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

2023/2024 Report no. 2: December 19 and 20

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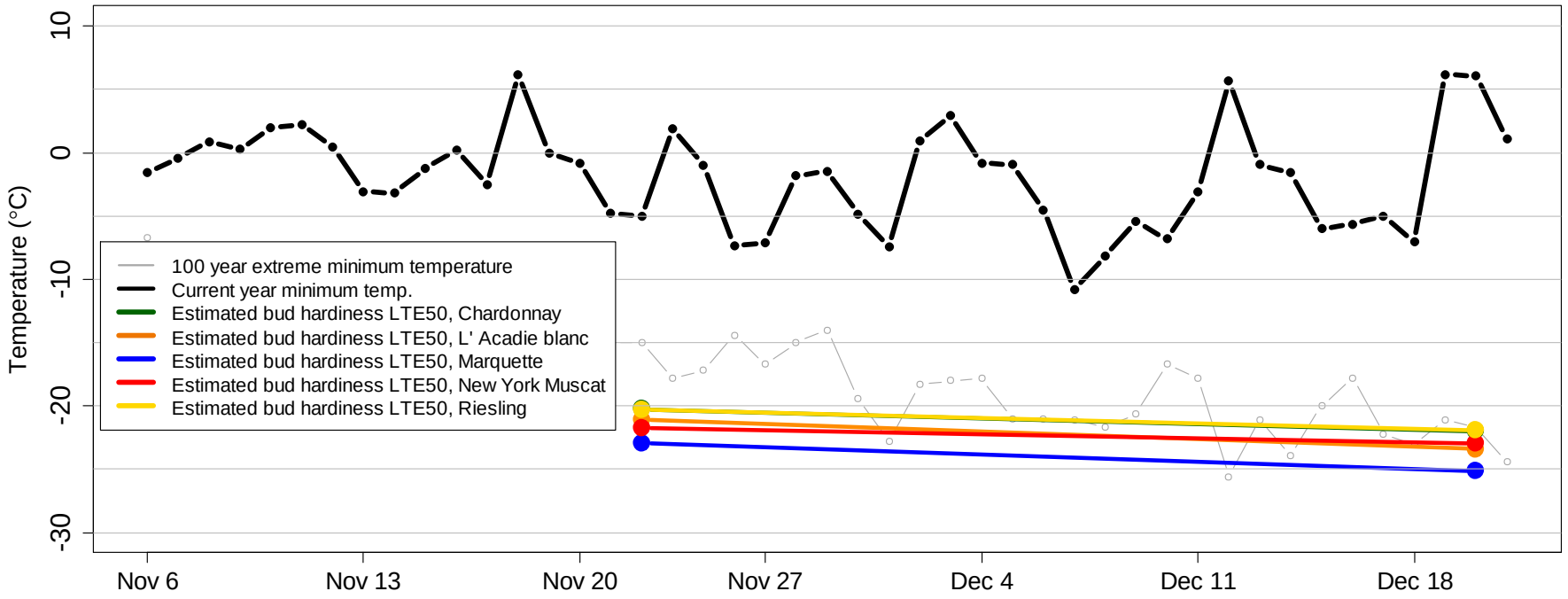

Figure 1. Plot showing the LTE50 values (coloured lines) for five wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100-year minimum temperatures (grey line) were recorded at the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

Current biweekly report

Bud hardiness estimates continue to be higher (less hardy) than expected for this time of year based on historical data. Looking back as far as 2017, mean LTE50 values are: Chardonnay -23.3 °C, L'Acadie -25.9 °C, Marquette -28.3 °C, and Riesling -23.4 °C. The pattern is similar to 2022 with L'Acadie and Marquette showing the greatest discrepancy from their historical averages at +2.5 °C and +3.2 °C, respectively. Chardonnay and Riesling show a difference of +1.3 °C and +1.5 °C, respectively, from their averages. The mean monthly temperature so far in December is 1.6 °C compared to the 25-year average of -0.9 °C. Most of this temperature discrepancy has resulted from temperature extremes during the last few storm events. The long-term forecast calls for temperatures to continue to cycle until at least the end of the month.

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

	Nov. 22 - 23			Dec. 19 - 20											
Coré cultivars and sites	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90									
Chardonnay (5 sites)	-17.4	-20.3	-22.0	-20.5	-22.0	-23.2									
L'Acadie (5 sites)	-19.0	-21.1	-22.6	-21.2	-23.4	-24.7									
Marquette (5 sites)	-19.4	-22.9	-24.6	-22.1	-25.1	-27.4									
New York Muscat (4 sites)	-19.2	-21.8	-23.3	-17.8	-23.0	-24.5									
Riesling (5 sites)	-16.5	-20.3	-22.1	-19.3	-21.9	-23.4									

Research report description

The Nova Scotia wine grape bud hardiness survey generates reports detailing 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 county 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. 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.

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