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

2021/2022 Report no. 9: February 28 – March 1

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.

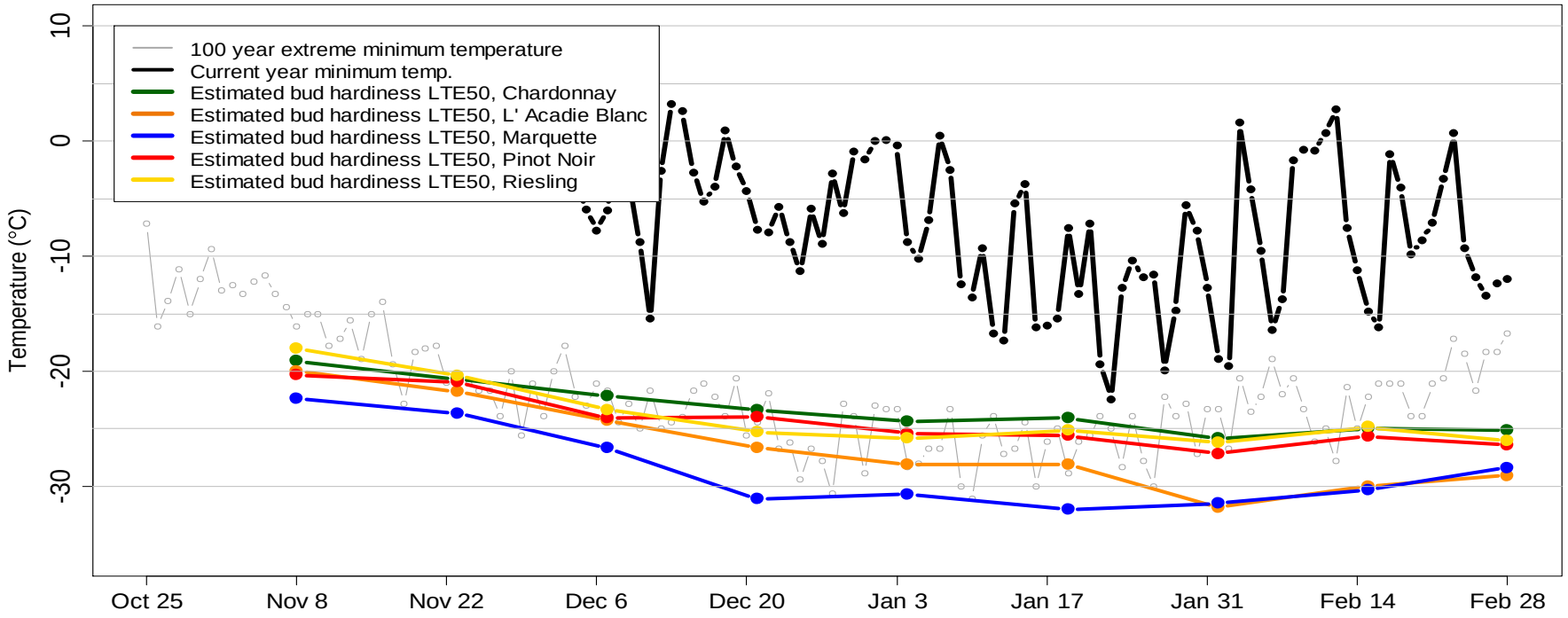

Figure 1. Plot showing the LTE50 values (coloured lines) for five wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100 year minimum temperatures (grey line) were recorded at the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

The cycling temperature that began in early January continues to characterize our weather. The 14-day forecast predicts that this cycling will continue in the coming weeks. Both L'Acadie and Marquette have continued to deacclimate compared to the survey on January 31. Typically, these varieties stay close to their deep winter values until the end of March when LTE50 values may change by 5 to 10 °C between survey dates. The three vinifera varieties in the survey appear to be holding close to their deep winter minimums as expected.

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

	Jan. 4 - 5			Jan. 19 - 20			Feb. 1 – 2			Feb 15 - 16			Feb 28 – Mar 1		
Core cultivars and sites	LTE90	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90
Chardonnay (6 sites)	-20.6	-24.4	-26.9	-19.9	-24.1	-26.1	-21.6	-25.8	-29.3	-22.0	-25.0	-27.7	-22.2	-25.1	-27.2
L'Acadie Blanc (7 sites)	-23.7	-28.1	-30.9	-23.7	-28.1	-30.5	-28.1	-31.8	-34.1	-27.1	-30.0	-32.6	-23.0	-29.1	-31.5
Marquette (3 sites)	-28.0	-30.7	-32.6	-31.1	-32.0	-33.9	-29.5	-31.5	-33.7	-27.3	-30.3	-33.2	-24.4	-28.4	-30.1
Pinot Noir (3 sites)	-21.0	-25.4	-27.3	-21.6	-25.6	-28.1	-22.7	-27.2	-30.2	-23.4	-25.7	-27.9	-21.6	-26.4	-28.3
Riesling (5 sites)	-20.1	-25.8	-27.6	-19.7	-25.1	-27.2	-23.1	-26.2	-28.6	-22.2	-24.9	-27.5	-22.7	-26.0	-29.0

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-rccv.ca/site/cold-hardiness-and-climate-change.