



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.

Early-Season Disease Management

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Although many grape diseases do not show actual symptoms on the foliage or fruit until later in the season, it is imperative that disease management begin shortly after growth begins in the spring. Early season foliar and fruit diseases (Phomopsis, Powdery Mildew, Downy Mildew, and Black Rot) become established on the young foliage and spread to new foliage and developing clusters as growth continues. As each disease has a specific set of temperature and moisture requirements, as well as specific timing, it is critical to protect the susceptible young grape growth before the diseases become established. Growers should apply a series of protective fungicide sprays to new shoots to protect them from these diseases, beginning shortly after bud break.

1/2- to 1-inch Shoots

- **Phomopsis cane and leaf spot** is usually the earliest disease threat. Spores can germinate as soon as temperatures are above freezing, so include protection in your first shoot spray. Cool and wet conditions favor spore production and shoot and leaf infection.
- **Powdery mildew (PM)**. In Maryland, the ascospores that cause primary infections on shoots and rachises may be present as soon as bud break, so include a **PM** fungicide in your first shoot spray. Extended moisture triggers ascospore release from over-wintering chasmothecia, and temperatures above 59° F, high humidity, and overcast skies favor infection. Protecting new growth from primary infections on shoots and rachises is the key to preventing later fruit infections.
- **Downy mildew (DM)**. DM is one of the most significant issues in many of our vineyards. The initial inoculum (oospores) becomes active when wet soils combined with temperatures above 10°C (50°F), which enters stomata of tissue for infection. 0.05 inch of rain in a 24-hr period can satisfy the requirement of soil wetness.
- **Black rot (BR)**. You may want to include **BR** protection in the first spray in warmer parts of the state, particularly in wet weather and in vineyards that had high levels of disease last year. Leaf infections may occur at temperatures as low as 50° F if leaves remain wet for 24 hours or longer. The warmer the temperature, the shorter the leaf wetness period needed for infection. If you are using mancozeb or captan for Phomopsis and **DM**, they will protect against **BR** as well.

3- to 5-inch Shoots

- Continue protection for **Phomopsis, DM, and PM**. Begin protection for **BR** if you didn't do so at the first shoot spray. Preventing leaf lesions reduces **BR** inoculum for fruit infections.

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Pre-Bloom

- Make your second shoot spray 7–10 days after the first spray. If 2 or more inches of rain have fallen since the first spray, or if shoots are growing rapidly. Fungicides must be re-applied as new growth occurs, as they do not move systemically to protect it.
- If rain is predicted between 7 and 10 days after the first spray, make the second spray *before* the rain. Some studies have shown 1-inch of rain could wash-off as much as 60 percent of the protectant fungicide residue. However, there is a great variability among fungicides and formulations in their ability to adhere to plant surfaces. Systemic fungicides therefore are better choices during rainy days.

6- to 10-inch Shoots

- Continue protection for **Phomopsis**, **DM**, and **PM**. Make your third spray 7–10 days after the second spray. See the note on intervals under the previous spray.
- If you are using a fungicide that is at high or medium risk of resistance development, it is wise to tank-mix with a low-risk fungicide if resistance issues at your site are unknown. Limit total applications of these fungicides to no more than 2 per season. See Table 2 of Fact Sheet 848 for more information on fungicide classes and resistance risks.
- Bear in mind that resistance to **FRAC 11** (e.g. Pristine) and **FRAC 40** (e.g. Revus) fungicides has been detected to **DM** pathogen in the region, minimizing the use of these chemical classes if possible.

12- to 17-inch Shoots

- Continue protection for **DM**, **PM**, and **BR**.
- If you have been using paraffinic oil (JMS Stylet-Oil or Pure-Spray) for **PM**, switch to another fungicide after the last shoot spray. Later in the season, oil can slow growth and retard fruit ripening.
- Remember to increase spray volume as the canopy fills out to ensure thorough coverage.

For more information, contact Dr. Mengjun Hu at mjhu@umd.edu or Dr. Joseph A. Fiola at jfiola@umd.edu.

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
- Penn State Grape Pest Management
<https://psuwineandgrapes.wordpress.com/category/viticulture-2/disease-management/>

Thanks to Anne DeMarsay, Ph.D., (former University of Maryland Extension Specialist in Fruit Pathology) for the original version of this TimelyVit.

05072020