

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

2022/2023 Report no. 6: January 30 - 31

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

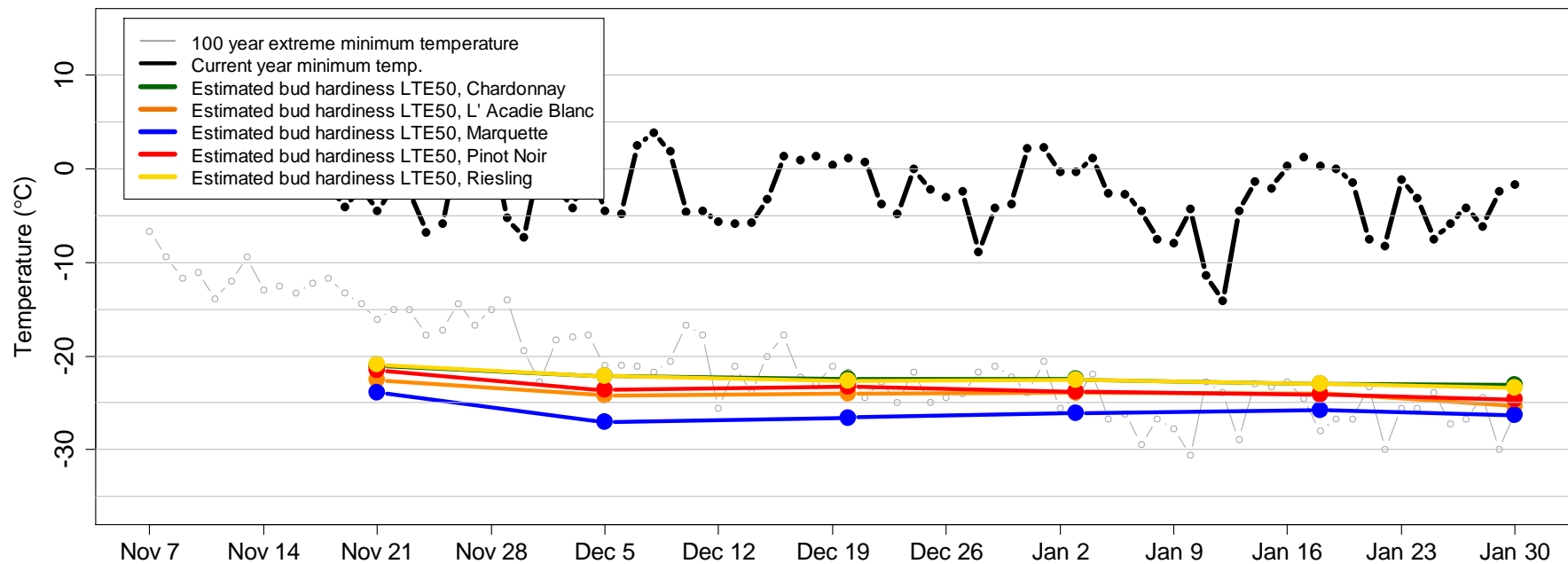


Figure 1. Plot showing the LTE50 values (coloured lines) for five wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100 year minimum temperatures (grey line) were recorded at the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



Current biweekly report

All varieties in the survey have acclimated slightly compared to our last survey two weeks ago. None of the varieties in the survey have reached their deep-winter hardiness levels at this point and it is unclear if they will acclimate much further before March when de-acclimation typically begins in earnest. While hybrid varieties included in the survey remain hardier than *vinifera* varieties, as expected, the margin of difference is less this year than in previous years. We are closely watching a weather event forecasted to affect our growing region Friday and Saturday. This event will bring low temperatures on Friday night well into the -20s. There is currently some disagreement on how cold it will get, but given the current levels of bud hardiness in the growing region, we anticipate that there will be some degree of damage, especially to *vinifera* varieties.

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

Core cultivars and sites	Dec. 5 - 6			Dec. 20 - 22			Jan. 3 - 4			Jan. 18 - 19			Jan. 30 - 31		
	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90
Chardonnay (7 sites)	-19.9	-22.2	-23.9	-19.2	-22.4	-24.3	-20.2	-22.5	-24.0	-21.6	-23.0	-24.5	-21.3	-23.1	-24.4
L'Acadie Blanc (8 sites)	-22.3	-24.2	-26.5	-21.5	-24.0	-26.0	-21.2	-23.9	-26.2	-21.5	-24.0	-26.2	-23.2	-25.4	-27.3
Marquette (3 sites)	-23.7	-27.1	-28.5	-24.3	-26.6	-28.1	-24.5	-26.1	-27.6	-24.0	-25.8	-27.8	-24.3	-26.3	-28.3
Pinot Noir (4 sites)	-22.1	-23.6	-24.5	-21.4	-23.3	-24.9	-22.2	-23.8	-25.3	-21.9	-24.1	-25.5	-21.7	-24.7	-25.8
Riesling (6 sites)	-20.3	-22.1	-23.7	-21.3	-22.6	-24.0	-20.0	-22.6	-23.7	-21.2	-23.0	-24.8	-21.8	-23.4	-25.2



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>.

© Her Majesty the Queen in Right of Canada, represented by the Minister of Agriculture and Agri-Food (2023).