

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

Activity #6: Sustainable control of grapevine trunk diseases under a changing climate

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

This research project aims to address knowledge gaps regarding grapevine trunk diseases (GTDs) in Canada, the main biotic factor reducing yields and limiting vineyards' lifespan. The main goal of this project is to provide Canadian growers with sustainable, practical and effective management strategies against GTDs to be implemented at different stages of the grapevine production process, including nurseries, and young and mature vineyards.

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 all project objectives. New biological control agents (BCAs) with potential activity against GTD pathogens have been characterized. Advances have been made on evaluating best application timing and performance of known BCAs in the genus *Trichoderma* to control GTDs. A MSc student was hired and started in September of 2025 conducting work to determine the role that biotic factors have on both pathogen and host when grapes are infected with GTD fungi. In addition, experiments have started to evaluate the health status of dormant material (scion and rootstock) entering into the nursery propagation process with regard to GTDs, with preliminary results indicating high levels of infection in this material. An economic study to determine the impact that GTDs has on grapevine production in British Columbia has started.

Two main milestones have been achieved this year. First, new bacteria and fungal isolates with potential biocontrol have been fully characterized. Laboratory experiments showed these isolates to provide a high control activity against GTD fungi. Second, we have shown that dormant material used by nurseries to propagate grapevines are already infected with GTD fungi before entering in the nursery process. This information is significant, as it will help to find control strategies targeted to minimize the presence of these pathogens before entering in the nursery and being propagated.

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 research intent is to develop and implement sustainable control strategies to mitigate the impact that GTDs cause on grape production and vineyard's lifespan. This research aims to find locally source organisms (fungi and/or bacteria) that can serve as biological control agents against GTD pathogens. Identification and characterization of these organisms is critical to identifying the best agents that can be selected to develop a biological control commercial product used by Canadian growers to control GTDs.

This research also aims to identify the health status of grapevine material used by nurseries with regards to GTD pathogens. Grapevines are clonally propagated in nurseries and thus, if infection occurs in the mother plant (source of the material to be propagated), that infection will be extended to the new vines produced. Identifying where and when this material gets infected will assist with developing and implementing control measurements to provide nurseries with the healthiest material possible for propagation.

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 manuscripts show how abiotic (water stress) and biotic (nematodes) factors can influence the development and disease onset of grapevine trunk diseases. In summary, young vines under either water stress or presence of nematodes showed an increase of grapevine trunk disease fungus. This information is critical to understanding the need to avoid both abiotic and biotic stressors when planting and establishing new vineyards.

Hrycan, J., Bowen, P., Forge, T., and Hart, M., Úrbez-Torres, J.R. 2025. Impact of water stress on *Phaeomoniella chlamydospora* abundance and Petri disease symptom development in young grapevines. *OENO One* 59(1):8217.

<https://doi.org/10.20870/oeno-one.2025.59.1.8317>

Hrycan, J., Forge, T., Bowen, P., Hart, M., and Úrbez-Torres, J.R. 2026. Investigating the interactions between ring nematode infestation and Petri disease development in young Merlot grapevines infected with *Phaeomoniella chlamydospora*. *European Journal of Plant Pathology* (In Press).

<https://doi.org/10.1007/s10658-025-03165-3>

The following presentation provides a summary of practical control strategies developed and implemented in Canadian Vineyards to mitigate the impact of grapevine trunk diseases:

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_e3nPzkA

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