

Kentville Research & Development Centre (KRDC) – Nova Scotia wine grape bud hardiness 2019/2020 Report no. 8: February 17 - 18

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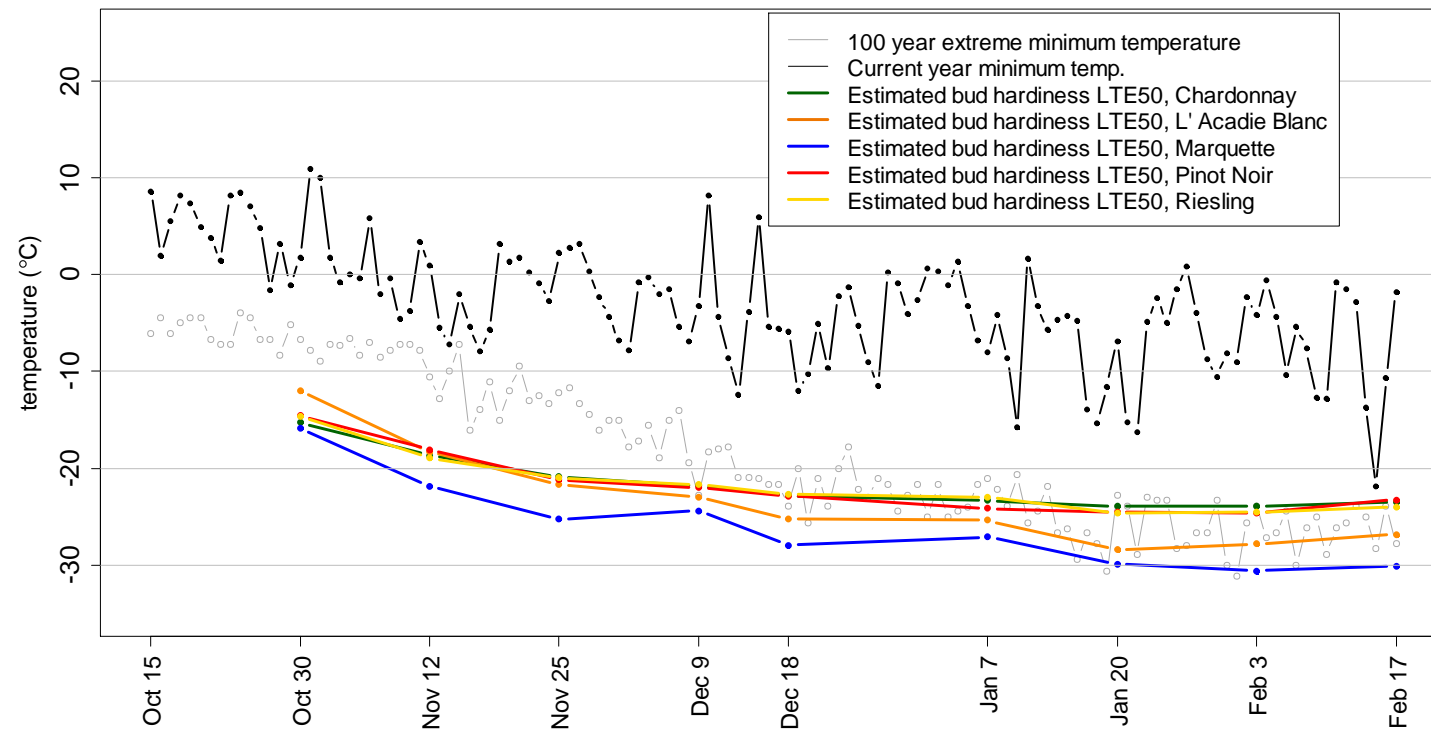


Figure 1. Plot showing the LTE50 values for the core wine grape varieties as well as recent and historical minimum temperature trends.



Current biweekly report

On February 15th, temperatures dropped below -20 °C in many areas of the Annapolis Valley. At the southwest end of the Valley, the minimum temperature was -13.9 °C while the Kentville and Wolfville area saw temperatures in the -20 to -22 °C range. There were also some locations where temperatures were below -23 °C, but we do not have enough data to estimate the extent of these extreme temperatures. Figure 1 shows that the LTE50 bud-hardiness estimates were very close to the observed low temperature and Table 1 shows that the LTE10 values for vinifera varieties were above the observed low temperature. Because of this we estimate lethal bud damage, in vinifera varieties, of between 10% and 50% in locations where temperatures were below -20 °C. In addition to bud-hardiness we are also monitoring dormant bud viability in many of our sites and will report our results as soon as the data is processed. Both the figure and table show a very slight de-acclimation in all varieties compared to the previous survey date. We will be watching closely to see if this trend continues in the coming weeks.

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 18 - 19			January 6 - 7			January 19 - 20			February 3 - 5			February 17 - 18		
	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90
'Chardonnay' (5 sites)	-19.4	-22.8	-24.9	-20.3	-23.3	-25.8	-19.6	-23.9	-26.7	-19.9	-23.9	-26.4	-15.9	-23.5	-26.0
'L'Acadie Blanc' (6 sites)	-23.3	-25.3	-28.4	-22.6	-25.4	-29.1	-23.7	-28.4	-31.8	-23.2	-27.8	-30.5	-23.1	-26.8	-29.5
'Marquette' (3 sites)	-25.5	-27.9	-30.8	-25.6	-27.1	-29.5	-25.9	-29.9	-32.4	-28.9	-30.6	-32.5	-27.3	-30.1	-31.7
'Pinot Noir' (3 sites)	-17.3	-22.9	-25.2	-21.1	-24.1	-25.7	-19.4	-24.5	-27.5	-18.6	-24.6	-26.9	-16.3	-23.3	-25.9
'Riesling' (5 sites)	-18.2	-22.7	-24.7	-18.7	-23.0	-26.2	-18.9	-24.6	-28.8	-19.7	-24.5	-26.9	-18.7	-24.0	-26.7
Additional cultivars and sites															
'Baco Noir' (2 sites)										-20.9	-26.1	-29.1			
'Chenin Blanc' (1 site)										-18.9	-21.7	-23.9			
'Geisenheim' (2 sites)										-22.1	-25.0	-27.1			
'Lucie Kuhlman' (2 sites)										-24.8	-26.4	-28.3			
'Leon Millot' (2 sites)										-24.3	-28.2	-30.8			
'New York Muscat' (2 sites)										-22.1	-26.5	-28.2			
'Ortega' (2 sites)										-20.8	-24.9	-26.5			
'Pinot Gris' (2 sites)										-20.6	-24.2	-26.4			
'Sauvignon Blanc' (3 sites)										-16.3	-23.5	-25.6			
'Seyval Blanc' (2 sites)										-22.6	-25.1	-27.6			
'Vidal Blanc' (2 sites)										-24.6	-26.0	-28.1			



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 basket 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 1 plus the LTE values for additional cultivars monitored with less frequency throughout the dormant period (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-rccv.ca/site/home>.

Her Majesty the Queen in Right of Canada, represented by the Minister of Agriculture and Agri-Food (2019).