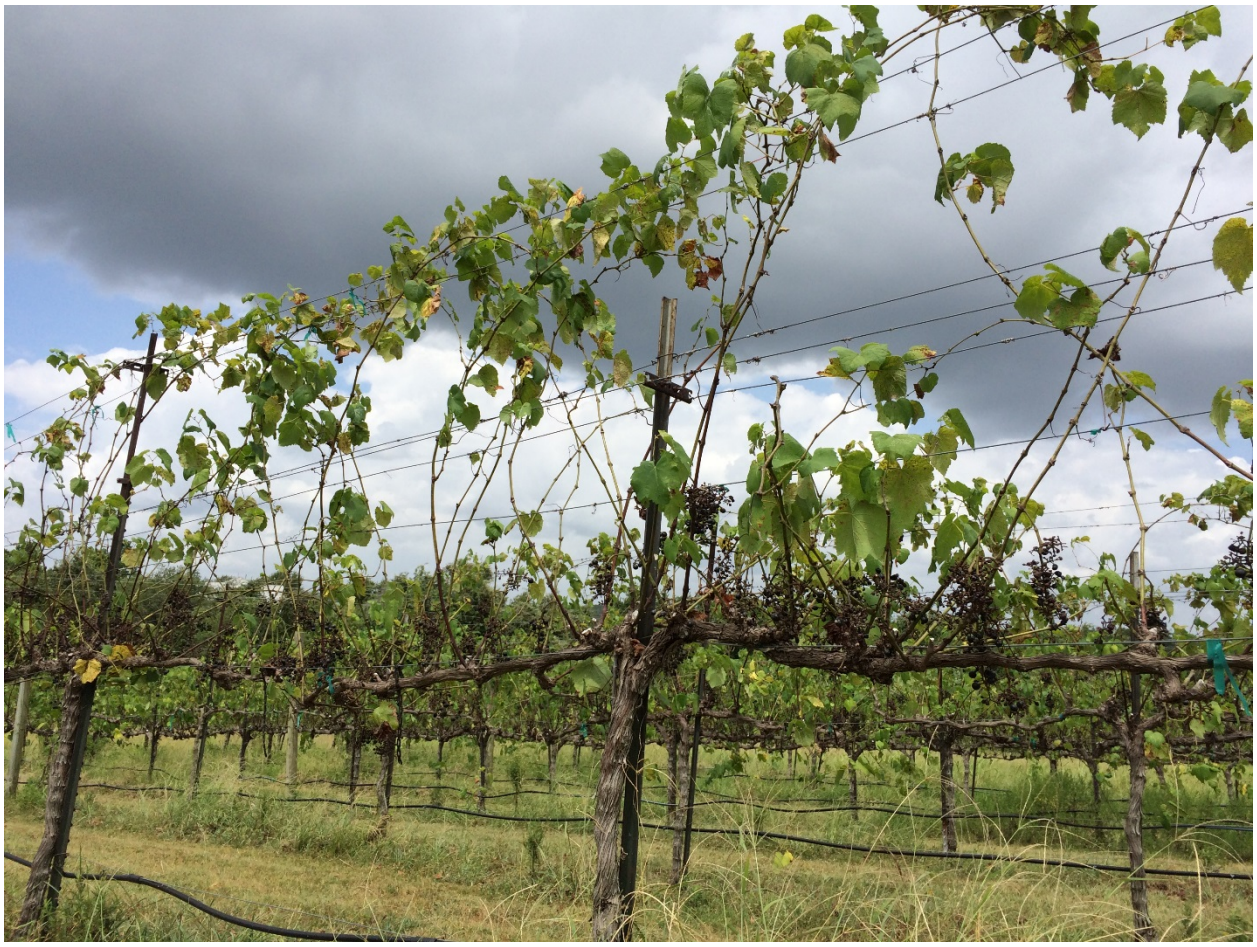
Downy Mildew

The recent weather pattern was a big relief for many dryland farmers in Texas, but for grape growers in the eastern half of the state and especially the Gulf Coast, tropical moisture in the summer can spell big problems with downy mildew. Downy is one of few fungal diseases that can cause serious damage all season long, and each year we hear at least one report of total crop loss from downy.

The warm and wet conditions this week have been ideal for downy mildew infections so if you have already seen downy in your vineyard this year then there is an extremely high probability of a reoccurring infection. If you have not seen downy mildew yet this year, there is a still a very good chance that an infection can or already has occurred. Even a very small, unnoticeable infection can explode into an outbreak under the right conditions. Make sure that your vineyard is properly protected!

Young berries are highly susceptible to direct infections by downy mildew, but become increasing resistant with age. However, downy can infect all of the green parts of a grapevine season long. Infections this time of the year can lead to significant defoliation which in turn can severely reduce fruit quality and vine health.



