

Grape Hardiness Update – Critical temperature and Growth Stages

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Many growers are concerned about the current levels of hardiness of grapevines in buds and trunks. In **prior reports we talked about the difference between phloem/xylem hardiness and bud hardiness**. As we are approaching bud swell and bud break on some cultivars (Baco Noir in some areas), be aware that there is now virtually **NO DIFFERENCE in hardiness levels of buds and phloem/xylem at this time and going forward**. Trunk damage and splitting at this stage will require a very prolonged period of cold temperatures at or below freezing. If we receive these types of temperatures, bud injury would be very high as well!

Bud injury is more likely with a lethal temperature drop one evening/morning and a single short episode is not likely to result in trunk injury

We are still measuring hardiness levels of dormant buds in the minus 3 to minus 4 C range. From our research and data published in other areas (courtesy T. Wolf of Va Tech) the following are used as critical temperature guidelines:

Growth stage	Critical temperatures	Suggested Temperatures for start-up of wind machines
Dormant bud	Minus 4 C or 25 F (as of April 10, 2012 in Niagara)	Minus 1 to Minus 2 C
Dormant swollen bud	Minus 3 C or 27 F	Minus 1 to 0 C
Bud Burst	Minus 2.2 C or 27/28 F	0 C to Plus 1 C
One leaf unfolded	Minus 1.5 C or 28/29 F	Plus 1 C to Plus 2 C
Two or more leaves unfolded	Minus 1 to 0 C or 30 to 32 F	Plus 1 C to Plus 2 C

For optimal use of wind machines, it is suggested that the start-up temperatures be set at 2 to 3 degrees warmer than the critical temperatures listed so that they can be active as the ground temperature declines and provide protection before we reach critical temperatures.

So what does this mean at this period of time? Knowing that buds and the rest of the vine have roughly equivalent hardiness, there is no need to start a wind machine at a higher temperature with the goal of protecting the trunks or phloem/xylem. Just follow the temperature guidelines for what you would do for bud protection.

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Please note: Cold hardiness ratings are estimates only and the information provided are for general guidance. Cold hardiness ratings are site specific and may vary based on vine health, viticulture practices and site conditions, among other factors. Any decisions for protection strategies should be based on your own information and site conditions.