the intervening dry period is less than 24 hours.

**Pesticide Information**

**Disclaimer:** *These are theoretical predictions and forecasts. The theoretical models predicting pest development or disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps.*



## Apple scab – leaf wetness events



Logged from March 1 to October 30 each year.



## Fire blight – blossom infection risk

NEWA - Apple Diseases - Windows Internet Explorer

http://newa.cornell.edu/index.php?page=apple-diseases

NEWA - Apple Diseases

### NEWA Apple Disease Models

Select a disease:  
Fire Blight

Weather Station:  
Putney, VT

Date of Interest:  
05/30/2010

Calculate

Map Results Help

#### Fire Blight Risk Predictions for Putney

Blossom blight predictions using the Cougarblight model begin at first blossom open.

**First blossom open date:** 5/26/2010

*First blossom open date above is estimated based on degree day accumulations or user input. Enter the actual date for blocks of interest and the model will calculate the protection period during bloom more accurately.*

**Orchard Blight History:** Fire blight occurred in your neighborhood last year.

*The orchard blight history above and the*

- Fire blight occurred in your neighborhood last year.
- No fire blight in your neighborhood last year.
- Fire blight occurred in your neighborhood last year.
- Fire blight is now active in your neighborhood.



# Fire blight – blossom infection risk results

## Blossom Blight Summary - Cougarblight

Date	Past	Past	Current	Blossom Blight 5-Day Forecast				Forecast Details
	May 28	May 29	May 30	May 31	Jun 1	Jun 2	Jun 3	Jun 4
4-day DH	*	*	650	-	-	-	-	-
Risk Level	*	*	Extreme	-	-	-	-	-
<b>Wetness Events</b>								
Rain Amount	0.00	0.14	0.01	NA	NA	NA	NA	NA
Rain Prob (%)			- -	- -	- -	- -	- -	- -
Night Day ?								
Dew ?	Yes	Yes	Yes	NA	NA	NA	NA	NA
Leaf Wetness (hours)	3	5	7					

NA - data not available

Cougarblight Charts

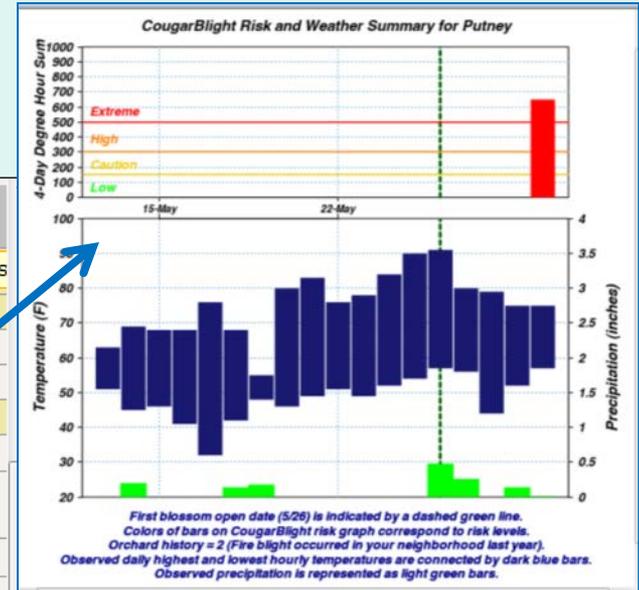
Download Time: 5/30/2010 23:0

\* indicates accumulating the 4-day DH total.

Scan 4-day degree hour (DH) totals, risk levels, rain, dew, leaf wetness, and note the infection risk level.

### Pest Management for Cougarblight Risk Level:

- **Low** - bactericides probably unnecessary, check the 5-day forecast for warm weather (60°F or higher) and wetting events.
- **Caution** - check the 5-day forecast, expect infection if warm weather continues (60°F or higher) and a wetting event occurs.
- **High** - expect infection if there is a wetting event, even a heavy dew.
- **Extreme** - the blossoms should be protected with streptomycin.



**Streptomycin Applications:** Enough heat units may accumulate to put the newly open flowers at risk for infection if rain or heavy dew then occurs. If you applied streptomycin before all flowers were open, enter the date of the streptomycin application to recalculate fire blight risk predictions.

Streptomycin Spray Date:

**Streptomycin Applications:** Enough heat units may accumulate to put the newly open flowers at risk for infection if rain or heavy dew then occurs. If you applied streptomycin before all flowers were open, enter the date of the streptomycin application to recalculate fire blight risk predictions.

