

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

Activity #5: Managing grapevine viruses and their arthropod vectors

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

Grapevine virus diseases, in particular grapevine leafroll disease (GLD) and grapevine red blotch disease (GRBD) cause important economic losses to the Canadian grape and wine industry as a result of yield losses and reductions in fruit and wine quality. Considerable progress has been made in the past years with respect to identifying the different viruses affecting vineyards in Canada, their insect vectors and the impact that these viruses have on plant health and fruit and wine quality under Canadian grape growing conditions. However, further research is required to develop and implement methods to reduce and prevent the spread of these diseases, their impact on plant health and fruit quality, and to control their insect vectors.

The research outlined in this project addresses methods to prevent and manage the natural spread of GLD, caused primarily by *Grapevine leafroll associated virus 3* (GLRaV-3) and GRBD, caused by Grapevine red blotch virus (GRBV) within and between vineyard blocks in British Columbia. The focus of this project includes i) evaluation of the effectiveness and economics of rogueing, a cultural practice focused on the removal and replacement of virus infected vines ii) investigation of novel techniques to prevent infections based on recently developed molecular techniques, iii) assessment of methods to manage insect vectors responsible for the transmission of GLRaV-3 and GRBV, and iv) determine the economic impact that both GLD and GRBD have on grapevine production in Canada.

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

Significant progress has been made in most objectives of this research project. Rogueing trials to control the spread of GRBD are showing this technique to be very effective in eliminating virus infected vines and showed very minimal spread of GRBD in BC vineyards.

Significant progress has been made in better understanding the biology of the GLRaV-3 insect vector, the grape mealybug. Work conducted this year has shown the presence of two potential distinct morphological types of mealybugs. This needs to be resolved but if confirmed, this research will have a tremendous impact on the development and implementation of effective

tools for insect monitoring and management since up to date, only one species of mealybug was thought to be present in BC vineyards.

Finally, preliminary data on the economic impact that virus diseases have on grapevine production in BC shows significant losses due to virus infection, which can be estimated up to \$30,000/acre in a lifetime period of a vineyard of 25 years. These are significant losses impacting grape growers and highlight the urgent need to find sustainable solutions to control virus diseases and their insect vectors.

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?

The main goal of this research project is to develop and implement proper management and mitigation strategies for grapevine virus diseases and their insect vectors affecting the grape and wine industry in Canada. The goal of this research is to transfer these management techniques to industry in order to minimize the economic impact that grapevine viruses have on production and assist growers to become more profitable and competitive.

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

The following scientific manuscript shows how crop thinning does not help to mitigate the impacts of grapevine viruses. However, this study also shows no benefit to crop-thin vines lower than 1.5 clusters/shoot, as no gain in fruit quality was observed. Thinning lower than 1.5 cluster/shoot in BC results in significant reduction of cash flow with no gain on fruit quality.

Roberts, A., Hart, M., Usher, K., and **Úrbez-Torres, J.R.** 2025. Mitigating the effects of *Grapevine red blotch virus* using crop thinning and investigating the role of viral load on vine health and fruit composition in Cabernet Sauvignon in the Okanagan Valley, British Columbia. *Australian Journal of grape and Wine Research* 2025:3762280.
<https://doi.org/10.1155/ajgw/3762280>

The following manuscript is a review of the current status of grapevine viruses across Canadian vineyards.

Vemulapati, B.M., Ghoshal, K., Lerat, S., McFadden-Smith, W., Fall, M.L., **Úrbez-Torres, J.R.**, Moffet, P., Boyes, I., Phelan, J., Bennouna, L., Moreau, D., Rott, M., and Poojari, S. 2025. Metagenomic profiling of the grapevine virome in Canadian Vineyards. *Agriculture* 15:1532.
<https://doi.org/10.3390/agriculture15141532>

The following presentations provide a summary of practical control strategies developed and implemented in Canadian vineyards to mitigate the impact of grapevine diseases, including grapevine viruses.

Úrbez-Torres, J.R. 2025. *Towards sustainable management strategies to mitigate the impact of economically important grapevines diseases in Canada*. Presented at the Cool Climate Oenology and Viticulture Institute Seminar Series. Brock University, St. Catharines ON, Canada.

https://www.youtube.com/watch?v=EJ_e_3nPzkA

https://brocku.ca/ccovi/wp-content/uploads/sites/125/Jose-CCOVI_Lecture_Series_Urbez-Torres-1.pdf

Úrbez-Torres, J.R. 2026. Grapevine Red Blotch in Canada: What We Know and What We Don't. Canadian Grapevine certification network Webinar. March 5, 2026.

<https://www.cgcn-rccv.ca/site/blog/2026/03/05/webinar-updates-red-blotch>