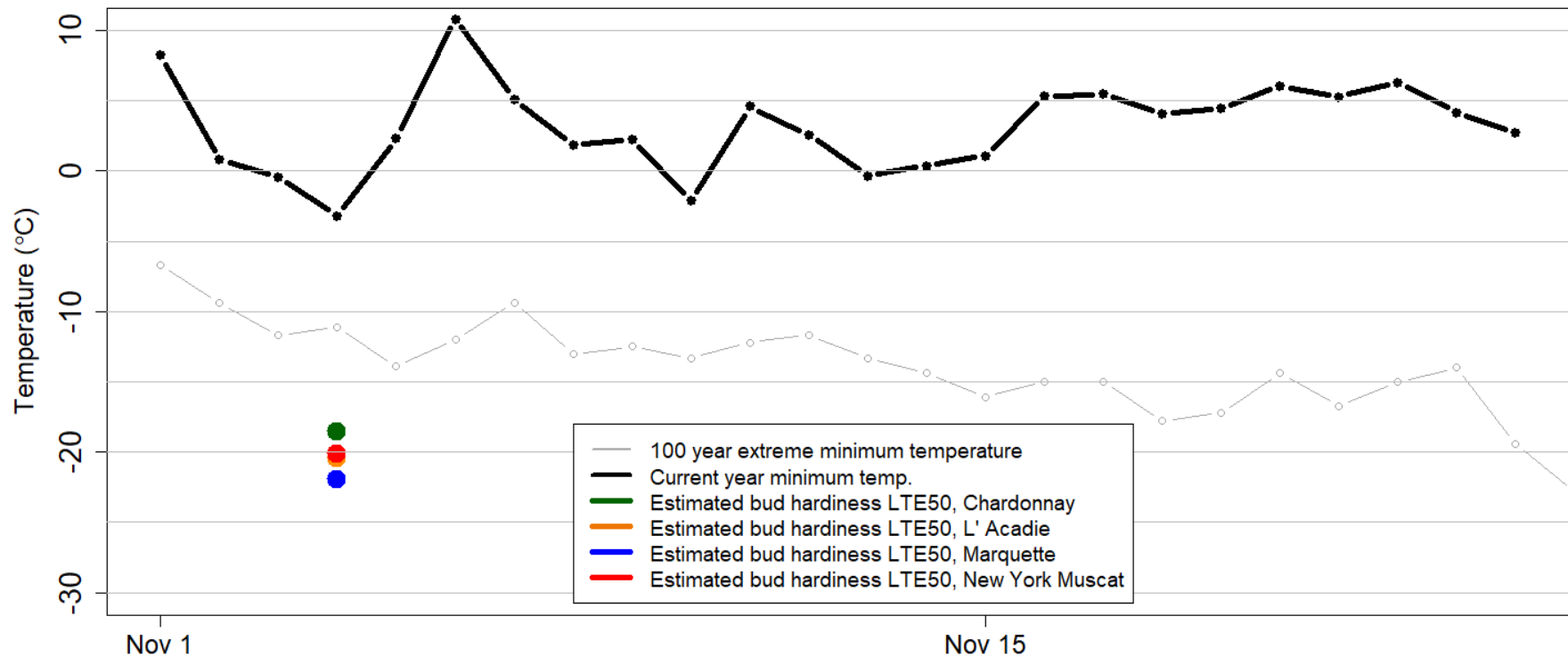




**Kentville Research & Development Centre (KRDC) – Nova Scotia wine grape bud hardiness  
2024/2025 Report no. 1: November 4 & 5, 2024**

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**Figure 1.** Plot showing the LTE50 values (coloured lines) for five wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100-year minimum temperatures (grey line) were recorded at the Environment and Climate Change Canada (ECCC) weather station located at the Kentville Research and Development Centre.



**Current report**

The bud hardiness values from our recent survey are similar to values observed in previous years. The average temperature so far for November is 6.22 °C compared to the 10 and 25-year averages of 4.59 °C and 4.63 °C, respectively. It is likely that this trend will continue for the short-term as the 14-day forecast predicts near normal daily highs and above average nighttime minimums. Looking forward to 30 days, temperatures are expected to return to seasonal values. We are hopeful that the near normal temperatures will provide the necessary stimulus to deepen bud hardiness values as we move into winter. A new addition to the wine grape bud hardiness reports this year is a comparison between the LTE50 values generated by our direct measurements in the lab and an estimate generated using the NYUS.2.1 model, which is based on temperature alone.

**Table 1.** LTE10, LTE50 and LTE90 average values (°C) for core wine grape cultivars for the current and previous reporting periods

Core cultivars and sites	Nov. 4 - 5														
	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90
Chardonnay (5 sites)	-17.0	-18.6	-20.4												
L'Acadie (5 sites)	-17.4	-20.4	-22.4												
Marquette (5 sites)	-19.5	-21.9	-26.6												
New York Muscat (5 sites)	-17.1	-20.1	-21.9												
NYUS.2.1 LTE50 prediction*															
Chardonnay (Kentville)		-17.9													
L'Acadie (Kentville)		-18.5													
Marquette (Kentville)		-20.2													

\* Wang et al., 2024. *Horticulture Research*, 11, 2: uhad286. Follow predicted bud hardiness values in real time at a weather site near you in the US or Canada via the following website: [https://cornell-tree-fruit-physiology.shinyapps.io/North\\_America\\_Grape\\_Freezing\\_Tolerance/](https://cornell-tree-fruit-physiology.shinyapps.io/North_America_Grape_Freezing_Tolerance/).



### Research report description

The Nova Scotia wine grape bud hardiness survey generates reports detailing the low temperature exotherm (LTE) values over the dormant period (roughly from November to April). The LTE is the temperature (°C) at which a bud freezes and is killed: LTE10, LTE50 and LTE90 values denote the temperatures at which 10%, 50% and 90% of the viable buds freeze. The LTE values for a given variety and site are generated using eight canes obtained from eight vines; the compound buds from nodes 3 through 7 from each cane are measured via differential thermal analysis (DTA). It is important to note that the LTE value denotes a bud's susceptibility to acute, cold temperature damage; it does *not* necessarily reflect the bud's susceptibility to dehydration, poor vine health and other more chronic forms of stress that can result in bud mortality at temperatures above the LTE values.

Each report includes: (1) a plot showing the median LTE50 values for a group of hybrid and vinifera wine grape cultivars averaged over several sites located in Kings county as well as recent and historical minimum temperature trends (Figure 1); (2) comments on the current reporting period; (3) a table of LTE10, LTE50 and LTE90 values for the same cultivars shown in Figure (Table 1); (4) A computer-model generated approximation of the LTE50 value based on temperatures obtained from the Kentville Environment and Climate Change Canada (ECCC) weather station and the NYUS.2 machine learning model. This report is produced by the KRDC Plant Physiology Program and is supported by Grape and Wine Cluster Activity #18: Growing More Resilient and Hardy Wine Grapes in the Face of Climate Change in an Eastern Canadian Environment . If you have any questions or comments, please feel free to reach out to the KRDC Plant Physiology Program using the contact information listed above.

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