Streptomycin Spray Date:

**Fire blight – streptomycin sprays**

//newa.cornell.edu/index.php?page=apple-diseases

NEWA - Apple Diseases

Blossom Blight Summary - Cougarblight								
	Past	Past	Current	Blossom Blight 5-Day Forecast			Forecast Details	
Date	May 28	May 29	May 30	May 31	Jun 1	Jun 2	Jun 3	Jun 4
4-day DH	-	-	*	*	*	-	-	-
Risk Level	-	-	*	*	*	-	-	-
<b>Wetness Events</b>								
Rain Amount	NA	NA	0.00	NA	NA	NA	NA	NA
Rain Prob (%) Night Day ?			-	-	-	-	-	-
Dew ?	NA	NA	No	NA	NA	NA	NA	NA
Leaf Wetness (hours)	NA	NA	0					

NA - data not available

[Cougarblight Charts](#)      [Download Time: 5/30/2010 23:00](#)

\* indicates accumulating the 4-day DH total.  
Scan 4-day degree hour (DH) totals, risk levels, rain, dew, leaf wetness, and note the infection risk level.

**Pest Management for Cougarblight Risk Level:**

- Low** - bactericides probably unnecessary, check the 5-day forecast for warm weather (60°F or higher) and wetting events.
- Caution** - check the 5-day forecast, expect infection if warm weather continues (60°F or higher) and a wetting event occurs.
- High** - expect infection if there is a wetting event, even a heavy dew.
- Extreme** - the blossoms should be protected with streptomycin.



# Fire blight – shoot blight

## Scouting for strikes

### Calculating infection dates

**Monitoring for Shoot Blight Symptoms:** To effectively limit shoot blight damage, strikes should be pruned throughout the terminal growth period. If you have a trauma event such as windy thunderstorm during bloom or a summer hailstorm, begin checking for symptoms 90-100 degree day base 55°F after the event. Enter the date of the infection/weather event:

Infection Event Date:

If you are seeing fire blight symptoms and want to determine approximately when the infection event occurred, enter the date of symptoms:

Symptom Occurrence Date:

#### Shoot Blight Infection for Calais

Fire blight symptoms on infected shoots show up when about 90 to 100 degree days base 55F have accumulated after an infection event.

Infection event:  
June 25

Degree Days (base 55 BE) 6/25 through 7/5:  
108

Check for symptoms starting on July 5

**Disclaimer:** *These are theoretical predictions and forecasts. The theoretical models predicting pest development or disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps.*

**Monitoring for Shoot Blight Symptoms:** To effectively limit shoot blight damage, strikes should be pruned throughout the terminal growth period. If you have a trauma event such as windy thunderstorm during bloom or a summer hailstorm, begin checking for symptoms 90-100 degree day base 55°F after the event. Enter the date of the infection/weather event:

Infection Event Date:

If you are seeing fire blight symptoms and want to determine approximately when the infection event occurred, enter the date of symptoms:

Symptom Occurrence Date:

#### Shoot Blight Infection for Calais

Fire blight symptoms on infected shoots show up when about 90 to 100 degree days base 55F have accumulated after an infection event.

Symptom Occurrence Date:  
July 5

Approximate Infection Date:  
June 27

Degree Days (base 55 BE) 6/27 through 7/5:  
96

**Disclaimer:** *These are theoretical predictions and forecasts. The theoretical models predicting pest development or disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps.*



# Apple insect models

- Codling moth
- Oriental fruit moth
- Obliquebanded leafroller
- Plum curculio
- Spotted tentiform leafminer
- Apple maggot

These models are interactive.