Favorite vineyard defoliated from downy mildew infection.

The foliar symptoms of downy can vary quite a bit based on cultivar and tissue age so know what to look for when you are scouting your vineyard. You can visit the Texas A&M AgriLife Extension Viticulture & Enology webpage to view a photo gallery with more than fifty photos of downy mildew infections.

https://aggie-horticulture.tamu.edu/vitwine/viticulture/viticulture-resources/httpaggie-horticulture-tamu-eduvitwineviticultureviticulture-resourceshttpaggie-horticulture-tamu-eduvitwineviticultureviticulture-resourcesimage-gallery-of-grapevine-diseasesdiseases-of-the-g/diseases-of-the-grapevine-downy-mildew/

Downy mildew infections on leaves of the same vine.

Fortunately, there are a number of fungicide products with efficacy against down mildew. However, it can be challenging to determine which one is right for the job. My advice is to start by eliminating products that don't fit your needs such as those with a pre-harvest interval that extends beyond your anticipated harvest date. Then, consider what material you last sprayed and when the application was made. If you sprayed a systemic protectant with efficacy against downy mildew before the rain, then it should have provided some protection, assuming good coverage and that the application was within a reasonable spray interval. If you do not feel that you had adequate protection going through the wet period, then it is critical that you apply a product with post-infection activity as soon as you can access your vineyard. We like to have a minimum of 4 hours of drying time after an application for rainfastness so if you tried to spray between rain showers and it got washed off then you should consider reapplying. Should you use a systemic material or a contact material? Contact materials are protectants, thus only provide fungal disease control from the point of application forward, and they are subject to wash-off. While some systemic materials also work primarily in a protective mode, others can provide meaningful reach-back. In other words, they can kill an infection that started up to several days before the application, but before symptoms are visible. Once the symptoms of a downy mildew infection are

visible, the fungal colony cannot be eradicated by a post-infection fungicide. However, products that have anti-sporulant properties can reduce further spread by reducing sporulation of the fungal disease. For more information on fungicide properties, terminology, etc. check out the May 2018 issue of the Texas Wine Grower https://aggie-horticulture.tamu.edu/vitwine/files/2018/05/Texas-Winegrower-May-2018-Volume-II-Issue-2.pdf.

The table below contains a list of fungicides that have good to excellent efficacy against downy mildew. Notice that myclobutanil, trade name Rally, is not on that list. Rally is an excellent systemic fungicide with good reach-back, but it is not active against downy mildew. When choosing materials to spray, make sure that is (1) active against the disease(s) of interest, (2) it has the needed physical mode of action and mobility and (3) consider the resistance group (FRAC), REI, and PHI.

Fungicide – common name, trade name	Protectant[a]	Post-infection[b]	Anti-sporulant[c]	Resistance group	REI (hours)	PHI (days)
ametoctradin + dimethomorph (Zampro)	+	+?	+	40,45	12	14
azoxystrobin (Abound, Aframe, Satori)	+	+/-	+	11	4	14
azoxystrobin + difenoconazole (Quadris Top)	+	+/-	+	11,3	12	14
captan (Captan, Captec)	+	-	-	N/A	TVSL[d]	0
cyazofamid (Ranman)	+	+/-?	+?	21	12	30
difenoconazole + mandipropamid (Revus Top)	+?	+	+?	3,40	12	14
fenamidone (Reason)	+	+/-	+	11	12	30
fixed copper (several formulations) and lime	+	-	-	N/A	TVSL	TVSL
mancozeb (Dithane, Koverall, Manzate, Penncozeb, Roper)	+	-	-	N/A	24	66
mandipropamid (Revus)	+?	+	+?	40	4	14
mefanoxam + mancozeb (Ridomil Gold MZ)	+	+	+	4	48	66
mefanoxam + copper hydroxide (Ridomil Gold Copper)	+	+	+	4	48	42
phosphorous acid (various formulations)	+/-	+	+	33	4[e]	0
pyraclostrobin + boscalid (Pristine)	+	+/-	+	7, 11	TVSL	14
zoxamide + mancozeb (Gavel)	+	+	+?	22	48	66

Ratings
+ significant activity
+/- limited activity, or only active against some target pathogens in this mode
- not active in this mode

a Active when present before the pathogen begins to infect.
b. Active when applied after infection has begun, but before symptoms appear.
c. Significantly reduces spore production when applied after infection has occurred, although symptoms may develop or persist.
d. Times vary see label, Restricted entry interval or Pre-harvest interval may vary by rate applied or by specific vineyard task
e. The phosphorous acid product Aliette WGD has a 12-hour REI and a 15-day PHI.