

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

2022/2023 Report no. 8: March 9

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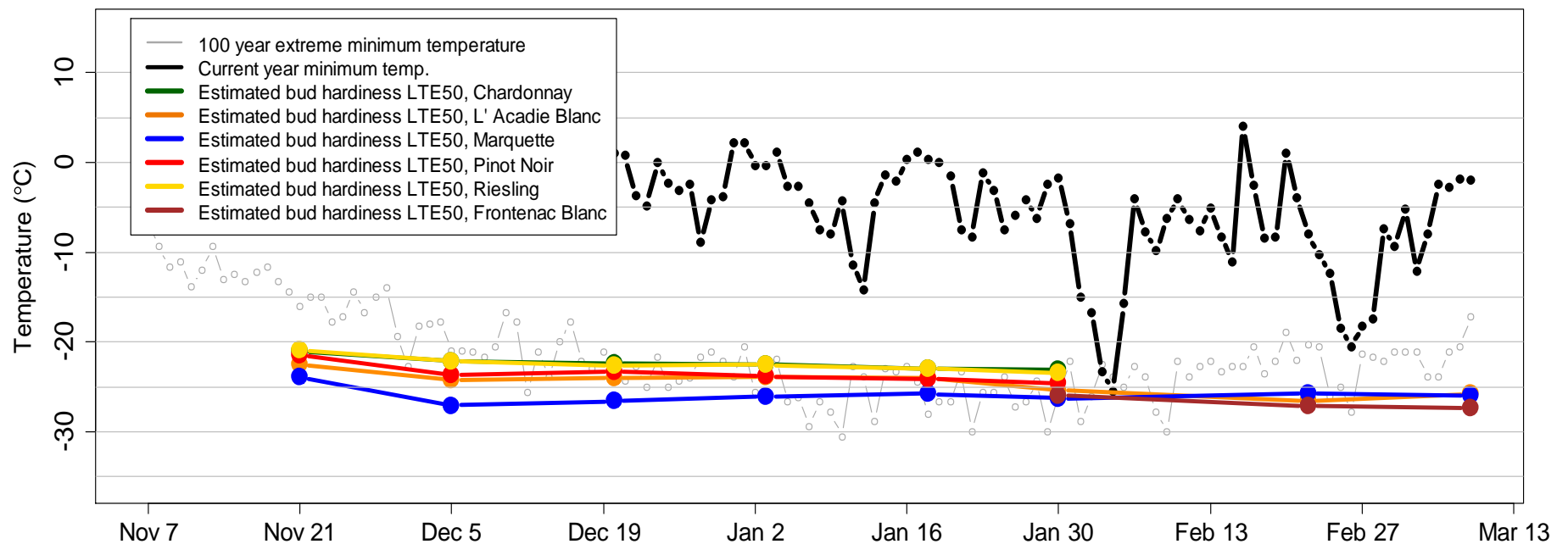


Figure 1. Plot showing the LTE50 values (coloured lines) for six wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100 year minimum temperatures (grey line) were recorded at the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



Current biweekly report

The three remaining varieties in the survey did not show signs of appreciable acclimation since the last sample date. LTE50 values for Frontenac Blanc and Marquette are very close to the values from February 22, while L'Acadie Blanc may have deacclimated slightly (+0.8 °C) since that date. Temperatures at the Kentville Research and Development Centre for the month of February have been colder than average with a mean daily temperature of -5.1 °C compared to the 25-year average -4.2 °C. We anticipated that this return to traditional winter temperatures would have caused LTE values to decrease, but this was not the case. In past years of the survey, all varieties had reached their deep winter LTE values by early March, so we do not expect any further decreases in LTE values for the rest of the season. The long-term forecast predicts that temperatures will be average or slightly above for the next two weeks.

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

Core cultivars and sites	Jan. 3 - 4			Jan. 18 - 19			Jan. 30 - 31			Feb. 22			Mar. 9		
	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90
Chardonnay (7 sites)	-20.2	-22.5	-24.0	-21.6	-23.0	-24.5	-21.3	-23.1	-24.4	NA	NA	NA	NA	NA	NA
L'Acadie Blanc (8 sites)*	-21.2	-23.9	-26.2	-21.5	-24.0	-26.2	-23.2	-25.4	-27.3	-24.0	-26.6	-27.9	-24.3	-25.8	-27.7
Marquette (3 sites)	-24.5	-26.1	-27.6	-24.0	-25.8	-27.8	-24.3	-26.3	-28.3	-24.4	-25.8	-27.3	-23.4	-26.0	-27.9
Pinot Noir (4 sites)	-22.2	-23.8	-25.3	-21.9	-24.1	-25.5	-21.7	-24.7	-25.8	NA	NA	NA	NA	NA	NA
Riesling (6 sites)	-20.0	-22.6	-23.7	-21.2	-23.0	-24.8	-21.8	-23.4	-25.2	NA	NA	NA	NA	NA	NA
Frontenac Blanc (2 sites)	NA	NA	NA	NA	NA	NA	-24.6	-26.0	-27.6	-25.7	-27.1	-28.6	-24.8	-27.4	-29.4

*The L'Acadie site number was reduced from 8 to 3 starting Feb. 22.



Research report description

The Nova Scotia wine grape bud hardiness survey generates a biweekly report of 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, Annapolis, Digby and Lunenburg counties 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. Funding for this work is through an AgriScience Program Cluster project (J-001930, "ASC-12 Grape Wine Cluster Activity 7 - Grapevine evaluation and cold hardiness program to ensure superior plant material for the Canadian Grapevine Certification Network and to improve the sustainability of the Canadian Grape and Wine Industry"). 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. This report, and others, can be found on the Canadian Grape Certification Network (CGCN) webpage <https://www.cgcn-rcv.ca/site/cold-hardiness-and-climate-change>.

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