

Vinews
Viticulture Information News, Week of 22 June 2020
Columbia, MO



As temperatures rise and the pest complex increases, be aware of tank mixes

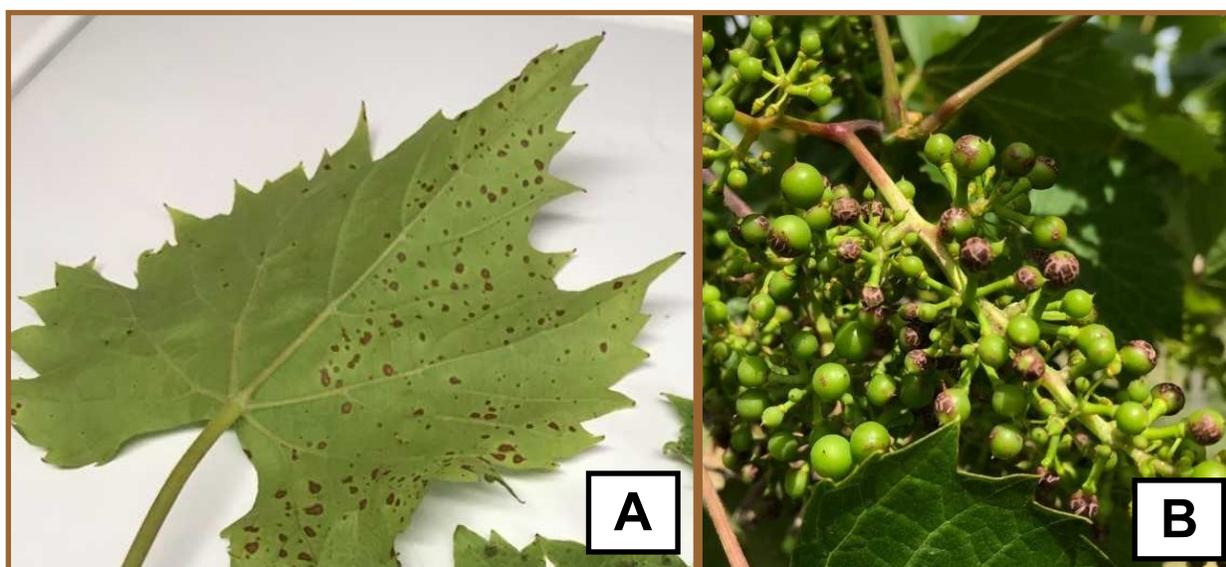


Figure 1. Chambourcin leaf with phytotoxicity (A) from tank mix spray mixture. Note how only one half of leaf is affected. A disease by a pathogen is much more random than the pattern displayed. A grape cluster showing phytotoxicity with only the berries that were in the direct path of the spray mixture showing phytotoxicity (B). Photo credit: Chambourcin leaf Kattie Kammler, MU Horticulture Field Specialist. Berry cluster, Wayne Peterson Midwest Grower Supply.

You need to consider several factors prior to making a complex spray tank mixture. With Japanese beetles becoming more prevalent and fungal issues still a concern there is often consideration of tank mixing multiple pesticides. Tank mixing has several advantages; single application, delivering more than one mode of action directed at a pest and tank mixing saves time. If you have tank mixed certain pesticides before and were satisfied with the results, then there is little concern for phytotoxicity. However, if you are considering a new tank mix, you should initially try the mixture on a few vines at least few days prior to a full-blown vineyard application. Symptomology as a result of phytotoxicity often appears relatively fast compared to symptomology as a result of a pathogen infection.

There are classic differences between disease symptomology and phytotoxicity. Disease symptoms appear random on leaf tissue or berries. Whereas phytotoxicity often appears on only the tissue that was exposed to the spray droplets (Figure 1). Fruit clusters typically only have phytotoxicity symptoms on the side of the cluster that was directly exposed to the spray application. Similarly, leaves on the outside of the canopy will have phytotoxicity symptoms whereas leaves within the canopy will not have or will have reduced symptoms.

As we enter the summer months consider the air temperature prior to making a pesticide application. Try to avoid making any pesticide application when air temperatures are above 85° F. Some fungicides such as sulfur and Captan can become phytotoxic at high air temperatures.

