

Plain Language Research Summary - AgriScience Grape & Wine Cluster - 2025-2026

Activity #16: Increase productivity, climate change adaptation and resilience of northeastern Canadian vineyards through different weed, insects, fungal disease and virus control strategies

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1. What is the overall focus of this research activity?

This research focuses on improving the productivity and resilience of vineyards in Eastern Canada by developing better strategies to manage key challenges such as diseases, insects, weeds, and viruses. These factors can significantly affect grape yield, vine health, and fruit quality, and represent major constraints for growers, especially under changing climate conditions. The project takes an integrated approach, combining plant selection, disease management, and soil management practices to support more sustainable vineyard production systems. To address these challenges, the research brings together several complementary areas of study. We are evaluating new and existing grapevine cultivars, including disease-resistant and cold-adapted varieties, to improve vineyard performance and reduce reliance on pesticides. We are also studying the impact of important grapevine viruses on plant health, particularly in hybrid cultivars, where knowledge is still limited. In parallel, we are evaluating the use of cover crops to improve soil health, reduce weeds, and enhance ecosystem resilience. Finally, we are developing and refining weather-based disease prediction models to help growers better anticipate disease risk and optimize their management practices.

2. What are the main progress updates/milestones in terms of work that was done on this research activity this year?

This year, extensive data collection was carried out across all components of the project. For the grapevine cultivar evaluation, data were collected on vine development, including timing of bud break, bloom, and veraison, as well as disease and insect susceptibility, yield, and berry chemistry. Data collection was also initiated for the virus component on hybrid cultivars infected with grapevine leafroll and red blotch viruses. Several physiological and production parameters were measured to support future analysis.

The cover crop trials continued for a second year across multiple commercial vineyard sites. Data were collected on weed pressure, vine performance, disease presence, and environmental

conditions. Soil and plant samples were also collected for microbiome analysis, with processing ongoing.

In parallel, work on disease prediction models advanced through the consolidation and standardization of a large historical dataset combining disease observations, weather data, and phenology. This dataset will support the development and validation of predictive models adapted to Canadian conditions.

3. What is this research activity's intended impact on the Canadian grape and wine industry? What benefits could/will the growers, wineries, consumers, etc. see as a result of this research?

This research aims to generate practical knowledge that supports grape growers in improving vineyard performance and managing key production challenges under Eastern Canadian conditions. By combining work on cultivars, viruses, soil management, and disease prediction, the project provides a more integrated understanding of the factors influencing vine health, yield, and fruit quality. In practical terms, the results will support several concrete applications. Data on new and existing grapevine cultivars will help growers select varieties that are better adapted to their local conditions, including disease pressure, productivity, and fruit quality potential. Results from the cover crop trials will allow growers to better evaluate the usefulness of different cover crop mixtures and their impact on vineyard operations, including weed control, vine performance, and disease management. Work on disease prediction models will provide improved tools to anticipate disease development and optimize the timing of interventions, supporting more targeted and efficient disease management strategies. In parallel, the evaluation of virus impacts in hybrid cultivars will help clarify their relevance under northeastern North American conditions, where preliminary observations suggest limited effects under the conditions tested. Overall, this project will contribute to the adoption of more efficient and sustainable vineyard management practices, while helping growers improve consistency and performance in a context of increasing environmental variability.

4. Do you have any communications materials, publications, or other content related to this research activity that you would like CGCN-RCCV to share?

A 1-hour webinar presenting the main results of the grape cultivar trial is available: [Watch the webinar](#)

Technical factsheets for each cultivar in the trial are also currently in development to support growers in varietal selection.