



Viticulture Notes..... 27 January 2022

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<https://www.avec.vaes.vt.edu/avec/alson-h-smith.html>

A note about recent (and future) low temperatures:

Temperatures in the Northern Shenandoah Valley dipped below 0°F in some spots on the morning of 22 January, and were in the 0 – 5°F range in many locations for 5 or more hours. Temperatures that low can certainly injure cold-tender varieties and are cause for concern, particularly if you grow Merlot, Tannat, or other known, cold-tender varieties. Fortunately, the cold air incursion on the 22nd was principally restricted to the Northern Shenandoah Valley. Most areas east of the Blue Ridge and south of the James River stayed in the higher single-digits or above, which should not have caused problems for most varieties. Regardless, it would be wise to check buds and cane tissues for evidence of cold injury, and make some compensatory adjustments to dormant pruning if you're seeing injury (see guidelines and instructional video links, below).

Anticipating the low temperatures (and getting our freezer repaired in the nick of time), we ran some cold hardiness tests between the 19th and the 21st of January on some of the varieties grown here at the research center. Research Associate Dana Acimovic ran the cold hardiness tests and summarized the average cold tolerance of varieties as LTE50 data in the table on the following page. For the unfamiliar, LTE50 values are the temperatures required to kill 50% of the buds in a controlled freezing test. I'll spare you the methodology. Just assume that if a variety had an LTE50 of -2°F it means that if the temperature dropped in the field to -2°F, you should anticipate that about 50% of the buds would be killed. The mean LTE50 is just that; an average killing temperature. Lower temperatures will kill more buds and warmer temperatures will result in greater bud survival. The full range of temperature over which buds survive or perish might be as much as 8 to 10 degrees though. Again, if you got close to 0°F or below at your site, you should do bud checks and check canes for vascular injury as well. Don't assume that all is well.

We often use Chardonnay as a benchmark in these tests, and the -7.6°F level of hardiness on 21 January is about where we'd anticipate its cold hardiness to be at our location for this time of year. Note that Chardonnay buds acquired about a degree per day in additional cold hardiness on the very cold days of 19 – 22 January. We had some concerns about some of our "new" varieties under evaluation, including Marselan (LTE50 of 0°F) and Gamaret (+4.5°F), but these sustained very little or no injury – albeit it was a close call.

We are due for more low temperatures this coming weekend, and then some warming. While unpleasant, the low, but non-lethal temperatures do help retain cold hardiness of grapevines, so it's not all bad.

Table. Predicted Mean Low Temperature Exotherm temperatures lethal to 50% (LTE50) of a sample of dormant buds, and primary bud mortality (%) of some varieties grown at the AHS Jr. AREC near Winchester VA. The low temperature reached at the vineyard on 22 January (7:00 am) was around 6°F. Only those varieties with relative warm LTE50 values were evaluated for bud mortality.

Variety	Date LTE determined	LTE50 (°F)	Primary bud mortality (%) evaluated on 27 January 2022.
Cabernet franc	19 January	-2.4	.
Chardonnay	19 January	-5.8	.
Chardonnay	20 January	-6.5	.
Chardonnay	21 January	-7.6	.
Itasca	20 January	-3.3	.
Marselan	20 January	0.0	0.0
Gamaret	20 January	4.5	2.0
Garanoir	20 January	0.8	.
San Marco	20 January	1.2	0.0
SK-77	20 January	-6.5	.
Fleurtai	20 January	-8.7	.
Verdejo	21 January	-4.2	.
Teroldego	21 January	-8.0	.
Soreli	21 January	-8.7	.
Saperavi	21 January	-9.0	.

Temperatures further north of us were colder on the morning of the 22nd and colleagues in New York State already shared some data and some recommendations on response to cold injury with respect to altering pruning strategies. The following is adapted from Hans Walter-Peterson of the Finger Lakes Grape Program (Cornell Cooperative Extension).

Sample vines for bud damage so that any necessary adjustments to the number of buds retained can be made during pruning. Sample canes that might otherwise be retained at pruning (good quality, moderate caliper). Cut at least 50 buds and check for viability (normal, green tissue) of the primary buds. Bud adjustments can be calibrated to the extent of bud kill (or bud necrosis with varieties susceptible to bud necrosis, such as Viognier):

A suggested rule of thumb for making bud retention adjustments follows:

- 0-15% primary bud damage – No adjustment
- 15-35% primary bud damage – Keep an additional 30% of buds
- 35-50% primary bud damage – Double the amount of buds normally retained.
- Over 50% primary bud damage – Minimal pruning

In the case of the last two categories, it will likely be better to spur prune the vines instead of trying to leave more and longer canes in order to accommodate the increased number of buds needed.

Here are a few resources to help with assessing your own buds for winter injury:

Videos

[Evaluating Bud Injury Prior to Pruning, Part 1](#) – Finger Lakes Grape Program

[Evaluation Bud Injury Prior to Pruning, Part 2](#) – Finger Lakes Grape Program

[Sampling and Dissecting Buds to Determine Winter Injury](#) – Lake Erie Regional Grape Program

[Pruning Grapevines That Have Been Winter Injured](#) – Michigan State Extension

Publications

[Assessing and managing cold damage in vineyards](#) – Washington State University



Healthy primary and secondary buds of San Marco, 27 January 2022. Photo courtesy of Dana Acimovic.



Cold-injured primary bud with live secondary and tertiary buds.
