

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

2020/2021 Report no. 3: January 4 – 5

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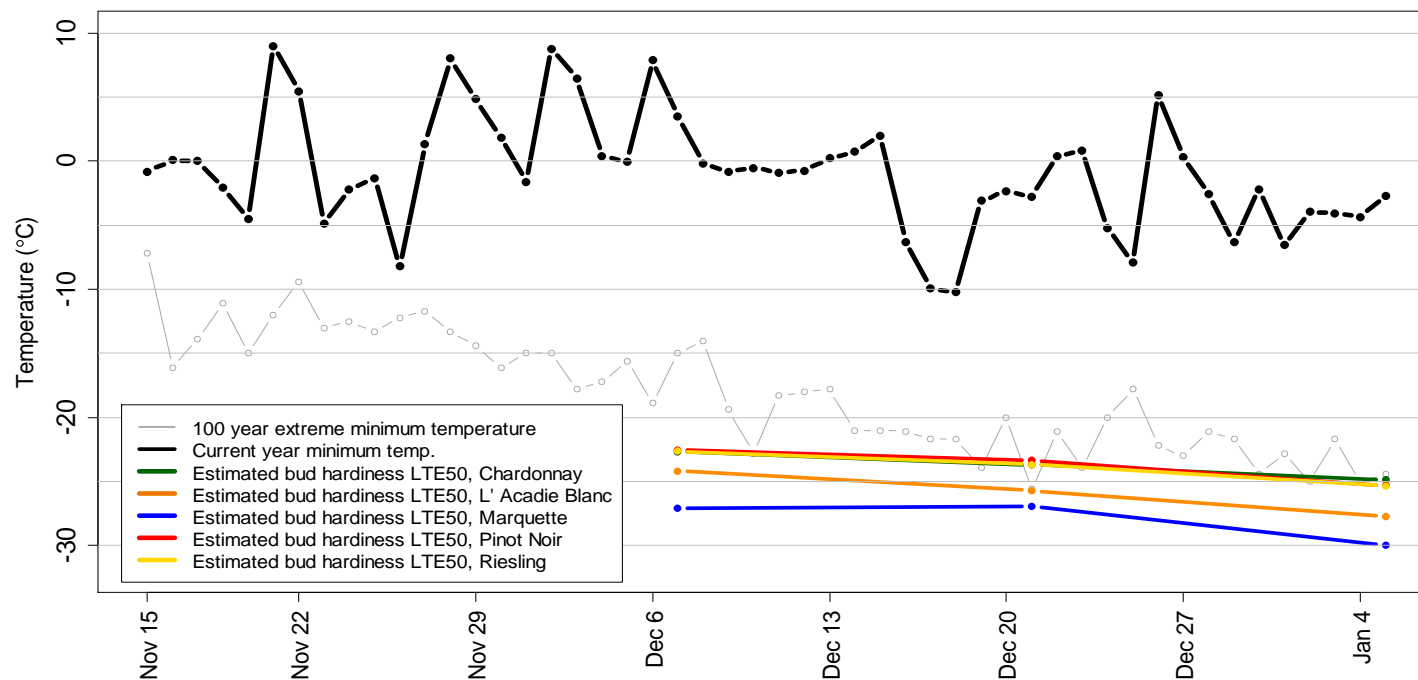


Figure 1. Plot showing the LTE50 values (colored lines) for five wine grape varieties taken from various Nova Scotia vineyards, as well as recent and historical minimum temperature trends. Current observed temperatures (black line) as well as the 100 year minimum temperatures (grey line) were recorded at the Kentville Research Station. The LTE50 values for 'Riesling', 'Chardonnay' and 'Pinot Noir' have been very similar in value and overlap on the plot.



Current biweekly report

Buds for the five varieties in our survey continue to deepen their acclimation values. Bud hardiness values for the current year are between 0.2 °C and 2.8 °C lower than they have been on this date for the previous two survey seasons. Currently, ‘Riesling’ has a lower acclimation value (-25.3 °C) than it did at any point in the last two winters. There is a possibility that the level of hardiness found in this long-season variety this year is due to the favourable growing season experienced in Atlantic Canada in 2020. We will be watching the hardiness values for all vinifera varieties closely as observed differences between 2019/20 and 2020/21 may give us insights on the environmental stresses put on them as a result of the much cooler growing season experienced in 2019. The average mean daily temperatures continue to be above the ten year average and the Environment Canada seasonal forecast calls for this to continue through the winter.

Table 1. LTE10, LTE50 and LTE90 average values (°C) for core (measured biweekly) and additional (measured three times per season) wine grape cultivars and sites for the current and up to four previous reporting periods

Core cultivars and sites	December 7 - 8			December 21 - 22			January 4 - 5								
	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90
‘Chardonnay’ (5 sites)	-20.4	-22.7	-24.6	-20.0	-23.7	-25.4	-21.0	-24.9	-26.9						
‘L’Acadie Blanc’ (6 sites)	-21.9	-24.2	-26.8	-23.0	-25.7	-27.7	-24.0	-27.7	-29.5						
‘Marquette’ (3 sites)	-23.4	-27.1	-29.0	-24.1	-26.9	-29.5	-26.6	-29.9	-31.4						
‘Pinot Noir’ (3 sites)	-20.2	-22.6	-24.3	-21.0	-23.4	-25.8	-22.3	-25.3	-27.0						
‘Riesling’ (5 sites)	-19.2	-22.6	-24.7	-19.4	-23.7	-25.9	-19.5	-25.3	-27.1						



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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