NEWA - Apple Insects - Windows Internet Explorer

http://newa.cornell.edu/index.php?page=apple-insects

NEWA - Apple Insects

## NEWA Apple Insect Models

Select a pest:  
Codling Moth

Weather Station:  
East Dorset, VT

Accumulation End Date:  
06/17/2010

**Calculate**

Map Results Help

### Codling Moth Results for East Dorset

**First Trap Catch:** 6/14/2010

*First Trap Catch date above is estimated based on degree day accumulations or user input. Enter the actual date for blocks of interest and the model will calculate the protection period after first trap catch more accurately.*

**Accumulated degree days (base 50°F) first trap catch through 6/17/2010:** 41 (0 days missing)

**Pest stage:** Moths flying & first eggs laid

*The pest stage above is estimated. Select the actual stage and the model will recalculate recommendations.*

Pest Status	Pest Management
First <u>eggs</u> are laid at about 50 DD and the first eggs usually hatch after about 220 DD.	Apply insecticides that need to be present before egg laying at about 50-75 DD. Apply insecticides that target early egg laying period at 100-200 DD. <a href="#">Pesticide information</a>

**Disclaimer:** *These are theoretical predictions and forecasts. The theoretical models predicting pest development or disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps.*







NEWA - Apple Insects - Windows Internet Explorer

http://newa.cornell.edu/index.php?page=apple-insects

NEWA - Apple Insects

## NEWA Apple Insect Models

Select a pest:  
Oriental Fruit Moth

Weather Station:  
East Dorset, VT

Accumulation End Date:  
05/30/2010

**Calculate**

Map Results Help

### Oriental Fruit Moth Results for East Dorset

**First Trap Catch:**

*Degree day accumulations estimate that First Trap Catch may not have occurred yet. If it has, enter the actual date for blocks of interest above and the model will calculate the protection period more accurately.*

**Accumulated degree days (base 43°F) 1/1/2010 through 5/30/2010:** 342 (132 days missing)

**Phenological stage:**

*The phenological stage above is estimated. Select the actual stage and the model will recalculate recommendations.*

**Pest stage:** First generation moths emerge

Pest Status	Pest Management
First catch of moths from the overwintering generation is expected. Flight of OFM usually begins when trees are in the pink or bloom bud stages.	No insecticides need to be applied until eggs begin to hatch; since OFM flight usually begins at bloom, it is not possible to apply an initial spray to kill adults.

*Disclaimer: These are theoretical predictions and forecasts. The theoretical models predicting pest development or disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps.*

NEWA PMEP Powered by ACIS Northeast Regional Climate Center



## NEWA Apple Insect Models

Select a pest:  
Plum Curculio

Weather Station:  
East Dorset, VT

Accumulation End Date:  
06/12/2010

Calculate

Map Results Help

### Plum Curculio Results for East Dorset

At petal fall, fruit become susceptible to feeding and oviposition injury. Control measures are only needed until 308 degree days have accumulated since petal fall.

90% petal fall on McIntosh apple: 6/12/2010

Petal Fall date above is estimated based on degree day accumulations or user input. Enter the actual date for blocks of interest and the model will calculate the protection period after petal fall more accurately.

Accumulated degree days (base 50°F) petal fall through 6/12/2010: 8 (0 days missing)

Pest stage: Adults ovipositing

The pest stage above is estimated. Select the actual stage and the model will recalculate recommendations.

Pest Status	Pest Management
Plum curculio (PC) adults will continue to damage fruit ( <a href="#">example 1</a> , <a href="#">example 2</a> ) and may be moving among trees. PC activity is highly dependent upon temperatures, particularly at night when adults are most active. PC usually do not feed or oviposit when nighttime temperatures are below 50 deg F. If the weather is extremely warm after petal fall, the oviposition cycle may be completed in 2 weeks. In cooler seasons, PC may continue to oviposit for 4-6 weeks.	A petal fall spray should control plum curculio (PC) for about 10 -14 days. Incidence of observed PC damage is highly variable among different orchards. PC damage usually occurs primarily along the edges of commercial orchards, and noticeable damage occurs in the same locations in orchards year after year, regardless of treatment levels. Therefore, the potential for damage in any particular orchard can be predicted from past observations. Usually, a post-petal fall spray for control of PC is not necessary in low-pressure orchards in which no damage has been observed in the past. In high-pressure orchards, additional sprays along the perimeter of the orchards should be applied until the oviposition model predicts that control is no longer necessary. <a href="#">Pesticide information</a>

**Disclaimer:** These are theoretical predictions and forecasts. The theoretical models predicting pest development or disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps.



