



Timely Viticulture

- Dormant - Pre-Bloom - Bloom - Post Bloom - Mid Season - Pre-Harvest - Harvest - Post Harvest - Dormant

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"Timely Vit" is designed to give those in the Maryland grape industry a timely reminder on procedures or topics they should be considering in the vineyard.

Assessing Grapevine Bud Damage

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Damage from low winter temperatures is arguably the greatest risk to sustainable profitable winegrape production in the eastern US. The majority of Maryland vineyards have not experienced a significant amount of low temperature damage over the past decade or so, however some vineyards have experienced damage this winter (2013/2014). The following "Timely Vit" will give an overview of how to assess the damage and how to modify your pruning based on the assessment. Please see the previous "Timely Vit" in the series on "**Understanding Grapevine Bud Damage**" for an overview of how vines attempt to prevent damage, the conditions which influence the level of damage, and types of damage.

When temperatures below 0 °F take place, it is prudent for growers to collect canes and assess bud damage prior to pruning. Here are some guidelines for bud damage assessment and pruning adjustment.

How to assess amount of low temperature damage to buds. (*Handle sharp objects with CARE!!*)

1. Collect enough canes so that you have about 100 buds from the block or variety that you are checking.
 - Collect buds for damage assessment for *each* variety separately *and* for *each* block of same variety separately (for example Cabernet Sauvignon on top of hill and Cabernet Sauvignon on the bottom of hill.)
 - The first 2-10 buds from the bottom of the cane (closest to the cordon/head) are critical.
2. Bring the canes indoors and allow them to warm at room temperature for a minimum 24 hours. This allows the damage to develop and makes it easier to differentiate between healthy and injured buds.
3. Use a sharp razor blade to cut cross sections of the bud until you can tell if the large primary bud is healthy (green) or injured (brown) (all green in figure 5)
 - First cut about 1/3 down from the top of the bud (figure 2).
 - Use this to assess *primary* bud damage (large bud in center of figure 3).
 - Second cut about 2/3 down from the top of the bud (figure 4).
 - Use this to assess *secondary* bud damage (secondary left of primary; tertiary right of primary.)



Figure 1. Side view before cut

Figure 2. First cut in yellow

Figure 3. Top view after first cut

Figure 4. Second cut in yellow

Figure 5. Top view after second cut

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4. Count the number of dead or injured buds, and divide by the total number of buds sampled to get the percentage of injury.
- Use a data sheet to record and compute bud mortality by variety and block.

To see a VIDEO of how this is done, please check the following:

FLGP Bud Injury Testing Part 1.

http://www.youtube.com/watch?v=_RHJ5mY3fAs

FLGP Bud Injury Testing Part 2.

<http://www.youtube.com/watch?v=eWtr0jzI2Dk>

If there is damage to buds you can modify your normal pruning practices and leave proportionately more buds to try to compensate for the damage and get back to a “normal” or desired crop level.

How to adjust pruning based on assessment of low temperature damage to buds.

- 0-15% dead *primary* buds – Do not change normal pruning practices.
- 15-35% dead *primary* buds – Increase number of buds retained by 35%.
- 25-50% dead *primary* buds – Increase number of buds retained by 50%.
- >50 dead *primary* buds – Minimally prune. Prune away only those nodes which will intrude into the space of adjacent vines or which will produce fruit so low that it hangs to the ground.
 - If damage is >50% there is a high likelihood of cordon and cane/trunk damage.
 - There will also be a higher likelihood of Crown Gall damage to the graft union area
 - Watch those vines closely in mid spring to assess the extent of cane/trunk damage and Crown Gall.

The following resources were utilized for the information in this “Timely Vit.” For more information on assessing bud injury:

“Anatomy of Grapevine Winter Injury and Recovery”

http://www.hort.cornell.edu/goffinet/Anatomy_of_Winter_Injury_hi_res.pdf

“Assessing Winter Cold Injury to Grape Buds”

<http://www.fruit.cornell.edu/grape/pool/winterinjurybuds.html>

“Assessing Winter Cold Injury of Grape Canes and Trunks”

<http://www.fruit.cornell.edu/grape/pool/winterinjurycanes.html>

“How Grapevine Buds Gain and Lose Cold-Hardiness”

<https://grapesandwine.cals.cornell.edu/newsletters/appellation-cornell/2011-newsletters/issue-5/how-grapevine-buds-gain-and-lose-cold>

“Winter injury to Grapevines and Methods of Protection.” Zabadal, T., et.al. 2007

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