

Assessing and Managing Winter Injury of Grapevines

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1) How to assess winter injury:

- Evaluate bud mortality: best if done immediately before pruning.
- Collect at least 100 buds from each variety.
- Samples should represent buds that you normally retain during pruning.
- Conduct separate sampling of the same variety if it is grown in separate and distinct blocks (e.g. one block is high and one is low in elevation of the same variety).
- Keep cane samples warm at room temperature for 1-2 days.
- Cut the buds with a sharp razor blade.
- Record the number of dead (brown or black appearance) primary buds and the total number of buds observed (in this case 100). Some growers record the status of secondary buds, but it is not required. Calculate the percent (%) of dead primary buds.

2) Pruning adjustment following winter injury:

- Use the following guidelines to adjust the number of buds to retain during pruning (we assume in this example that vines are normally pruned to 30 buds per vine):

% Primary bud injury	Recommendation	Example
0 to 20	Do not adjust pruning; prune normally.	Prune to 30 buds per vine.
20 to 75	Add equivalent number of buds based on following formula: Adjusted bud number (ABN) = normal bud number / (1 - % primary bud injury)	If 50% bud injury, then $ABN = 30 / (1 - 0.5) = 60$. Prune to 60 (i.e. double) buds per vine.
75 to 100	Do not prune. Vascular system (phloem, cambium, and xylem) of canes and/or trunk is likely damaged. Wait until after bud burst (Mid-May to June) to assess extent of trunk injury. Adjust cultural practices as described in section below.	a) At 75% bud injury, trunk vascular system may recover and low to moderate crop is possible. b) At 100% bud injury, no crop, die-back and weak growth are expected; trunks need to be removed and multiple suckers trained.

3) Other cultural practices adjustment following winter injury:

- With moderate damage, normal cultural practices (fertilization, pest control, canopy management) are followed.
- With severe injury (75-100%), dead trunks need removal and multiple suckers trained. Focus on slowing growth and maximizing winter hardiness by reducing or eliminating fertilization and protect suckers from late season mildew.