

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

2021/2022 Report no. 6: January 19 - 20

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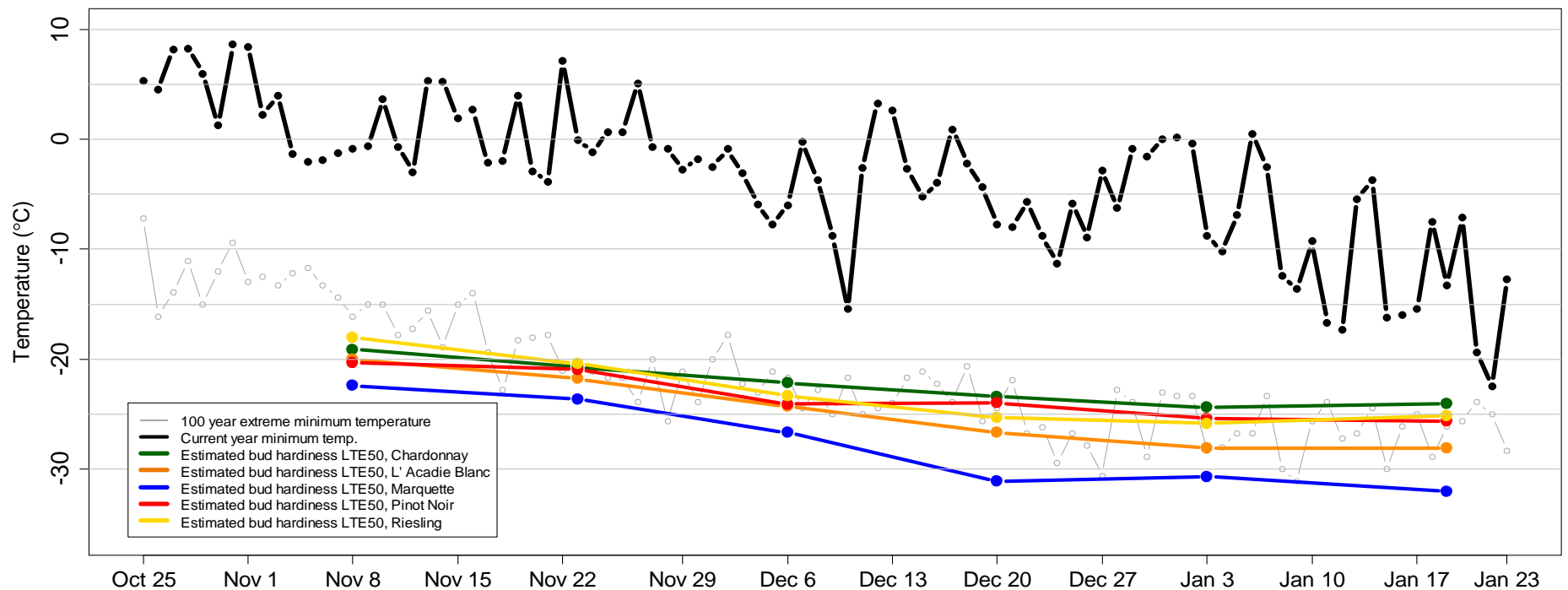


Figure 1. Plot showing the LTE50 values (coloured lines) for five wine grape varieties taken from Nova Scotia vineyards, as well as recent and historical temperature trends. Current observed minimum temperatures (black line) as well as the 100 year minimum temperatures (grey line) were recorded at the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



Most of the varieties in our survey are maintaining the acclimation values seen on the previous survey date. The exception to this is Marquette, which is showing a slightly lower LTE50 value compared to the previous two surveys. All of the varieties are at or below the mean LTE50 values seen on this same date in previous years. With the exception of Marquette, the varieties in the survey should continue to acclimate by a degree or so to reach their deep winter values. The current LTE50 value for Marquette (-32.0 °C) has already exceeded the deep winter hardiness values observed in other years. This is good news given that in the early hours of January 22nd, we recorded a low temperature of -22.4 °C at the Kentville Research Centre (Figure 1) and -26.5 °C at CFB Greenwood. The winds were very light through the night and morning of the 22nd and there are reports of temperatures lower than these in low-lying areas. As a reminder, if your vineyard contains some of the more tender varieties and you believe your vineyard may have approached lethal low temperature levels as shown in Table 1, it is best to have a sense of the extent of the damage and to revise your pruning plan accordingly. On our next survey date (February 1), we will be assessing bud viability in addition to bud hardiness at certain sites and should have an estimate of the degree of damage caused by this low temperature event.

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

| Core cultivars and sites | Nov. 22 - 23 | | | Dec. 6 - 7 | | | Dec. 20 - 21 | | | Jan. 4 - 5 | | | Jan. 19 - 20 | | |
|--------------------------|--------------|-------|-------|------------|-------|-------|--------------|-------|-------|------------|-------|-------|--------------|-------|-------|
| | LTE90 | LTE50 | LTE90 | LTE10 | LTE50 | LTE90 | LTE10 | LTE50 | LTE90 | LTE10 | LTE50 | LTE90 | LTE10 | LTE50 | LTE90 |
| Chardonnay (6 sites) | -17.3 | -20.7 | -22.8 | -18.9 | -22.1 | -25.2 | -19.7 | -23.4 | -26.0 | -20.6 | -24.4 | -26.9 | -19.9 | -24.1 | -26.1 |
| L'Acadie Blanc (7 sites) | -18.9 | -21.8 | -24.2 | -21.2 | -24.3 | -27.2 | -23.3 | -26.7 | -29.5 | -23.7 | -28.1 | -30.9 | -23.7 | -28.1 | -30.5 |
| Marquette (3 sites) | -20.1 | -23.6 | -26.0 | -23.3 | -26.7 | -30.4 | -28.0 | -31.1 | -33.0 | -28.0 | -30.7 | -32.6 | -31.1 | -32.0 | -33.9 |
| Pinot Noir (3 sites) | -18.0 | -20.9 | -22.4 | -20.1 | -24.1 | -26.1 | -19.3 | -24.0 | -26.8 | -21.0 | -25.4 | -27.3 | -21.6 | -25.6 | -28.1 |
| Riesling (5 sites) | -17.4 | -20.4 | -22.8 | -19.5 | -23.3 | -25.6 | -20.3 | -25.3 | -27.0 | -20.1 | -25.8 | -27.6 | -19.7 | -25.1 | -27.2 |



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 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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