Project Title: Increasing the Reliability and Scope of NEWA Weather and Pest Model Information

Principal Investigator: Jennifer Phillips Russo, Viticulture Specialist, Lake Erie Regional Grape Program (716) 792-2800 jjr268@cornell.edu

Collaborators: Dan Olmstead, NEWA Coordinator, NYS IPM Program, (315) 787-2207 dlo6@cornell.edu Kevin Martin, Business Management Educator, LERGP (716) 792-2800 kmm52@psu.edu

New Research ☐

Continued Research ☒

Amount Requested: $46,927

Funding is for April 1, 2021 – March 31, 2022 Fiscal Year Only

Objectives:

1. Increase reliability of weather and pest model information provided through the NEWA website through monitoring and machine maintenance in the Lake Erie and Finger Lakes Regions.
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.

Reporting Session February 10, 2022

Grape growers face the risk each season of their vineyards being attacked by insects and diseases whose severity is dependent on the current season's weather conditions. This results in growers needing to modify their vineyard IPM strategy on a yearly, monthly and, sometimes, daily basis.

This has resulted in a critical need for a portion of a technician's time to be devoted to installing, monitoring and maintaining the weather network to keep a robust stream of data flowing to NEWA to ensure that the pest model information is reliable.

By increasing the reliability of the weather and pest model data, adoption of cost-effective, research-based IPM practices will be increased through communication and grower education on the resources available through NEWA.

Monitor 41 weather stations:

- 24 Lake Erie Region
- 17 Finger Lakes Region

NEWA sends a daily Data Report via email. This report indicates which stations have sent: no data in the past 24 hours, reporting data in the last 24 hours, and inactive stations of those 41.

Stations listed as inactive or that have no data reported in the last 24 hours are investigated:

- Check Rainwise to see if no radio signal or if offline and then look at data to see when it last reported.
- Depending on the status, recommendations are made to the station owners via email.
    - **No radio signal** indicates a problem between the station and the IP-100 and this can usually be remedied by resetting the IP-100 or power cycling the station
    - **Offline** indicates that the IP-100 or TeleMet is not communicating with the internet. This can be as simple as just accidentally unplugging or can indicate a connection issue with the service provider.
- Often no response comes back from the station owner but the station comes back online and is sending data. Success! If not, repeated contact attempts are made.
- Often in the winter there will be issues with the station battery. If that is the case the information is then sent to the owners about which battery to purchase and how to change it.
- Sometimes there are questions that can't be handled remotely or need more expertise. For those I recommend contacting Rainwise directly.

For the Lake Erie Region stations there is a more hands-on approach, especially for anything beyond resetting the IP-100 which is often inside someone's home.

If there is missing data (i.e. no precipitation data when a rain even has occurred) a technician drives to the station to see if the bucket needs to be cleaned or if there is a sensor error. We are capable of replacing sensors as needed with minimal time on site. Again, sometimes the problems require the expertise of the Rainwise or Onset support staff, but we serve as the liaison between them and the owner of the property.

2021 NEWA in a Nutshell:

- 274 emails to check status and troubleshoot issues associated with the NEWA stations.
- 24 phone calls to follow through on the troubleshooting
- 32 site visits which included:
    - Replaced miniaerave on Sheridan Rainwise station to troubleshoot incorrect wind data
    - Converted Westfield station to TeleMet, then back to IP-100 near the end of the year. Had issues with lag in data reporting with the TeleMet. Also interference from some other device was causing strange precipitation to be recorded. Changed channel of station and IP-100 to remedy the problem.
    - Pulled East Westfield TeleMet that had been short circuited by ants in mid June, then replaced in September when it finally arrived.
    - Set up HOBO station in Sheridan – replaced Rainwise station
    - Set up HOBO station in Brant – expanded network into Brant (Erie County)
    - Troubleshoot Portland Escarpment Rainwise station Relative Humidity and Temperature sensors, High Gain antenna helped for signal, but ultimately decommissioned station at the end of the season due to motherboard failure. Currently no longer a station there – grower hosts moved and the station was old.
    - Moved high gain antenna to North East Side Hill station to help resolve connection issues
    - Replaced 1 battery
    - Cleaned 8 rain buckets and replaced 3 reed switches to ensure functionality of the tipping mechanism to collect rainfall accurately.
    - Added a homemade “bird cage” to the Silver Creek station to deter birds from roosting on the station and causing the rain bucket to plug.
- 16 crop update and 2 newsletter articles to keep the growers informed of the status of the NEWA network in the Lake Erie Region.