

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

2021/2022 Report no. 11: March 28 – 30

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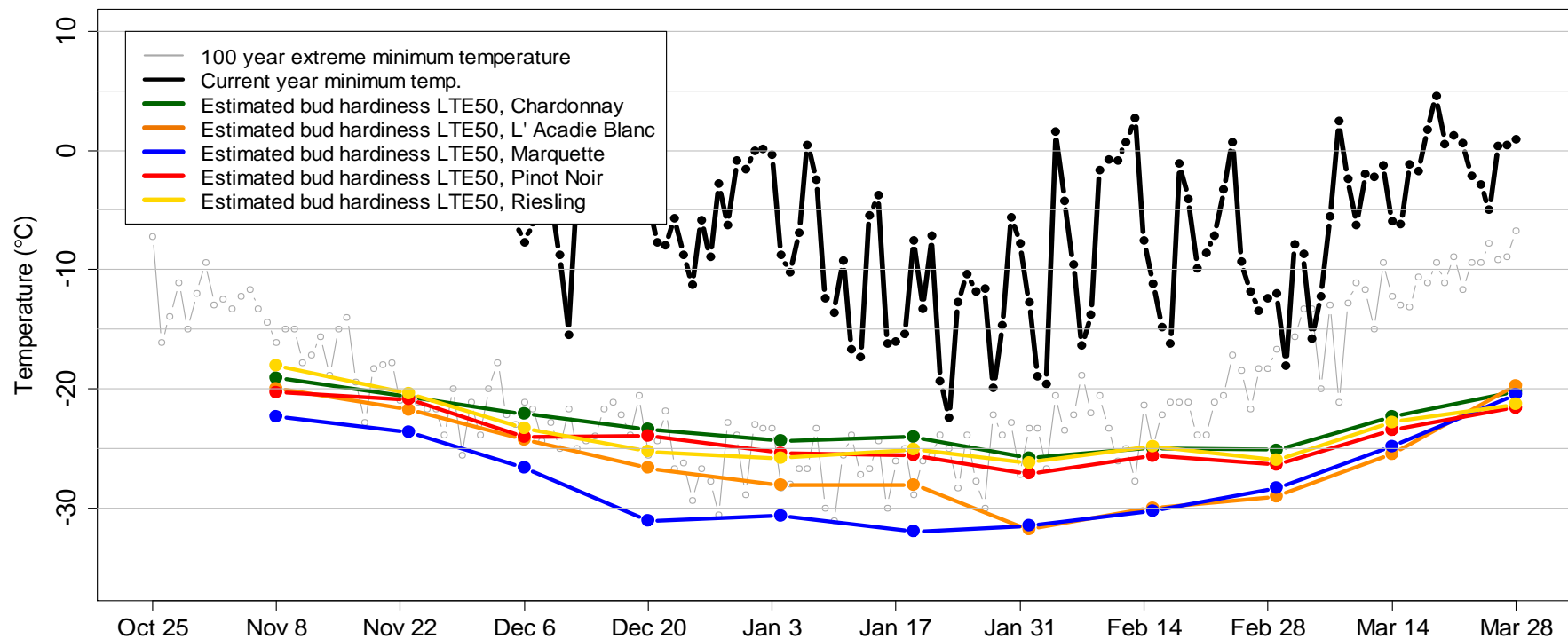


Figure 1. Plot showing the LTE50 values (coloured lines) for five wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100 year minimum temperatures (grey line) were recorded at the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



All varieties in our survey continue to deacclimate with a 5 to 10 °C change since the beginning of March. The current LTE50 value for L'Acadie Blanc is the highest (less hardy) that we have seen for this time of year over the last 4 years. The other varieties in the survey are close to the values observed in the spring of 2021. The weather we have experienced this year is similar to 2021 with most of March free of snow cover with brief periods of above average temperatures. The average temperature for March 2022 was 1.20 °C compared to 1.15 °C for March 2021; the 10-year March average is -0.56 °C. At the Kentville Research Station, soil temperatures at 35 cm are currently 3.5 °C compared to 4.5 °C for the same date in 2021; both are above the 5-year average of 1.5 °C. Although these measurements point to the possibility of an early bud break, temperatures in the month of April have a significant impact on bud development.

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

Core cultivars and sites	Feb. 1 – 2			Feb. 15 - 16			Feb. 28 – Mar 1			Mar. 14 - 15			Mar. 28 - 30		
	LTE90	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90
Chardonnay (6 sites)	-21.6	-25.8	-29.3	-22.0	-25.0	-27.7	-22.2	-25.1	-27.2	-20.8	-22.3	-23.8	-18.5	-20.3	-21.4
L'Acadie Blanc (7 sites)	-28.1	-31.8	-34.1	-27.1	-30.0	-32.6	-23.0	-29.1	-31.5	-21.8	-25.5	-28.5	-17.7	-19.7	-22.1
Marquette (3 sites)	-29.5	-31.5	-33.7	-27.3	-30.3	-33.2	-24.4	-28.4	-30.1	-22.5	-24.8	-28.0	-18.6	-20.5	-22.6
Pinot Noir (3 sites)	-22.7	-27.2	-30.2	-23.4	-25.7	-27.9	-21.6	-26.4	-28.3	-21.5	-23.5	-24.7	-19.2	-21.6	-23.2
Riesling (5 sites)	-23.1	-26.2	-28.6	-22.2	-24.9	-27.5	-22.7	-26.0	-29.0	-21.4	-22.8	-24.5	-20.0	-21.3	-22.4



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 late October to late 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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