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

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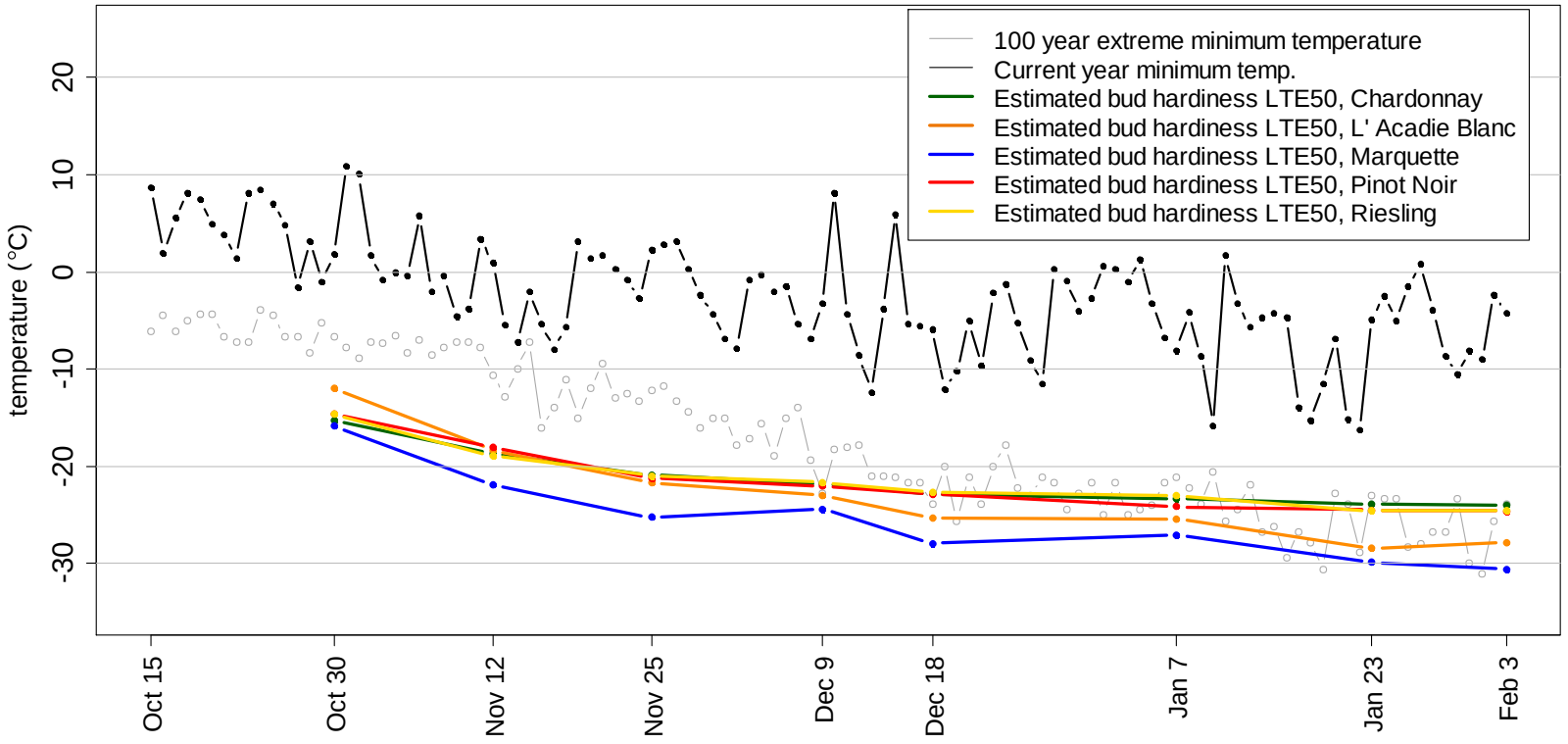

Figure 1. Plot showing the LTE50 values for the core wine grape varieties as well as recent and historical minimum temperature trends.

The LTE50 values of the 5 main varieties in the survey have remained approximately the same since the last survey date. The three vinifera varieties in our survey have not shown any significant changes since the January 6th and 7th survey and have likely reached their deep winter values. Temperatures from the Kentville Research Station show that there have only been 11 days with temperatures below -10°C so far this winter compared to an average of 21 days below -10°C for the same time frame over the last 25 years. The relatively milder winter has resulted in a wide margin of safety for our vines in terms of bud freeze damage. It should be noted that in all four years of the survey we have maintained varying degrees of this margin between bud freezing points and observed temperatures, but have still noticed that some bud damage in the spring. To help us understand and estimate this damage, we began sampling extra buds in January to estimate bud viability. We will continue this survey over the winter, on a monthly basis, and on a subset of the bud hardiness sites. The results from our first survey date in January are quoted as the %viable primary buds / %viable secondary buds for each of the following varieties: Chardonnay 95% / 81%, L'Acadie Blanc 90% / 96%, Riesling 99% / 92%, Marquette 100% / 99% and Pinot Noir 86% /70 %.

Table 1. LTE10, LTE50 and LTE90 average values (°C) for core (measured biweekly) and additional (measured three times per season) wine grape cultivars and sites for the current and up to four previous reporting periods

	December 9 - 10			December 18 - 19			January 6 - 7			January 19 - 20			February 3 -5		
Core cultivars and sites	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90	LTE10	LTE50	LTE90
'Chardonnay' (5 sites)	-18.5	-21.8	-24.4	-19.4	-22.8	-24.9	-20.3	-23.3	-25.8	-19.6	-23.9	-26.7	-19.9	-23.9	-26.4
'L'Acadie Blanc' (6 sites)	-20.1	-23.0	-27.0	-23.3	-25.3	-28.4	-22.6	-25.4	-29.1	-23.7	-28.4	-31.8	-23.2	-27.8	-30.5
'Marquette' (3 sites)	-19.5	-24.4	-29.0	-25.5	-27.9	-30.8	-25.6	-27.1	-29.5	-25.9	-29.9	-32.4	-28.9	-30.6	-32.5
'Pinot Noir' (3 sites)	-17.2	-22.0	-23.7	-17.3	-22.9	-25.2	-21.1	-24.1	-25.7	-19.4	-24.5	-27.5	-18.6	-24.6	-26.9
'Riesling' (5 sites)	-17.1	-21.7	-25.1	-18.2	-22.7	-24.7	-18.7	-23.0	-26.2	-18.9	-24.6	-28.8	-19.7	-24.5	-26.9
Additional cultivars and sites															
'Baco Noir' (2 sites)													-22.4	-26.1	-29.2
'Chenin Blanc' (1 site)													-18.9	-21.7	-23.9
'Geisenheim' (2 sites)													-22.1	-25.0	-27.1
'Lucie Kuhlman' (2 sites)													-24.8	-26.4	-28.3
'Leon Millot' (2 sites)													-24.3	-28.2	-30.8
'New York Muscat' (2 sites)													-22.1	-26.5	-28.2
'Ortega' (2 sites)													-21.4	-25.4	-26.8
'Pinot Gris' (2 sites)													-19.2	-24.0	-26.3
'Sauvignon Blanc' (3 sites)													-16.3	-23.5	-25.6
'Seyval Blanc' (2 sites)													-22.6	-25.1	-27.6
'Vidal Blanc' (2 sites)													-24.6	-26.0	-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 basket 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 1 plus the LTE values for additional cultivars monitored with less frequency throughout the dormant period (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.