

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

2022/2023 Report no. 4: January 3 - 4

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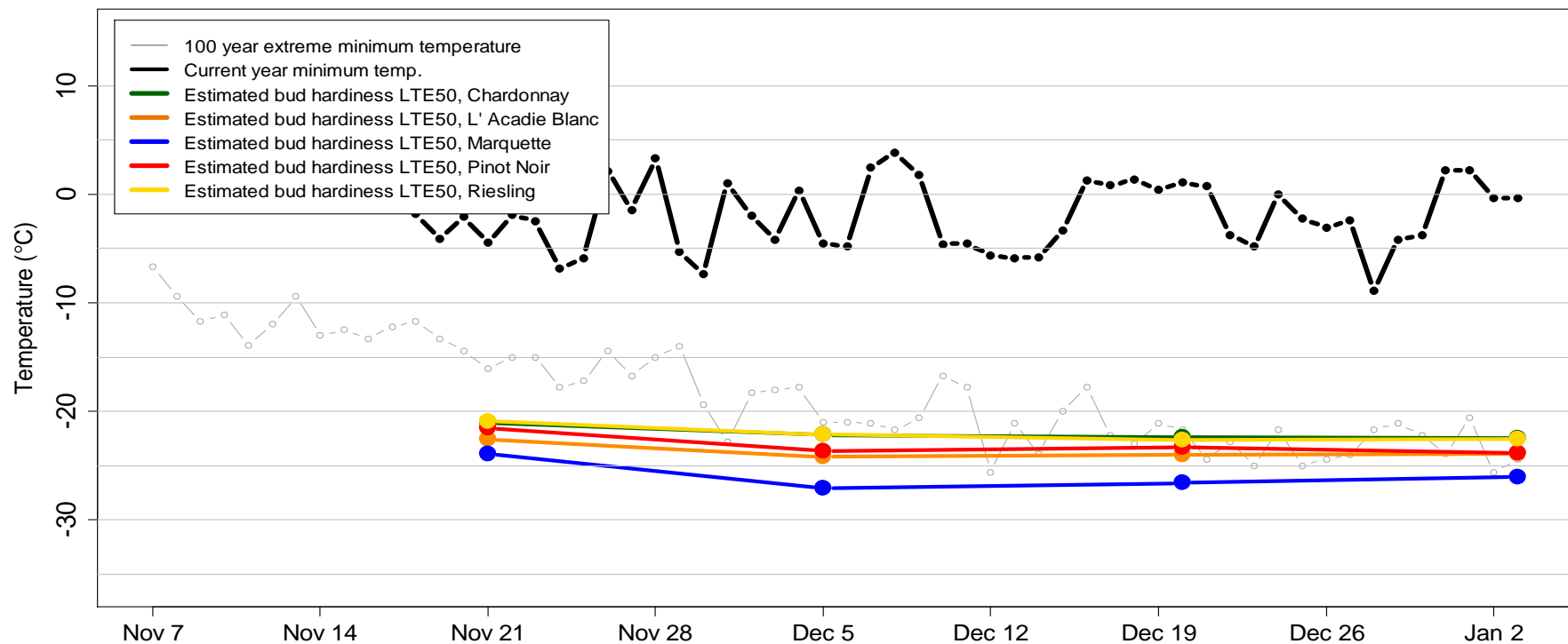


Figure 1. Plot showing the LTE50 values (coloured lines) for five wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100 year minimum temperatures (grey line) were recorded at the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



Current biweekly report

Bud acclimation continues to hold at the levels seen in the survey from early December. Current LTE50 values for all varieties in our survey are above the average values measured over the previous five years of the survey. The differences between the current LTE50 values for these varieties and the 5-year average for this time of year are: Chardonnay – 1.7 °C, L’Acadie Blanc – 3.0 °C, Marquette – 3.1 °C, Pinot Noir – 0.6 °C, and Riesling – 1.2 °C. The lower degree of acclimation over the course of the 2022 / 2023 dormant season thus far is likely due to the above average temperatures we have experienced this fall and early winter. The mean temperature over the months of October, November and December of 2022 was 6.4 °C compared to the 25-year average of 4.4 °C. This is the warmest start to the dormant season since the current wine grape cluster project began five years ago. The long term forecast calls for this trend to continue for at least another two weeks. We are hopeful that cooler temperatures will develop after that and so continue the acclimation process for grapes and other sensitive perennial crops.

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					
	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			
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			
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			
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			
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			



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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