NEWA - Apple Insects - Windows Internet Explorer

http://newa.cornell.edu/index.php?page=apple-insects

NEWA - Apple Insects

## NEWA Apple Insect Models

Select a pest:  
Spotted Tentiform Leafminer

Weather Station:  
East Dorset, VT

Accumulation End Date:  
05/28/2010

**Calculate**

Map Results Help

### Spotted Tentiform Leafminer Results for East Dorset

**Accumulated degree days (base 43°F) 1/1/2010 through 5/28/2010: 301 (132 days missing)**

**Phenological stage:** Pink Bud

*The phenological stage above is estimated. Select the actual stage and the model will recalculate recommendations.*

**Pest stage:** Moths flying and egg laying continues

Pest Status	Pest Management
First generation adult STLM are actively flying and laying eggs from tight cluster until the end of the pink bud stage.	No insecticidal control sprays are recommended against STLM adults. Control sprays targeted against younger instars of larvae ( <u>sap feeding stages</u> ) feeding in the leaves can be applied either at pink or shortly after petal fall. To determine whether or not pink sprays are necessary, sample clusters for eggs at <u>pink</u> and if necessary apply insecticides before bloom. <u>Pesticide information</u>

**Disclaimer:** *These are theoretical predictions and forecasts. The theoretical models predicting pest development or disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps.*



NEWA - Apple Insects - Windows Internet Explorer

http://newa.cornell.edu/index.php?page=apple-insects

NEWA - Apple Insects

## NEWA Apple Insect Models

Select a pest:  
Apple Maggot

Weather Station:  
Rutland, VT

Accumulation End Date:  
07/30/2010

**Calculate**

Map Results Help

### Apple Maggot Results for RUTLAND STATE AP

**First Trap Catch:** 7/24/2010

*First Trap Catch date above is estimated based on degree day accumulations or user input. Enter the actual date for blocks of interest and the model will calculate the protection period after first trap catch more accurately.*

**Accumulated degree days (base 50°F) first trap catch through 7/30/2010:** 128 (0 days missing)

**Pest stage:** Sexually immature females

*The pest stage above is estimated. Select the actual stage and the model will recalculate recommendations.*

Pest Status	Pest Management
Early emerging AM females are still sexually immature and have not yet started to lay eggs.	It is still too early to apply insecticide sprays against AM even if flies have been captured on traps deployed along the edges of commercial apple orchards.

**Disclaimer:** *These are theoretical predictions and forecasts. The theoretical models predicting pest development or disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps.*





