Exploiting the vagaries of weather with open access tools on the Network for Environment & Weather Apps (NEWA)

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NEWA is a crowd-sourced knowledge network

- Growers share weather data through NEWA, providing feedback and guidance
- Weather data is collected every 15 minutes and tabulated in hourly and daily summaries
- Rain, temperature, humidity, leaf wetness, solar radiation, wind speed and direction
- These data run 40 agriculture decision support tools
NEWA’s map

- NEWA stations
- Airports

Over 400 stations

newa.cornell.edu
Partners

- Cornell University – NY
- Minnesota Apple Growers Assoc. – MN
- North Carolina Apple Growers Assoc. - NC
- Pennsylvania State University – PA
- Rutgers, The State University – NJ
- University of Connecticut – CT
- University of New Hampshire – NH
- University of Massachusetts – MA
- University of Vermont – VT
- Virginia Tech - VA
Top 3 reasons to use NEWA

1. IPM forecast tools for plant diseases & arthropods
2. Crop management tools
3. Weather data tables & tools

• Real-time.
• Query-based.
• Decision support.
• User input biofix.
• Interactive user interface.

→ Better IPM, reduced pesticide use, improved environmental protection.
→ Better crop management, improved crop quality, improved yield.
→ Enhanced decision support.
Growers can save, on average, $19,500/yr in spray costs and prevent $264,000/yr in crop loss as a direct result of using NEWA pest forecast models. **99.2% of NEWA end users would recommend NEWA to farmers.**
NEWA’s Home Page

- Blue menu on all NEWA pages
  - Weather Data
  - Pest Forecasts
  - Station Pages
  - Crop Management
  - Crop Pages
  - About Weather Stations

- Blue menu: *interactive tools*

- The map saves your location
Pest Forecast items – blue menu bar

Access the Pest Forecast tools from the drop down list on the main menu.

See a 5-day forecast and details on past and current conditions.

Assess risk, learn IPM info, get decision support.
**NEWA Apple Disease Models**

Select a disease: Fire Blight

State: New York

Weather station: Chazy (Grower)

Date of Interest: 05/23/2016

**Fire Blight Risk Predictions for Chazy**

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

**First blossom open date:** 5/10/2016

*First blossom open date above is estimated based on degree day accumulations.* **Infection cannot occur without open blossoms.** If the predicted bloom date is incorrect, **enter the actual date for blocks of interest** and the model will calculate the protection period during bloom more accurately. If bloom in your orchard has not yet occurred, continue to check Cougarblight daily and monitor your bloom. If bloom in your orchard has not yet occurred, enter a future bloom date, up to five days into the future, to gauge fire blight risk potential.

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

*The orchard blight history above is the NEWA default. Select the actual blight history for your orchard and the model will recalculate recommendations.*

**Blossom Blight Summary - Cougarblight**

<table>
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<th>Date</th>
<th>Past</th>
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**Blossom Blight 5-Day Forecast**

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**Wetness Events**

High | High | Extreme | Extreme | Extreme | Extreme | Extreme | Extreme |
Crop management tools

Access Crop Management tools from the drop down list on the main menu.

Assess risk, get decision support.
Apple thinning
-Green tip date
-Bloom date
Thinning guidelines
Tree carbohydrate balance
Weather products

- Degree Day tables for 11 base temperatures (4°C, 32°F, 40°F, 43°F, 45°F, 48°F, 50°F, 86/50°F, 55°F, 47.14°C, 14.3°C)
  - January 1, March 1, April 1, and May 1
- Hourly Data tables
- Daily Summary tables
- Degree Day Calculator

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Weather data products – blue menu bar
Hendersonville, NC
Hourly and Daily Data showing rain events in October 2015 that prevented timely apple harvest.
The "Valentine’s Day Massacre" cold snap, February 14, 2016.

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<th>Date</th>
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<th>Total Rain (in)</th>
<th>RH Hrs ≥ 90%</th>
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How can people use NEWA tools?

- Pesticide application timing
  - Protect crops when sprays are necessary
  - Protect the environment when sprays aren’t necessary
- When to set traps for monitoring insects
- When to scout for plant disease symptoms
- Documentation for crop insurance
  - Freeze damage
  - Disease outbreaks
- Irrigation timing

Open access
Real-time.
Query-based.
Decision support.

newa.cornell.edu
Keep NEWA web apps on your smart phone browser!

So easy to access the decision support tool, reload to get new results.
The future looks bright!

- Woody ornamental insect degree day models
- Berry insect and disease models
- Onion disease models - upgrades being validated
- Grower cache for insect monitoring and crop growth stage