

Interpreting FRAC 11 Fungicide Resistance Tests - Vineyards

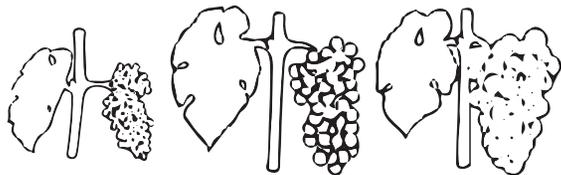
Phenological Stage



Budbreak to immediate pre-bloom
(EL 4 – EL 12)



Immediate pre-bloom to pea-sized berries
(EL 12 – EL 31)



Pea-size berries to harvest
(EL 31 – EL 38)

Sensitive

All samples are "sensitive"

FRAC 11 fungicides can be used, provided two applications of multi-site products were used prior to the first FRAC 11 application. Tank mix FRAC 11 fungicides with fungicides of other FRAC groups or multi-site modes of activity.

FRAC 11 fungicides can be used if tank-mixed with fungicides of other FRAC groups or multi-site modes of activity.

Semi-Resistant

Samples are a combination of "sensitive", "mixed" or "resistant", but no more than 25% are "mixed" or "resistant"

Delay the use of FRAC 11 fungicides until after two applications of multi-site fungicides have occurred.

Resistant

All samples are "mixed" and /or "resistant".

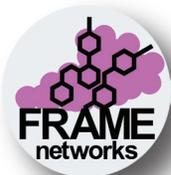
Do not use FRAC 11 fungicides for the remainder of the growing season, unless future diagnostic test results are sensitive.

Do not use FRAC 11 fungicides for the remainder of the season.

Next Season: Delay the use of FRAC 11 fungicides until after two applications of multi-site fungicides have occurred.

Conduct follow-up testing for FRAC 11 resistance and follow guidelines accordingly.

Updated: February 2025



For more information,
visit: framenetworks.wsu.edu

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To optimize pesticide applications: Calibrate your sprayer annually, at a minimum. Monitor spray droplet size, application volume, and canopy coverage. During periods of high disease or pest pressure, consider using shortest labeled product intervals and highest labeled rates.

Disclaimer: These guidelines are intended to support decision-making for grape powdery mildew when FRAC 11 fungicide resistance is a concern. Research on best practices is ongoing. The FRAME network is not responsible for the outcomes of selected farming decisions.

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

LOOKOUT FOR

Active ingredients classified as FRAC 11 fungicides that are commonly used in USA grape production:

- Azoxystrobin
- Kresoxim-methyl
- Famoxadone
- Fenamidone
- Mandestrobin
- Pyraclostrobin
- Trifloxystrobin

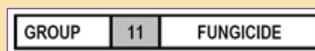
Not all active ingredients are labeled for use in all US states. Please consult your state-specific resources to ensure products containing any of these active ingredients are labeled for use on grapevines in your state.

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PRODUCT LABEL

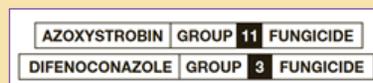
Most fungicides will have their FRAC group codes printed on the front of their product label:

Example:



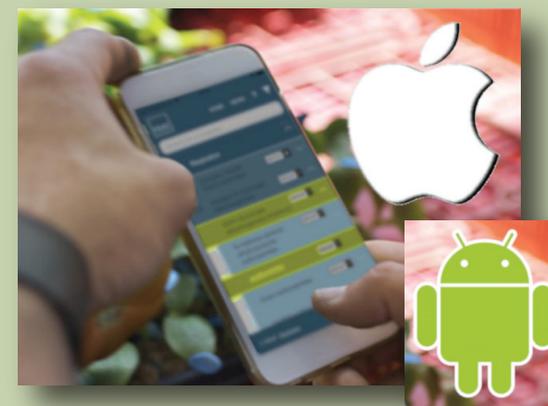
In some cases, a fungicide brand will be a mixture of two or more unique active ingredients. In these cases, the label will display the FRAC group for both active ingredients. In the two examples below, the first fungicide (left) contains active ingredients in FRAC group 7 and FRAC group 11; the second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

Example:



MOBILE APPLICATION

The Fungicide Resistance Action Committee (FRAC), has a mobile application you can use to identify the FRAC group code of a product's active ingredient:



Find more information on downloading this application at: www.frac.info

