Increasing the Reliability and Scope of NEWA Weather and Pest Model Information in the Lake Erie Region (Year 1 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.

Results

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

The eleven weather stations that currently make up the Lake Erie portion of the NEWA network were monitored on a regular basis throughout this project. In addition to these stations, information from two airports (Dunkirk, NY and Erie, PA) and two stations located in apple orchards in Niagara County (Somerset and North Appleton) were monitored. NEWA has instituted an email alert system warning of interruptions in data collection, where the station contact (in most cases the station owner and/or Tim Weigle) was contacted if two days elapsed with no data received.   Regular monitoring of the sites allowed us to correct a problem before the email alert was sent 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.   Problems addressed by the NEWA technician included communication problems ranging from signal loss due to a harvester parked between the station and receiver to the need to return a station to Rainwise for repair of the communication device. Ensuring the validity of data used in weather and pest models was accomplished through monitoring of daily data as well as the output of NEWA models for a station.   In instances where the validity of the data was questionable, measures were taken to remedy those problems. For example, stations were relocated on a post to reduce the effect of wind gusts on the tipping rain gauge, and a station that was sited in a wet area was reset in concrete to ensure a more solid base. In most cases, problems were easily solved through regular monitoring and contacting the grower on whose property the station was located. In some situations the NEWA technician was required to travel to the site to address the problem.

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 2017 growing season. Two hundred sixty-five (265) 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 with 16 articles written 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 13 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 and to take advantage of the model's 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 2017 *Crop Updates*. This example is from the September 7, 2017 *Crop Update*.

NEWA Location	Wild grape bloom date*	DD Total on Sept 7, 2017	Forecasted DD for Sept 12, 2017
Versailles	May 28	2075	2126
Dunkirk Airport	June 1	2006	2062
Sheridan	May 28	2192	2245
Silver Creek	May 31	2136	2195
Portland Escarp.	May 28	2142	2194
Portland	May 29	2163	2215
Ripley	May 28	2156	2215
North East Escarp	May 27	2154	2203
Harborcreek	May 28	2217	2278
North East Lab	May 29	2260	2322
Erie Airport	May 26	2194	2256
Ransomville	June 3	2059	2114
Somerset	June 8	1972	2026
North Appleton	June 11	1832	1888
* Estimated date provided by NEWA website			
Westfield station is off line for maintenance			

Growers in the Lake Erie Region 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. Nineteen growers from the Lake Erie region took advantage of the eNEWA-grape alert. Because there is currently no cost involved in sending out the alerts, this opportunity was provided to all the grape growing regions in New York. An additional 17 growers in the Finger Lakes and on Long Island also opted to receive the alerts.

A survey on the use of NEWA was conducted after the 2017 harvest. An invitation to participate in the survey was sent out by the LERGP as well as other regional grape programs in New York State. Due to the fact that this survey was conducted on-line there is no way of determining the exact location of respondents. The survey results indicated that if a grower used NEWA, 68% of them used the weather and pest information found on NEWA to assist in spray decisions. Only one respondent never used the information they found on NEWA. Of those growers using NEWA, 66% 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 (34% saved between $1 – $25 per acre, 19% saved between $26 - $50 per acre, and 13% 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.

We were unable to move forward with the cost share project that was to add three new stations to NEWA due to a number of reasons.   Due to the difficulty we had in getting the right candidate hired for the position with this project, we had significant savings in the categories of salary and fringe benefits. Working with the project funders, we were able to revise the budget and repurpose these savings into the purchase of additional Rainwise weather instruments. We have purchased and installed one unit that has the ability to communicate via cell phone and nine additional stations are on order. We are working with the funders to develop a plan for siting the additional instruments.