

Increasing the Reliability and Scope of NEWA Weather and Pest Model Information in the Lake Erie Region (Year 2 progress report)

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Objectives

1. Increase reliability of weather and pest model information provided through the NEWA website through monitoring and machine maintenance.
2. Increase adoption of the phenology-based degree-day model for timing of management strategies for grape berry moth, powdery mildew, downy mildew, black rot and Phomopsis.
3. Increase effective area of NEWA weather and pest model information through expansion of the Rainwise weather instrument network.
4. Examine effectiveness and longevity of insecticides for grape rootworm using weather parameters found on NEWA.

Results

Objective 1. Increase reliability of weather and pest model information provided through the NEWA website through monitoring and machine maintenance.

The Lake Erie Mesonet of NEWA increased from eleven Rainwise stations and two airports in 2017 to twenty-two Rainwise stations, two airports and two NYS Mesonet stations (Burt in Niagara County and Fredonia in Chautauqua County) that currently make up the Lake Erie portion of the NEWA network were monitored on a regular basis throughout this project. The technician funded by this project was able to install both the Rainwise dataloggers and the IP-100 communication devices in cooperation with participating growers. Funding for the new equipment came from National Grape Cooperative, Constellation Brands and Walker's Fruit Basket. All stations were monitored on a regular basis and allowed us to correct a problem before a major disruption in the weather data occurred in the majority of instances. This increased the reliability of the data used by NEWA to develop the weather and pest models used by grape growers in the Lake Erie region. The NEWA technician contacted growers to correct problems with the flow of data and in many cases was able to fix the problem with that call. When a simple phone call cannot correct the problem, a support ticket is developed alerting both NEWA and Rainwise of the problem. The NEWA technician then works with this team to find a solution to the problem. As a result of the support tickets, and the installation of new equipment, 120 site visits were required during 2018 to correct a problem. Problems ranged from communication problems (requiring a new IP-100 or addition of an external antennae) to malfunctioning tipping rain gauges or temperature and relative humidity sensors that needed recalibration.

Objective 2. Increase adoption of the phenology-based degree-day model for timing of management strategies for grape berry moth, powdery mildew, downy mildew, black rot and Phomopsis.

The implementation of NEWA resources in a vineyard IPM strategy was a focus of programming during the pest management portion of the 16 Coffee Pot meetings during the 2018 growing season. Two hundred sixty-one growers and members of the Lake Erie grape industry participated in discussions ranging from what resources are available on NEWA, to how to implement the information provided by

the weather and pest models found on NEWA. NEWA was also a significant subject in the *Crop Update*, LERGP's weekly electronic update to encourage the implementation of disease and GBM model information. A table was published in the *Crop Update* from the end of June through the beginning of September that provided the output of the grape berry moth model found on NEWA for the 24 stations we are currently monitoring in the Lake Erie region. Readers were encouraged to access the model on NEWA for the station closest to their vineyard to take advantage of the models ability to allow a user to input the wild grape bloom date (biofix date to start the GBM model) to get the most accurate model for their vineyard operation.

Table 1. Example of table showing results of the Grape Berry Model on NEWA created for use in 2018 *Crop Updates*. This example is from the August 23, 2018 *Crop Update*.

NEWA Location	2018 Wild grape bloom date*	DD Total on August 23, 2018	DD total on August 24, 2017	2017 Wild grape bloom date*
Versailles	May 29, 2018	2002	1975	May 28
Hanover	May 29, 2018	2055	1653	
Sheridan	May 28, 2018	2133	1975	May 28
Silver Creek	May 31, 2018	1993	1912	May 31
Dunkirk Airport	May 30, 2018	2031	1863	June 1
Forestville	May 30, 2018	2037		
East Fredonia	May 29, 2018	2039		
Fredonia	May 30, 2018	1975		
Portland Escarp.	May 29, 2018	2061	1933	May 28
Portland	May 30, 2018	2045	1949	May 29
East Westfield	May 30, 2018	2014		
Westfield	May 30, 2018	2045	2009	May 28
Ripley	May 29, 2018	2116	2009	May 28
Ripley Escarp	May 29, 2018	2093		
North East Escarp	May 29, 2018	2048	1948	May 27
Harborcreek	May 29, 2018	2114	1993	May 28
North East Lab	May 30, 2018	2127	2026	May 29
Erie Airport	May 27, 2018	2315	2066	May 26
Lake City	May 29, 2018	2118		
Ransomville	May 30, 2018	2102	1850	June 3
Burt	June 1, 2018	1923		
Somerset	May 31, 2018	Offline	1759	June 8
Corwin	May 31, 2018	1982		
North Appleton	June 3, 2018	1886	1614	June 11
* Estimated date provided by NEWA website				

Growers across New York State had the opportunity to receive the eNEWA grape alert, a daily email delivered at the time of their choosing for as many weather instruments as they requested. The daily eNEWA-grape alert provided information on weather and pest model output and is best used to alert growers that they should access the NEWA website to get the most up to date weather or pest model information on potential problems.

A survey on the use of NEWA was conducted after the 2018 harvest for those who received eNEWA in 2018. Fifty-three growers received eNEWA in 2018 as well as three members of grape programs in NYS. Twenty-four growers participated in the survey for a response rate of 45%. The survey results indicated that 92% of those who received eNEWA, used the weather and pest information found on in the daily eNEWA alert. Only two respondents indicated they never used the information they found in eNEWA. Sixteen of seventeen people who responded that they felt they improved profitability from reduced sprays, or increased crop/crop quality due to the information found on NEWA or in the eNEWA-grape alert (53% saved between \$1 – \$25 per acre, 12% saved between \$26 - \$50 per acre, and 29% saved more than \$50 per acre).

Objective 3. Increase effective area of NEWA weather and pest model information through expansion of the Rainwise weather instrument network in the Lake Erie region.

As mentioned in Objective 1 results above, eleven new Rainwise stations were installed during 2018. We worked with representatives of National Grape, Constellation Brands and Walker’s Fruit Basket (funding partners who provided the funds to purchase the stations) to determine the appropriate sites needed to close gaps in availability of weather and pest model information.

Objective 4. Examine effectiveness and longevity of insecticides for grape rootworm using weather parameters found on NEWA.

This objective was completed in 2018. Thanks to the funding of this project we have been able add four different insecticides, representing four different active ingredients through FIFRA 2(ee) recommendations. The traditional scouting period of July 4th weekend was found to be up to 4 weeks too late to catch the beginning of the population. We found that our attempt to construct a Degree Day model to time scouting was not in the scope of this project. Degree day accumulation and emergence varied widely during the 4 years we examined this project component. The project did allow us to recommend scouting for grape rootworm to begin the first week of June to ensure that the first emergence of grape rootworm adults was determined. We were also able to determine that any of the insecticides currently labeled for grape rootworm in New York State were effective in providing season long control of grape rootworm with a single application during the three years of testing. Other funding sources are being examined for continuing the work on development of a degree day model for timing grape rootworm emergence.