

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

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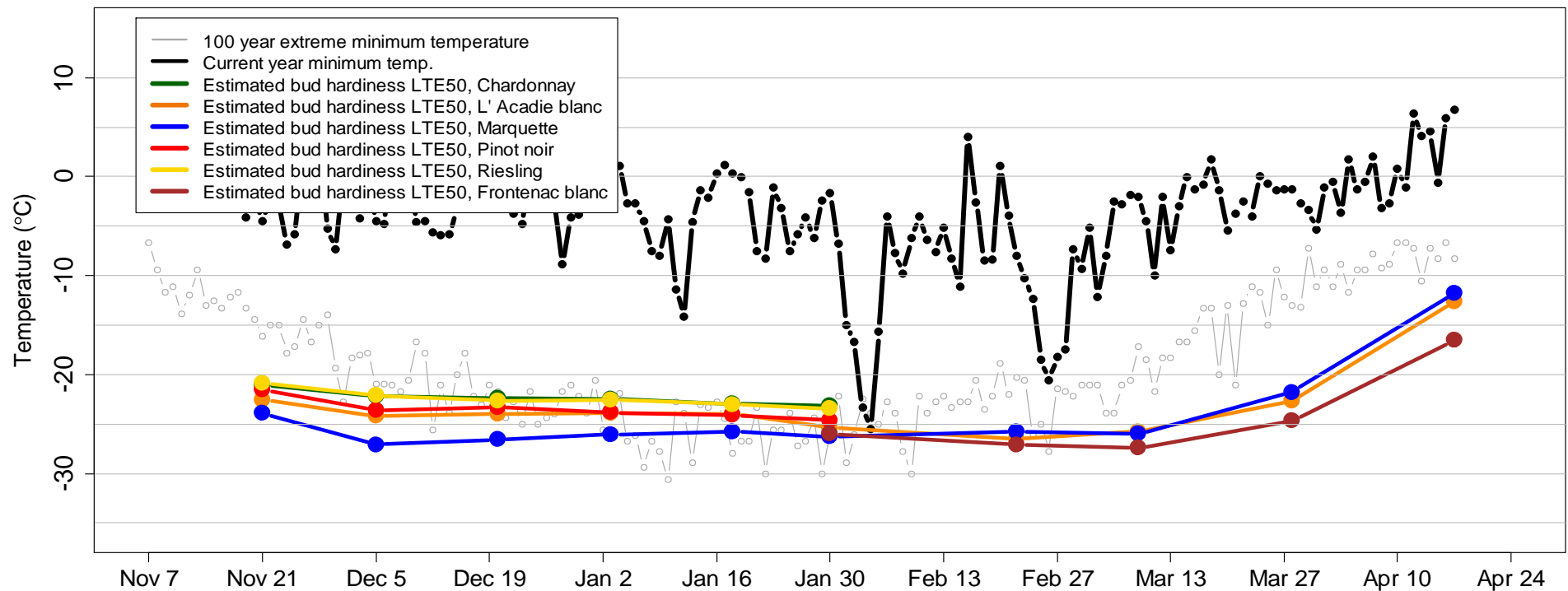


Figure 1. Plot showing the LTE50 values (coloured lines) for six wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100 year minimum temperatures (grey line) were recorded at the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



Current biweekly report

All varieties have deacclimated considerably since the last survey 3 weeks ago. Both L’Acadie and Marquette have deacclimated by 10 °C while Frontenac blanc has deacclimated by 8.2 °C. The LTE50 values for L’Acadie and Marquette in 2023 are higher than they have been in previous years of the survey at this time of the year. In previous years of the survey, LTE50 values were in the -15 °C to -20 °C range in the middle of April for both of these varieties. Possible reasons for this include the lower hardiness levels seen throughout the winter and the relatively warmer temperatures experienced to date in April. So far, the mean temperature for April is 6.0 °C compared to the 25-year average of 4.5 °C for the same time period.

This survey marks the end of our 2022/23 bud hardiness survey season and the end of the five-year project that provided funding for this survey. I would like to extend my deep gratitude to the Grape Growers Association of Nova Scotia, and the cooperating growers, for giving us access to their vineyards to help us carry out this study.

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. 30 - 31			Feb. 22			Mar. 9			Mar. 28			Apr. 17		
	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90
Chardonnay (7 sites)	-21.3	-23.1	-24.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
L’Acadie Blanc (8 sites)	-23.2	-25.4	-27.3	-24.0	-26.6	-27.9	-24.3	-25.8	-27.7	-20.0	-22.7	-24.4	-10.7	-12.7	-14.7
Marquette (3 sites)	-24.3	-26.3	-28.3	-24.4	-25.8	-27.3	-23.4	-26.0	-27.9	-19.7	-21.8	-23.5	-10.4	-11.8	-13.1
Pinot Noir (4 sites)	-21.7	-24.7	-25.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Riesling (6 sites)	-21.8	-23.4	-25.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Frontenac Blanc (2 sites)	-24.6	-26.0	-27.6	-25.7	-27.1	-28.6	-24.8	-27.4	-29.4	-22.6	-24.7	-26.1	-14.5	-16.5	-19.8

*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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