

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

2020/2021 Report no. 5: February 1 – 3

Prepared by Jeff Franklin (jeff.franklin@canada.ca) and Dr. Harrison Wright (harrison.wright@canada.ca), Plant Physiology Program, KRDC, Agriculture and Agri-Food Canada (AAFC) / Government of Canada; 32 Main St, Kentville, Nova Scotia, B4N 1J5.

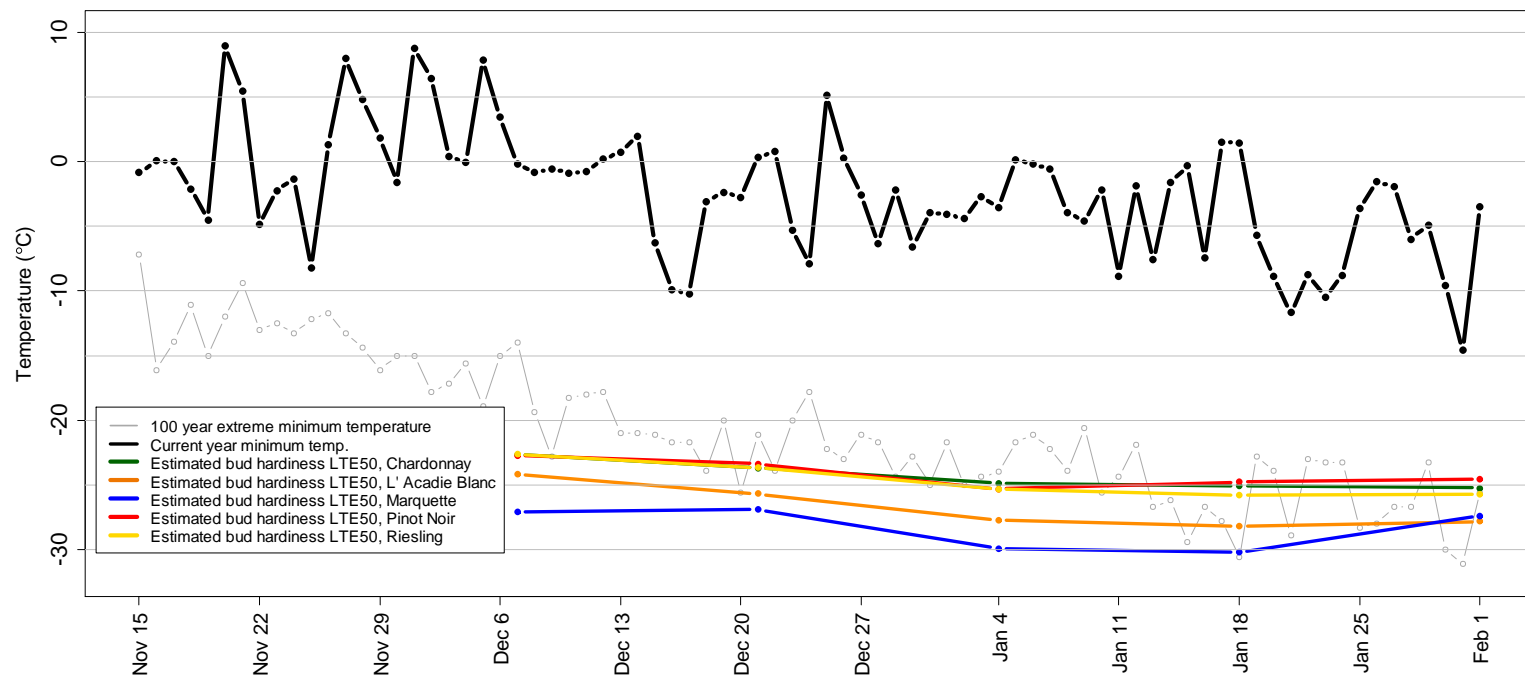


Figure 1. Plot showing the LTE50 values (coloured lines) for five wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100 year minimum temperatures (grey line) were recorded at the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



Current biweekly report

The most recent sample dates on February 1st and 3rd spanned an abrupt increase in observed temperatures, which affected our bud hardiness estimates. The daily maximum temperature observed on February 1 was -1.5 °C while the maximum temperature observed on February 3rd was 12.8 °C. Our data shows that Marquette deacclimated by approximately 3 °C when compared to the previous two survey dates. We expect that the bud hardiness estimates for this variety will return to the levels seen in the previous surveys; the long-term forecast for the next two weeks predicts a return to cold with temperatures near or slightly below seasonal norms. In spite of this, there is still a wide margin of safety between the forecast temperatures and our bud hardiness estimates.

Table 1. LTE10, LTE50 and LTE90 average values (°C) for core wine grape cultivars, for current and previous reporting periods

Core cultivars and sites	December 7 - 8			December 21 - 22			January 4 - 5			January 18 - 19			February 1 - 3		
	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	-20.7	-25.1	-27.1	-20.9	-25.3	-27.4
L'Acadie Blanc (6 sites)	-21.9	-24.2	-26.8	-23.0	-25.7	-27.7	-24.0	-27.7	-29.5	-25.4	-28.2	-29.7	-23.5	-27.8	-30.7
Marquette (3 sites)	-23.4	-27.1	-29.0	-24.1	-26.9	-29.5	-26.6	-29.9	-31.4	-27.9	-30.2	-31.8	-24.2	-27.4	-32.8
Pinot Noir (3 sites)	-20.2	-22.6	-24.3	-21.0	-23.4	-25.8	-22.3	-25.3	-27.0	-22.3	-24.8	-26.9	-21.0	-24.6	-27.2
Riesling (5 sites)	-19.2	-22.6	-24.7	-19.4	-23.7	-25.9	-19.5	-25.3	-27.1	-21.3	-25.8	-27.0	-19.4	-25.7	-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 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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