

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

2022/2023 Report no. 5: January 18 - 19

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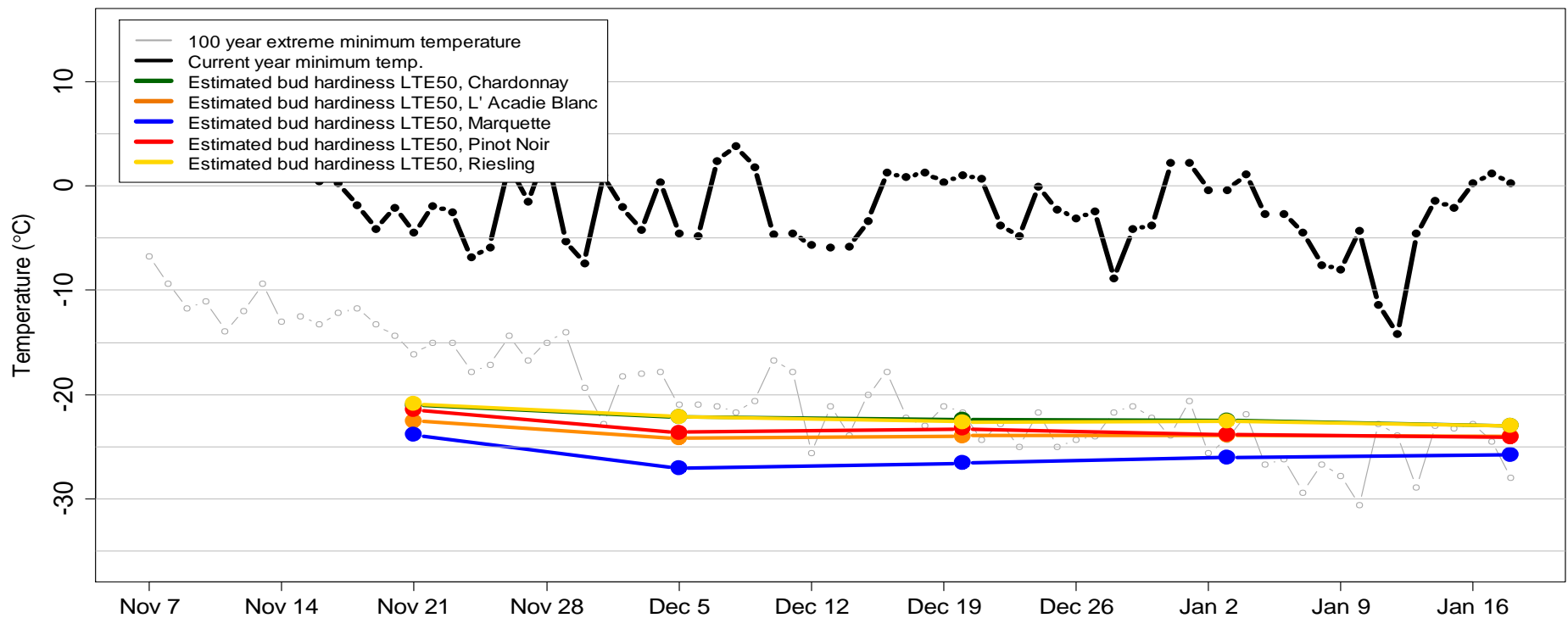


Figure 1. Plot showing the LTE50 values (coloured lines) for five wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100 year minimum temperatures (grey line) were recorded at the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



Current biweekly report

Bud hardiness levels continue to either hold or slightly deacclimate for the third consecutive survey date. Marquette has been consistently deacclimating since December 5 with a difference of 1.3 °C since that date. Currently, LTE50 values for Marquette and L'Acadie Blanc are 3.7 °C and 3.8 °C above their 5-year mean LTE50 values for this time of year. We are attributing this difference to the temperatures being consistently warmer than average. For the first 15 days on January 2023, temperatures at the Kentville Research Centre have been 3.4 °C warmer than the 25-year average. In spite of this, there remains a 10 to 15 °C margin of safety between the current levels of acclimation and the forecasted temperatures 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	Nov. 21 - 22			Dec. 5 - 6			Dec. 20 - 22			Jan. 3 - 4			Jan. 18 - 19		
	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90
Chardonnay (7 sites)	-18.0	-21.0	-22.7	-19.9	-22.2	-23.9	-19.2	-22.4	-24.3	-20.2	-22.5	-24.0	-21.6	-23.0	-24.5
L'Acadie Blanc (8 sites)	-20.7	-22.6	-24.1	-22.3	-24.2	-26.5	-21.5	-24.0	-26.0	-21.2	-23.9	-26.2	-21.5	-24.0	-26.2
Marquette (3 sites)	-21.8	-23.9	-25.6	-23.7	-27.1	-28.5	-24.3	-26.6	-28.1	-24.5	-26.1	-27.6	-24.0	-25.8	-27.8
Pinot Noir (4 sites)	-19.6	-21.5	-23.3	-22.1	-23.6	-24.5	-21.4	-23.3	-24.9	-22.2	-23.8	-25.3	-21.9	-24.1	-25.5
Riesling (6 sites)	-19.2	-20.9	-22.4	-20.3	-22.1	-23.7	-21.3	-22.6	-24.0	-20.0	-22.6	-23.7	-21.2	-23.0	-24.8



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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