ENHANCE RESILIENCY: ASSESSING NEW GRAPE CULTIVARS FOR CANADA'S GRAPE AND WINE INDUSTRY

Debra Inglis and Jennifer Kelly provide an update on resiliency strategies to select elite-performing grapevine varieties suited to the climate extremes of Canada's grape-growing regions

The future of Canada's grape and wine sector depends on more than maintaining production; it depends on improving vineyard performance under increasingly variable conditions. As climate instability, seasonal risk, and production pressures grow, the need for resilience has become more urgent. The VINO Solutions framework for climate-smart agriculture, presented in our earlier article, targets research to strengthen the sector, covering planting material through to vineyard performance and wine quality. [1]

Within that broader framework, the Enhance Resilience program focuses on improving how grapevine material performs under conditions in Ontario, Canada's largest grape-producing province. This includes identifying cultivars that offer stronger tolerance to environmental stress while ripening earlier and more reliably, giving growers a practical advantage in a region where harvest timing can strongly influence both risk and quality.

Addressing climate and production risk for Canada's grape and wine sector

One of the biggest concerns in Canada's grape and wine industry is the increasing extremes in weather patterns that have been observed and are expected to worsen. These include cold winter temperatures requiring vine cold resiliency [2] for the ability of vines to withstand temperatures below -15°C for 3+ days, as well as wetter and more humid conditions, which increase incidents of fruit rot and pests that damage fruit and spread virus and disease.

Ontario growers reported losing between 30% and 50% of their crop due to winter damage in 2022. [3] This totalled $62 million in farm gate value, a $50 million drop from the previous year, and resulted in a $22.8 million jump in Agricorp crop insurance claims paid to grape growers in 2022. [4]

Similarly, in British Columbia, an extreme cold event in January 2024 resulted in little to no crop for the 2024 vintage and reported tonnage equivalent to approximately 4% of a typical production year. [5] Therefore, any improvements in yield and decreases in loss will improve gross margins and contribute to the sustainability and resilience of Canada's grape sector.

Strengthening domestic supply and clean plant capacity

A domestic source of propagated clean grapevines will reduce Canada's reliance on foreign plant material while strengthening biosecurity and risk management for the grape and wine industry in an increasingly globalized sector. Our program will expand capacity to host novel rootstocks and cultivars suited to Ontario conditions, introduce disease-resistant cultivars into the repository, and ensure enough certified clean material is available to nurseries, grape growers, and custom propagators. Supporting the long-term sustainability of Ontario's grape and wine industry will require clean plant access to varieties with improved resistance to winter injury and disease pressure. [6]

However, market acceptance of wines produced from these varieties will be essential. Growers and wineries are beginning to invest in these selections [7], with young plantings already entering production, but important knowledge gaps remain regarding pest susceptibility under Ontario conditions, production performance, and fruit and wine quality. Evaluating wines made from these selections will help the industry improve quality, support domestic market growth, explore the commercialization of novel yeast selections from Ontario vineyards that enhance flavour, and develop low-alcohol wines that align with consumer demand through innovative production techniques.
The industry's immediate priority is to establish clean plant material from elite-performing vines and maintain that material free of economically significant virus diseases. Access to high-performing, disease-free grapevine material underpins both vineyard resilience and long-term market success.

Figure 1: Soreli (left) and Cabernet volos (right) on the vine at harvest time.

Early ripening as a practical advantage

An important practical advantage of these newer grapevine selections is their ripening pattern. In Ontario, earlier ripening reduces the risk of late-season weather, ensuring high-quality fruit with consistent maturity. Our 2024 pre-harvest monitoring data clearly illustrate this. By September 9, 2024, both Soreli and Cabernet Volos had reached approximately 21°Brix at the sampling site, while Cabernet Sauvignon at four Niagara benchmark sites was still only 15.5 to 17.7°Brix. In practical terms, these disease-tolerant cultivars were approaching harvest readiness, while a key *Vitis vinifera* benchmark remained several weeks from comparable maturity, underscoring that these cultivars can be harvested substantially earlier than the traditional parent varieties grown in the region. This earlier harvest window is especially meaningful in Ontario, where a compressed or delayed season finish can increase the risk of weather-related losses and complicate harvest logistics.

Preliminary outcomes

With respect to vineyard performance, these sustainable varieties acclimate steadily to winter temperatures and demonstrate good maximum cold hardiness levels for mid-winter protection. All cultivars exhibited strong freeze tolerance below -17°C and provided ample protection from early spring frosts.

Early pilot-scale fermentations showed that this ripening advantage translated into an oenological profile for Soreli and Cabernet Volos that supports fresher, lower-alcohol wine styles, which can be further modified by yeast strain choice. Sensory analysis of these wines is to follow, but preliminary analysis shows notes of red fruit, floral, spice, leather, and tobacco in Cabernet Volos, and minerality, citrus, lemon, and tropical fruit in Soreli.

A more resilient path forward

Building resilience in Ontario's grape and wine sector means strengthening the full system, from vineyard performance and plant material selection to wine quality and market success. By identifying better-adapted grapevine selections, the Enhance Resilience program helps support a stronger, more sustainable future for the industry. The Cool Climate Oenology Viticulture Institute (CCOVI) is proud to continue working with industry partners to advance practical solutions that reduce risk, support innovation, and build long-term resilience.

References

1. Inglis, Debra (2026) 'Resiliency strategies to overcome challenges facing the Canadian grape and wine sector'. Open Access Government January 2026, pp 412-413. Available at Open Access Government (Accessed May 11, 2026).

2. Hébert-Haché, A. et al. (2021). 'Clone and Rootstock Interactions Influence the Cold Hardiness of Vitis vinifera cvs'. Riesling and Sauvignon Blanc. Am J Enol Vitic, 72 (2), 126-136.

3. Grape Growers of Ontario. (2023). '2023 Grape Growers of Ontario annual report'.

4. Agricorp. (2023). '2022–23 Annual Report'. Agricorp. https://www.agricorp.com/SiteCollectionDocuments/Agricorp-AnnualReport-2023-en.pdf

5. British Columbia Wine Grape Council. (2024). 'Annual crop assessment'. https://bcwgc.org/report/annual-crop-assessment/

6. Inglis, D.L and Poojari, S. (2026) 'Start clean: Canada's grapevine clean plant program'. Open Access Government, April 2026, pp.421-422. Available at Open Access Government. (Accessed May 11, 2026)

7. VanSickle, R. (2026, January 19). 'New sustainable grape varieties at heart of Niagara's Al Borgo project'. Wines In Niagara.

Debra Inglis
Director, Cool Climate Oenology and Viticulture Institute
Professor of Biochemistry
Department of Biological Sciences
Brock University
Tel: +1 (905) 688 5550 ext 3828
WEBSITE EMAIL

Jennifer Kelly
Senior Scientist, Oenology
Cool Climate Oenology and Viticulture Institute
Brock University
WEBSITE EMAIL

Brock University