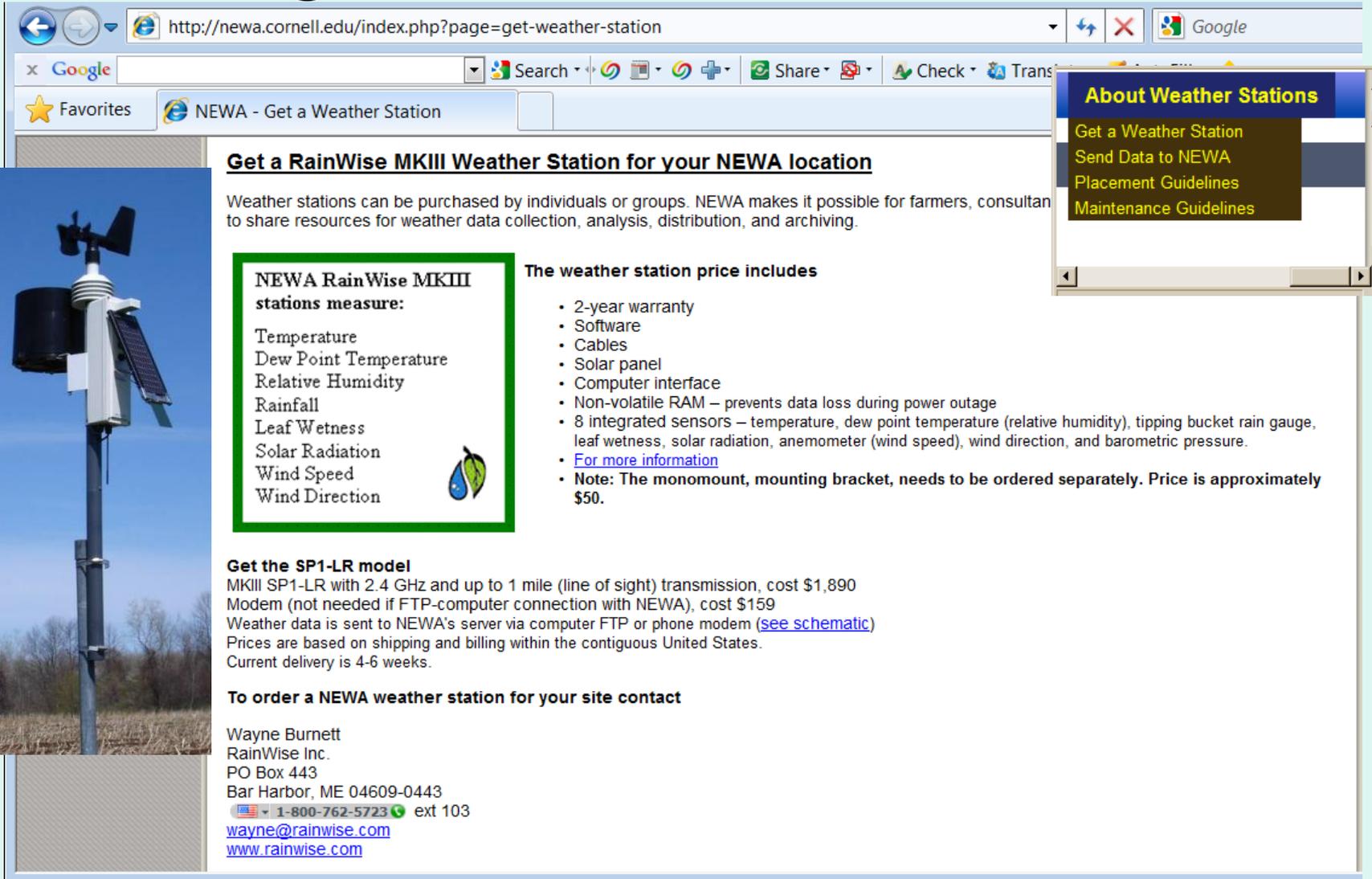


# Production decision aids – future?

- Apple ET model (current ET model is for turf)
- Apple carbohydrate model - thinning
- Spring freeze/frost warnings  
NWS, Buffalo & Binghamton, NY
- Critical temperatures
- Others?
  - soft scald on Honeycrisp
  - Blanpied/Silsby CA model for timing harvest



# Want to get a NEWA weather station?



<http://newa.cornell.edu/index.php?page=get-weather-station>

## Get a RainWise MKIII Weather Station for your NEWA location

Weather stations can be purchased by individuals or groups. NEWA makes it possible for farmers, consultants to share resources for weather data collection, analysis, distribution, and archiving.

**NEWA RainWise MKIII stations measure:**

- Temperature
- Dew Point Temperature
- Relative Humidity
- Rainfall
- Leaf Wetness
- Solar Radiation
- Wind Speed
- Wind Direction

**The weather station price includes**

- 2-year warranty
- Software
- Cables
- Solar panel
- Computer interface
- Non-volatile RAM – prevents data loss during power outage
- 8 integrated sensors – temperature, dew point temperature (relative humidity), tipping bucket rain gauge, leaf wetness, solar radiation, anemometer (wind speed), wind direction, and barometric pressure.
- [For more information](#)
- **Note: The monomount, mounting bracket, needs to be ordered separately. Price is approximately \$50.**

**Get the SP1-LR model**

MKIII SP1-LR with 2.4 GHz and up to 1 mile (line of sight) transmission, cost \$1,890  
Modem (not needed if FTP-computer connection with NEWA), cost \$159  
Weather data is sent to NEWA's server via computer FTP or phone modem ([see schematic](#))  
Prices are based on shipping and billing within the contiguous United States.  
Current delivery is 4-6 weeks.

**To order a NEWA weather station for your site contact**

Wayne Burnett  
RainWise Inc.  
PO Box 443  
Bar Harbor, ME 04609-0443  
1-800-762-5723 ext 103  
[wayne@rainwise.com](mailto:wayne@rainwise.com)  
[www.rainwise.com](http://www.rainwise.com)

**About Weather Stations**

- Get a Weather Station
- Send Data to NEWA
- Placement Guidelines
- Maintenance Guidelines



# To learn more about NEWA

visit [newa.cornell.edu](http://newa.cornell.edu) or [www.newa.cornell.edu](http://www.newa.cornell.edu)

## Contact your NEWA-VT Administrator

Terence Bradshaw  
Field Research Specialist  
University of Vermont Apple & Grape Team  
802-922-2591  
[tbradsha@uvm.edu](mailto:tbradsha@uvm.edu)

