



Timely Viticulture

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

Joseph A. Fiola, Ph.D.
 Extension Specialist in Viticulture and Small Fruit
 University of Maryland Extension

"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.

Grapevine Frost Damage II: Compensation, Management and Potential Options

By Joseph A. Fiola, Ph.D., Extension Specialist in Viticulture and Small Fruit

Spring frost is a significant production hazard in nearly all locations in the Mid-Atlantic however (luckily!) most areas of Maryland do not experience damage frequently compared to other areas. As with most issues in viticulture, **prevention or avoidance through excellent attention to site selection** is the best option to reduce risk. Please see the first in this TimelyVit series, **Grapevine Frost Damage I: Background and Prevention** for more detailed information. The purpose of this TimelyVit is to deal with the reality of managing a vineyard that has been damaged by frost.

Surveying and Assessing the Damage

First and foremost – do not despair! – grapevines have a significant capacity to **tolerate and compensate** for damage incurred by the vine.

- Remember, in most cases it takes about 24 to 48 hours to actually be able to visualize the extent of the damage to the shoots.
- Damage can vary greatly within a vine with some young shoots completely scorched, other superficially burned, and adjacent shoots on the same cane seemingly undamaged; the full range is possible.
- Longer shoots might only be affected near the distal ends, and regrowth by lateral shoots can, in time, compensate for the loss of the primary shoot tip.

Compensation and Dealing With the Damage

- A compound (triple) bud allows multiple levels of response for the vine
 - Primary bud – full crop
 - Secondary bud – can range from 0 to 60% of “typical” full crop.
 - Tertiary bud – no crop – only vegetative survival and renewal of the vine.
- There are also 1-3 (sometimes more!) clusters on each primary shoot and the less developed the cluster the more likely it is to survive low temperatures.

NOTE: This can vary by cultivar, training system, and bud exposure; the better your attention to open canopy management and light penetration to the buds on the shoots the previous year, the greater the flower bud initiation, the greater the number and size of clusters, and potential for compensation.

- When damage occurs, vines may compensate for reduced cluster number by increasing the number of berries set per cluster and/or compensate for reduced berry number by increasing berry size.
- *Vinifera* cultivars differ in their ability to tolerate low temperatures and the fruitfulness of their secondary

(Continued on page 2)

Managing Frost Damage: Background, Compensation, and Potential Options continued from page 1

Pre-Bloom

buds.

- Many of the hybrid varieties (including 'Seyval Blanc', 'Vidal Blanc', 'Marechal Foch', 'Chancellor', and others) possess the capacity to produce fruitful shoots from 'non-count' basal buds. This means that new shoots may appear from axillary buds in the cordon (typically at the base of the spur) that will have clusters to compensate for the loss of the initial primary shoots.

Regretfully there is not much you can do to react to the damage. A lot will depend on the extent of the damage and how the vine responds.

- There is an opportunity to try to induce the development of secondary shoots ASAP so your crop ripening will not be delayed significantly over the normal primary crop.
- If you have a variety, especially a hybrid, that may have fruitful secondaries or axillaries:
 - Check the primary shoot. If the shoot tip is intact but **all of the clusters on the primary shoot are completely burned**, an option is to cut the whole shoot off to try to induce the secondary.
 - **NOTE:** The longer the primary (12 inches or more) there is an increased risk that the secondary buds may not grow and possibly only the tertiary will develop. This is labor intensive and the cost will probably not be justified.
- If the **clusters are intact** but there is damage to the growing tip, leave the shoot as is and let the vine compensate.
- Much of the variability in cluster development that is apparent now will translate into variability in fruit maturation.
 - Regretfully, the solution to this problem is to sequentially harvest the grapes as they ripen (two or more harvest dates in the affected blocks)
 - As fruit matures it becomes increasingly difficult to differentiate early set clusters from later set secondaries, so be diligent to train pickers to visually recognize the differences in location and stage of fruit maturity.
- **IMPORTANT NOTE:** Remember, even if you think you have significant damage, **DO NOT STOP YOUR CROP PROTECTIVE SPRAYS!** You may have significantly more surviving crop than you expect and if you do not protect the crop with critical pre-bloom sprays, you risk losing it to disease.
- Post fruit set if you have actually experienced crop loss, it is important to continue disease and insect management throughout the year as you would not want to build inoculum for future seasons.
 - In the absence of a crop, you may cut back on fruit rot (black rot, botrytis, LSRs) fungicides, as well as the grape berry moth sprays; however maintain the schedule to keep foliage free of mildews and avoid excessive Japanese beetle feeding.
- Shoot thinning and shoot positioning may still be necessary, as you do not want to reduce flower bud initiation and decrease the crop for future season.
- Although we typically do not apply much Nitrogen fertilizer in Maryland vineyards, if there is significant crop and/or shoot loss, all scheduled fertilizer applications should be suspended.

05042020