WASHINGTON STATE UNIVERSITY EXTENSION

World Class. Face to Face.

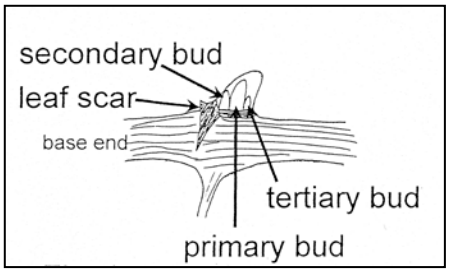
Grapevine Assessments for Cold Damage

Viticulture and Enology Program, WSU-Prosser

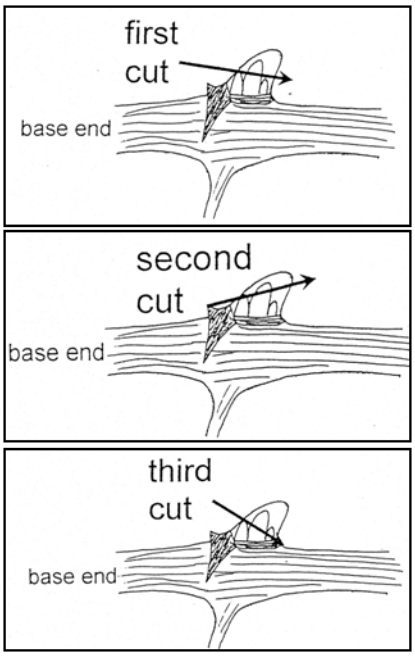
Initial Steps

To properly assess damage, divide the vineyard into blocks or regions based upon characteristics of the landscape. Determinative factors include: changes in elevation, structures inhibiting airflow (windbreaks, roads, and surrounding agriculture), soil variation, grape varieties, and vineyard size. With this in mind, decide how many sections within the vineyard are necessary to provide a good representation of the potentially different temperature zones.

Bud Anatomy and Dissection:



Cutting buds properly ensures accurate diagnosis of damage. The grape bud you see is called a compound bud, because there are three buds inside. When assessing buds, it is very important not to cut too deep. Your first cut should be very shallow and barely skim the tip of the compound bud.



Buds contain three or more growing points. The primary bud is central to, and larger than, the other buds.

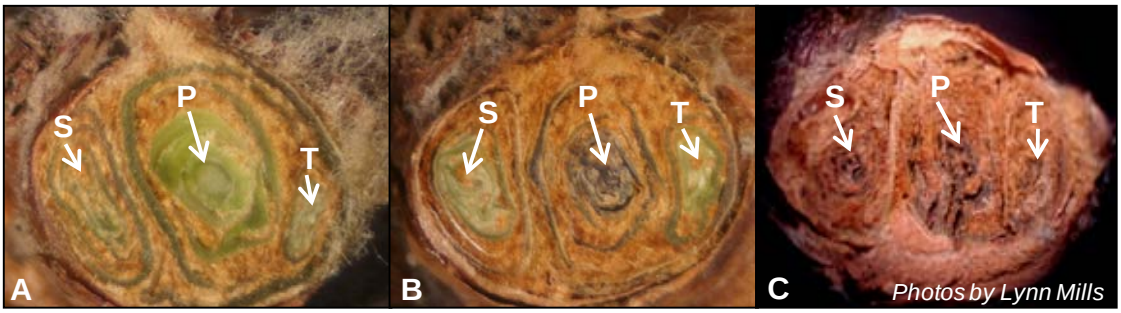


Figure 1- Cross sections of grapevine compound buds showing the location of Primary (P), Secondary (S), and Tertiary (T) buds. A) All three buds are alive; B) P bud is dead, S, T buds are alive; C) All three buds are dead.

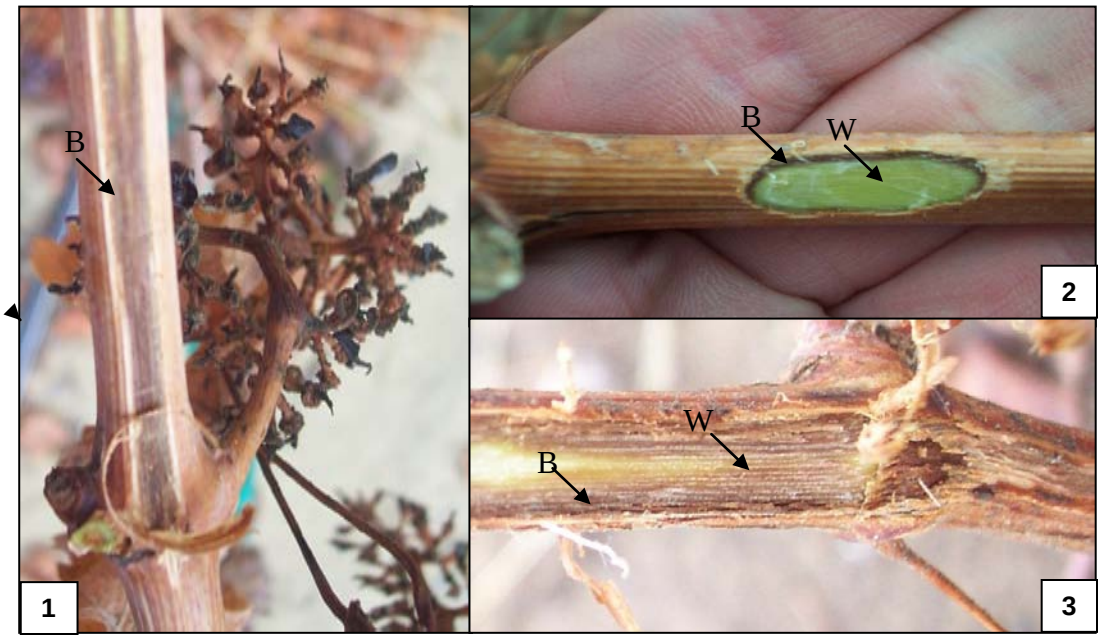
WASHINGTON STATE UNIVERSITY EXTENSION

World Class. Face to Face.

Cane Anatomy and Dissection:

Damage to cane tissue can be random and patchy throughout the cane. The key to properly assessing cane damage is to collect a large number of samples, and check for damage on different areas of each cane.

When assessing canes, you are looking for damage to the water and nutrient conducting vessels, the phloem and xylem. Making a series of *thin* longitudinal slices will reveal the extent of this damage. The first cut should remove only the outer bark and expose the inner bark (phloem). An additional, deeper cut will expose the wood (xylem).



Steps:

1. Make a thin slice, which helps to remove the outer bark and exposes dead, brown inner bark (B).
2. Even though the inner bark is dead (brown), the green, living wood (W) can be seen when deeper cuts are made.
3. In some cases, however, both the inner bark (B) and wood (W) can be damaged, as seen here. (The dark brown is dead inner bark, the lighter brown is dead wood.)

Trunk

Trunk damage is the most difficult to assess. Like the cane, damage can be patchy on the trunk and throughout the vineyard!

Vary the location of sampling on the bark, but BE CAREFUL not to girdle the vine. Use a series of thin longitudinal slices, as described in assessment of cane.

Since damage is patchy and samples must be limited, accurate assessment of trunk damage can be difficult!

For more information go to: http://wine.wsu.edu/research-extension/
click on Weather Data then Cold Hardiness