

Kentville Research & Development Centre (KRDC) – Nova Scotia wine grape bud hardiness

2023/2024 Report no. 4: February 12 and 13

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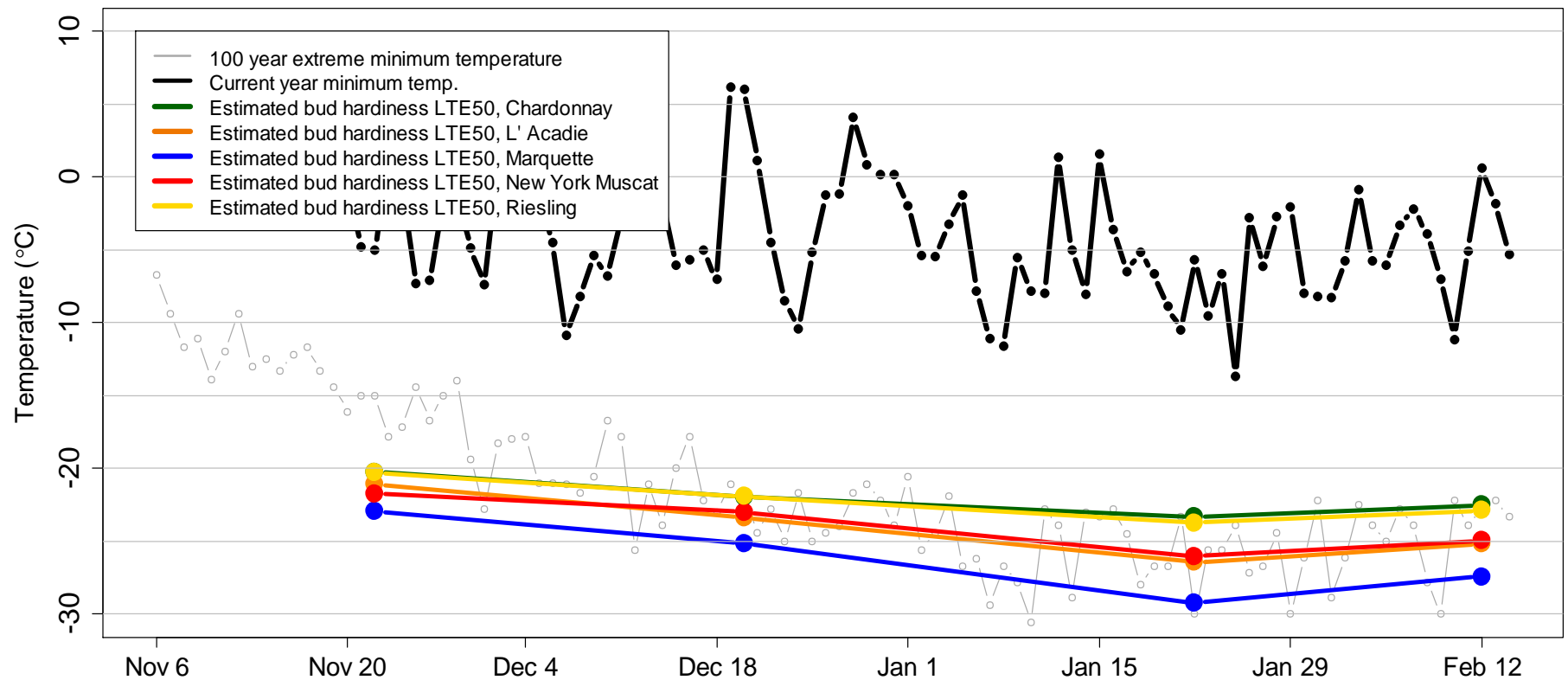


Figure 1. Plot showing the LTE50 values (coloured lines) for five wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100-year minimum temperatures (grey line) were recorded at the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



Current report

All varieties in the survey have deacclimated compared to the last survey date in January leaving the vines at a lower level of hardiness for the time of year. The biggest change has been in the hybrid varieties which have all deacclimated by more than 1 °C. Looking over our surveys from years past, there are cases when deacclimation begins early and continues slowly over the rest of the winter as well as cases where the buds deacclimate before regaining some hardiness. The temperatures that we receive in the remaining two weeks of February will determine which of these two scenarios is realized. Although cooler than last winter, this winter has been relatively mild compared to the past 25 years. The average daily temperature from January 1 to February 15, 2024, was -2.6 °C compared to the 25-year average of -4.7 °C. The average minimum temperature for this same period was -5.8 °C compared to the 25-year average of -9.2 °C. Nights below -10 °C have been relatively rare this winter which has likely been a factor in the bud hardiness values observed. The current long-term forecast for the rest of February predicts that temperatures will be slightly above the seasonal average leaving a healthy margin between observed and predicted damaging temperatures.

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

Coré cultivars and sites	Nov. 22 - 23			Dec. 19 - 20			Jan. 22 - 23			Feb. 12 - 13					
	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90			
Chardonnay (5 sites)	-17.4	-20.3	-22.0	-20.5	-22.0	-23.2	-22.0	-23.3	-24.9	-21.0	-22.5	-24.2			
L'Acadie (5 sites)	-19.0	-21.1	-22.6	-21.2	-23.4	-24.7	-23.4	-26.4	-28.5	-22.3	-25.2	-27.4			
Marquette (5 sites)	-19.4	-22.9	-24.6	-22.1	-25.1	-27.4	-26.4	-29.2	-30.6	-24.4	-27.4	-29.1			
New York Muscat (4 sites)	-19.2	-21.8	-23.3	-17.8	-23.0	-24.5	-22.8	-26.0	-28.4	-22.9	-24.9	-26.5			
Riesling (5 sites)	-16.5	-20.3	-22.1	-19.3	-21.9	-23.4	-21.9	-23.7	-25.6	-21.7	-22.9	-24.4			



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 five canes obtained from five 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). This report is produced by the KRDC Plant Physiology Program. 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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