



**Timely Viticulture**

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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.

## Mid-Season Disease Management

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At 3 to 4 weeks after bloom, the risks of black rot (**BR**), Phomopsis (**Ph**; including cane and leaf spot, and fruit rot), and powdery mildew (**PM**) are decreasing. Downy mildew (**DM**) will be the main threat. While most Botrytis bunch rot infections occur around bloom and fruit set, bunch closing and veraison may also be critical points for protection when weather conditions are favorable for infection, especially on susceptible varieties.

### First Cover Spray (10–14 days after post-bloom spray)

- Apply the first cover spray near the end of the **critical period** for controlling fruit infection by **BR**, **PM**, and **DM** (immediate pre-bloom through 3 to 4 weeks after bloom). **Ph** is a diminishing threat in most vineyards because the fungus becomes inactive in hot weather. Susceptibility of grape berries to **BR** and **PM** is also decreasing.
- If the weather has been unusually wet or **Ph** has been a problem in your vineyard, use mancozeb (note PHI) or captan in this spray. Both fungicides also offer good protection against **DM**. However, captan is ineffective for **BR** control. Thus, a DMI (FRAC 3) or QoI (FRAC 11) fungicide needs to be tank-mixed if **BR** has been an issue. Otherwise, phosphorous acid products (also called phosphites and phosphonates) are effective for **DM** control.
- Scout for **PM** infections on leaves, berries, and rachises. If you see actively sporulating colonies, apply a potassium salt (e.g., Armicarb, Kaligreen, MilStop) as an eradicant, plus sulfur for protection. With thorough coverage, potassium salts provide moderate to good control of active PM but no protection against future infections. Do not apply selective fungicides such as DMIs (FRAC 3) and QoIs (FRAC 11) to actively sporulating PM colonies, for better resistance management.

### Second Cover Spray (10–14 days after the 1st cover spray)

- Scout for **PM** and **DM**. If there are no active colonies, continue protectant sprays. While fruit are becoming resistant to infection, shoots, leaves, rachises remain susceptible until the end of the growing season.
- For **active PM** colonies, see the notes under the 1st cover spray. For **severe PM**, consider applying a single "rescue" spray of stilet oil.
  - Keep in mind that oil sprays at this stage may delay fruit ripening. **Do not** apply oil within 14 days of sulfur or captan to avoid vine injury.
- Studies have shown that berries of *Vitis vinifera* acquire ontogenic resistance to **PM** rapidly after fruit set.
- It is notable that diffuse and non-sporulating **PM** colonization can occur on young berries during 3 to 4

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weeks after bloom, when berries are undergoing the transition from a moderate to a high level of resistance to **PM**. This non-sporulating infection is difficult to see with the naked eye and can provide entry points for opportunistic fungal pathogens and insects, leading to bunch rots later in the season. Thus, it is important to maintain a good fungicide protection for **PM** until at least 4 weeks post bloom.

- For **early and sporadic DM** (“oil spots” on a few leaves), apply captan or a phosphite.
- For **sporulating DM**, apply a phosphite or Ridomil Gold.
  - Ridomil is very prone to resistance development, and shall only be considered as rescue treatment under severe **DM** infection with massive active spores. Limit: one Ridomil application per season.
  - Although phosphites do not have eradicated active as with Ridomil, they do have excellent kick-back or post-infection activity, which will largely inhibit spore production and limit disease spread. Unfortunately, captan will only protect healthy tissue from **DM** but lacks post-infection activity.
- Lengthen spray intervals to 12–16 days, depending on the weather. Use a 10-day interval if you are applying sulfur for **PM** or if 2 or more inches of rain have fallen since the last spray.
- If you are using a fungicide that is at high or medium risk of resistance development (e.g., FRAC 3, FRAC 11, FRAC 13), rotate to a fungicide with a different mode of action after *each* spray. Limit total applications of these fungicides to no more than *2 per season*.

### Additional Cover Sprays (at 10–14-day intervals)

- Continue to scout for **DM** and **PM**. Adjust your spray program for the weather, diseases observed, varieties grown, and the expected harvest date.
- Maintain a good protection for **PM** diffuse infection (see the notes under the 2nd cover spray).
- At bunch closing and veraison, include a fungicide for **Botrytis** control under wet and cool weather conditions, especially on bunch rot-prone (tight-clustered) varieties.
- Watch for fruit **rots**, especially if there has been hail, bird damage, insect feeding, or **PM** on fruit. Protect healthy fruit with captan. Do not use captan or sulfur within 30 days of the expected harvest date, as they may impair fermentation and wine quality.

*As always, read the fungicide label for allowable rates, REIs, cautions and restrictions on use, and resistance management requirements. As we get to mid-season, remember to note and closely follow PHIs (Pre-harvest interval) for each fungicide. Remember, the label is the law*

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### Additional resources for grape disease management.

- **Virginia Tech Grape Pest Management**  
[https://www.pubs.ext.vt.edu/content/dam/pubs\\_ext\\_vt\\_edu/456/456-017/ENTO-337C.pdf](https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/456/456-017/ENTO-337C.pdf)
- **Penn State Grape Pest Management**  
<https://psuwineandgrapes.wordpress.com/category/viticulture-2/disease-management/>
- **Vine-Smith Spray Guides**  
<http://www.vinesmith.com/spray-guides/>

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