



## Interpreting FRAC 11 Fungicide Resistance Assay Results

This resource is designed to help you navigate grape powdery mildew management decisions when faced with control failures, or with a diagnosis of FRAC 11 resistant mildew populations in your vineyard.

**Step 1:** Follow the directions below (“**How should I sample?**”) to collect and submit samples.

**Step 2:** Have your sample results handy.

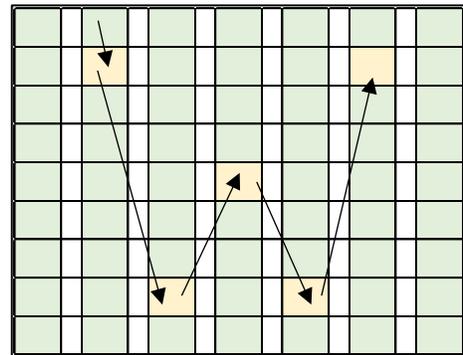
**Step 3:** Consider whether you had a powdery mildew management failure the preceding season. This helps determine the level of “risk” you might have in your vineyard this growing season.

**Step 4:** Navigate the flow chart to determine whether your control failure last year was likely due to poor spray practices (the most common form of control failure), and / or fungicide resistance. The suggested management options are designed to help minimize risk while maintaining maximum flexibility in your spray program.

**Note:** These recommendations are best practices based on our current level of knowledge. As we learn more about fungicide resistance risk and management, these recommendations will likely be adjusted.

### How should I sample my vineyard for powdery mildew fungicide resistance testing?

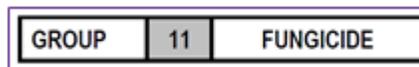
The best sampling pattern, and the total number of samples collected from a vineyard are still under investigation. For now, we recommend a minimum of 5 samples from each 5-acre-vineyard increment (1 to 5-acre vineyards should take 5 samples total, 6 to 10 -acre vineyards should take 10 samples total, etc.) that represent different areas within the vineyard. A “W” shaped sampling pattern (right) is generally a good sampling strategy. These samples can be collected via the glove method described at: <https://framenetworks.wsu.edu/grower-information/>



“W” sampling pattern. Green rows represent vineyard rows.

### What is a FRAC group and where do I find it?

Most fungicides have a specific FRAC group code number (“FRAC group”) that is printed on the front page of the label, for example:



In some cases, a fungicide brand will be a mixture of two or more unique active ingredients. In these cases, the label will display the FRAC group for both active ingredients. In the two examples below, the first fungicide (left) contains active ingredients in FRAC group 7 and FRAC group 11; the second fungicide (right) contains active ingredients in FRAC group 11 and FRAC group 3.



# FRAME network

## Interpreting FRAC 11 Fungicide Resistance Tests and Mildew Management for 2019



**Disclaimer:** These guidelines are intended to provide information to assist you in making management decisions for grape powdery mildew when faced with challenges associated with FRAC 11 fungicide resistance. Research is still ongoing as to what best practices may be. The FRAME Network is not responsible for the outcomes of the final selected farming decisions.

Control problems last year?	G143A Results	Interpretation	
No	Sensitive	Can use FRAC 11 fungicides tank-mixed with fungicides of the other FRAC groups or multi-site fungicides.	
	Less than 50% of samples from a block are designated "Resistant" or "Mixed"	Time of Sampling	Interpretation
		Up to the first 3 sprays of the season	Do not use FRAC 11 fungicides until after two multi-site fungicide applications have occurred.
		Bloom to pea-size berries	Do not use FRAC 11 fungicides for the rest of the season.
	Pea-size berries to harvest	Can use FRAC 11 fungicides tank mixed with a multi-site fungicide.	
	More than 50% of samples from a block are designated "Resistant" or "Mixed"	Time of Sampling	Interpretation
		Before pea-size berries	Do not use FRAC 11 fungicides for the rest of the season.
Pea-size berries to harvest		Can use FRAC 11 fungicides tank-mixed with other fungicides.	
Yes	Sensitive	Can use FRAC 11 fungicides tank-mixed with other fungicides. Check sprayer calibration and droplet size, application volume, and deposition. Consider shortening application interval and slowing tractor speed (adjust calibration accordingly).	
	Any sample results from a block are designated "Resistant" or "Mixed"	Do not use FRAC 11 fungicides for the rest of the season. Check sprayer calibration and droplet size, application volume, and deposition. Consider shortening application interval and slowing tractor speed (adjust calibration accordingly).	

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