

Vinews
Viticulture Information News, Week of 17 August 2015
Columbia, MO



Fungicide Resistance Management

In 2008, Virginia reported that downy mildew (*Plasmopara viticola*) had developed resistance to strobilurin fungicides. This was followed by Kentucky in 2012 reporting that downy mildew had developed resistance to strobilurin fungicides. There has been anecdotal report from Missouri that downy mildew has developed resistance to Pristine that contains the active ingredient pyraclostrobin and boscalid. The pyraclostrobin is the active component of Pristine that has activity against downy mildew. At this point there has been no scientific analysis of the suspected strobilurin resistant downy mildew population. Research will be undertaken to determine if the suspected downy mildew population is resistant to strobilurins. At this time, it is imperative that growers be made aware of potential resistance to strobilurin fungicides. In addition growers should continue to implement fungicide resistance management strategies.



DO

- Use fungicides that have multiple modes of action with fungicides that have a single target site. Strobilurin fungicides work by inhibiting a single target site. Whereas captan, mancozeb, and copper inhibit multiple target sites. The pre-harvest interval of mancozeb would preclude its use this late in the season.
- Use dormant pruning, shoot thinning, hedging or skirting and leaf pulling to increase air flow and sunlight penetration which will speed canopy drying after rainfall or dew events. Downy mildew requires free water on the grape plant tissue in order to initiate infection. In addition, these canopy management practices will improve spray penetration into the canopy.
- Calibrate and check your canopy spray coverage. Large canopies late in the growing season will require more carrier volume for complete spray coverage. Remember if using a protectant fungicide such as Captan that lower leaf surfaces should receive spray coverage. Briefly, downy mildew enters through leaf stomata that are on the underside or bottom of the leaf. Not sure if you are getting good spray coverage? Purchase some water sensitive cards and place in different places in your canopy to determine if spray coverage is uniform.

Become familiar with what products contain strobilurin fungicides (Table 1).

Table 1. Fungicides in the strobilurin class that are prone to selecting for fungicide resistant pathogens.

Fungicide class	Trade name	Common name
Strobilurin (FRAC code 11)	Abound	azoxystrobin
	Flint	trifloxystrobin
	Pristine	pyraclostrobin (+ boscalid)
	Quadris Top	azoxystrobin (+ difenoconazole)
	Reason	Fenamididone
	Sovran	kresoxim-mthyl

Do Not

Do not apply two sequential applications of fungicides in the same chemical class that are considered high risk for selecting for resistance. In other words, do not apply a strobilurin followed by a strobilurin fungicide (Abound, Flint, Pristine, Quadris Top, Sovran). Strobilurin fungicides are categorized by the Fungicide Resistance Action Committee (FRAC) as FRAC code 11. All fungicides belonging to FRAC code 11 are considered high risk for selecting for resistance.

Note: The Pristine label states; Do Not make more than 2 sequential applications of Pristine before alternating to a labelled fungicide with a different mode of action and Do Not make more than 5 applications of Pristine or other Group 7 or Group 11 fungicides per season.

A few alternative fungicides for downy mildew that you may want to work into your spray rotations.

Trade name	Active ingredient	FRAC code	PHI (days)
Forum	dimthomorph	40	14
Presidio	fluopicolide	43	21
Ranman 400SC	cyazofamid	21	30
Revus	mandipropamid	40	14
Zampro	ametoctradin + dimethomorph	45 and 40	14

Pierces Disease Confirmed

The Chambourcin grape plant pictured tested positive for Pierces disease. We are currently testing another sample sent from another vineyard. If you would like to have symptomatic plants tested, please follow the sampling protocol below. I have made two changes in the protocol. Please send symptomatic leaves with the petioles attached and also send 2 to 3 pictures to aid in diagnosis.



Sampling suspect grapevines for Pierces Disease

- Collect petioles with leaves attached from a minimum of 10 leaves showing PD symptoms. Stack leaves between two slightly moistened paper towels
- Place samples in plastic bag but do not seal bag
- Fill out a sample submission form found [here](#)
- Send samples and [submission form](#) to:
Plant Diagnostic Clinic
28 Mumford Hall
University of Missouri
Columbia, MO 65211
- Samples should be sent on a Monday or Tuesday to avoid weekend mail delays
- Cost is \$25 for the Elisa test for Pierces Disease
- Please take 2 to 3 pictures of the symptomatic vines and email to plantclinic@missouri.edu

Phenology from Gasconade County



Chambourcin on
August 17, 2015.
Gasconade County



Vignoles on August
17, 2015. Gascon-
ade County

Cumulative Growing Degree Days for the Seven Grape Growing Regions of Missouri from April 1 to August 17, 2015.

Region	Location by County	Growing Degree Days ¹		
		2015	2014	30 Year Average
Augusta	St. Charles	2730	2541	2597
Hermann	Gasconade	2610	2404	2505
Ozark Highland	Phelps	2843	2685	2689
Ozark Mountain	Lawrence	2791	2601	2649
Southeast	Ste. Genevieve	2832	2607	2668
Central	Boone	2617	2395	2564
Western	Ray	2557	2456	2508

¹Growing degree days at base 50 from April 1 to August 17, 2015. Data compiled from Useful and Useable at <https://mygeohub.org/groups/u2u/tools>. Click on link below to determine growing degree days in your area.

To determine the number of growing degree days accumulated in your area since April 1, click this link [Search for GDD at your location using this tool](#).

Cumulative Growing Degree Days for the Seven Grape Growing Regions of Missouri from April 1 to August 24, 2015.

Region	Location by County	Growing Degree Days ¹		
		2015	2014	30 Year Average
Augusta	St. Charles	2872	2735	2771
Hermann	Gasconade	2740	2580	2658
Ozark Highland	Phelps	2997	2874	2850
Ozark Mountain	Lawrence	2930	2798	2823
Southeast	Ste. Genevieve	3022	2835	2855
Central	Boone	2774	2628	2734
Western	Ray	2674	2636	2663

¹Growing degree days at base 50 from April 1 to August 24, 2015. Data compiled from Useful and Useable at <https://mygeohub.org/groups/u2u/tools>. Click on link below to determine growing degree days in your area.

Please scout your vineyards on a regularly scheduled basis in an effort to manage problem pests. This report contains information on scouting reports from specific locations and may not reflect pest problems in your vineyard. If you would like more information on IPM in grapes, please contact Dean Volenberg at 573-882-0476 or volenbergd@missouri.edu