Pay attention to the Captan label. Do not spray Captan products immediately before or after a short period when an oil has been applied. Remember emulsifiable concentrates or EC formulations often contain a surfactant which when mixed with Captan, the resulting mixture may cause phytotoxicity. Captan only becomes phytotoxic if it is delivered into the cells of green tissue. Both oils and EC formulated pesticides can help deliver Captan to unintended tissue such as grape tissue.

In summary, if you are applying a tank mix of pesticide products that you have not applied before, it would be worth the time to make a small batch mixture and try out on a few grapevines to determine the safety of the tank mixture. Pay attention to the air temperatures prior to a pesticide application, try to avoid pesticide applications when the air temperatures are above 85° F.

Some grape virus combinations appear to be more detrimental to grapevines

Some very preliminary observations in the field suggest that certain virus combinations are more damaging than others (Figure 2). Over the past year, Jim Schoelz and I have been identifying grapevines that have certain virus combinations. In addition, we also are identifying grapevines that have only one of the viruses found in the combination. We also are identifying grapevines that have no virus at all. As an example we identify grapevines that have Grapevine Red Blotch Virus (GRBV) + Grapevine Vein Clearing Virus (GVCV), grapevines that have only GRBV and grapevines that have only GVCV, and grapevines that have no virus at all.

This week we observed some of these grapevines in commercial vineyards in which we are researching. Preliminary observations suggest that GRBV+GVCV has a detrimental impact on grapevine growth and development compared to grapevines with either GRBV or GVCV alone. Realize these are preliminary observations and our research is just at its infancy. To further define which virus combinations are the most detrimental to grapevines we are developing an experimental planting of grapevine cultivars with different virus combinations. The idea is to quantify grapevine growth and development in these grapevines and to determine which viruses and virus combinations are the most detrimental to Missouri grapevine cultivars.



Figure 2. Chardonnay grapevine with Grapevine Vein Clearing virus (GVCV) (A) and Chardonnay grapevine with GVCV + Grapevine Red Blotch virus (B). Photo credit: D. Volenberg

There is a great need to determine which grapevine viruses are having a negative impact on Missouri grape cultivars. Grapevine red blotch virus was found in 35% of the samples in a statewide survey of vineyards in Missouri in 2007. Unlike *Vitis vinifera* cultivars, the American Heritage Cultivars grown in Missouri such as Vignoles, Vidal blanc, Valvin muscat, Norton and Chambourcin do not display symptomology when infected with GRBV. At this time we do not know if GRBV is having a negative impact on grapevine growth and development, berry quality or grapevine longevity. Current theory of *Vitis vinifera* suggests that the development of red blotches on the leaves decreases the photosynthetic area resulting in reduced brix and or stalled out sugar accumulation. Since Missouri grape cultivars do not develop classic red blotch symptomology when infected with GRBV, the question becomes what impact is GRBV having?

In the future we hope to answer that question as well as what virus combinations are the most detrimental to grapevine growth and development and berry quality. Similar to grapevines infected with GRBV, grapevines (Vidal blanc and St. Vincent) infected with Grapevine Leafroll associated Virus-3 (GLRaV-3) do not display classic leafroll symptomology. Initially grapevines infected with GLRaV-3 were identified in the vineyard using ELISA. To further determine if the vines identified in the vineyard had GLRaV-3 graft indexing was performed. Graft indexing involves grafting a scion infected with GLRaV-3 onto a *Vitis vinifera* cultivar that is highly sensitive to leafroll disease. The GLRaV-3 will travel from the grafted scion to the rootstock and the developing shoots from the rootstock display Grapevine leafroll disease symptomology. This research was completed by Laszlo Kovacs et al. in 2001 at Missouri State University.

I bring this last example to your attention because this week I again had the opportunity to evaluate a couple of vineyard blocks for mealybugs. Mealybugs are the vector of GLRaV-3 as well as some other strains of grapevine leafroll. In each block evaluated, adult mealybugs as well as egg clutches were very prevalent (Figure 3 and 4). The management of leafroll disease is managing the insect vectors that spread the GLRaV-3. So take some time and strip some bark and start evaluating your vineyard blocks for mealybugs. Next month the eggs will hatch producing the second generation of mealybugs that are clearly visible with the naked eye.

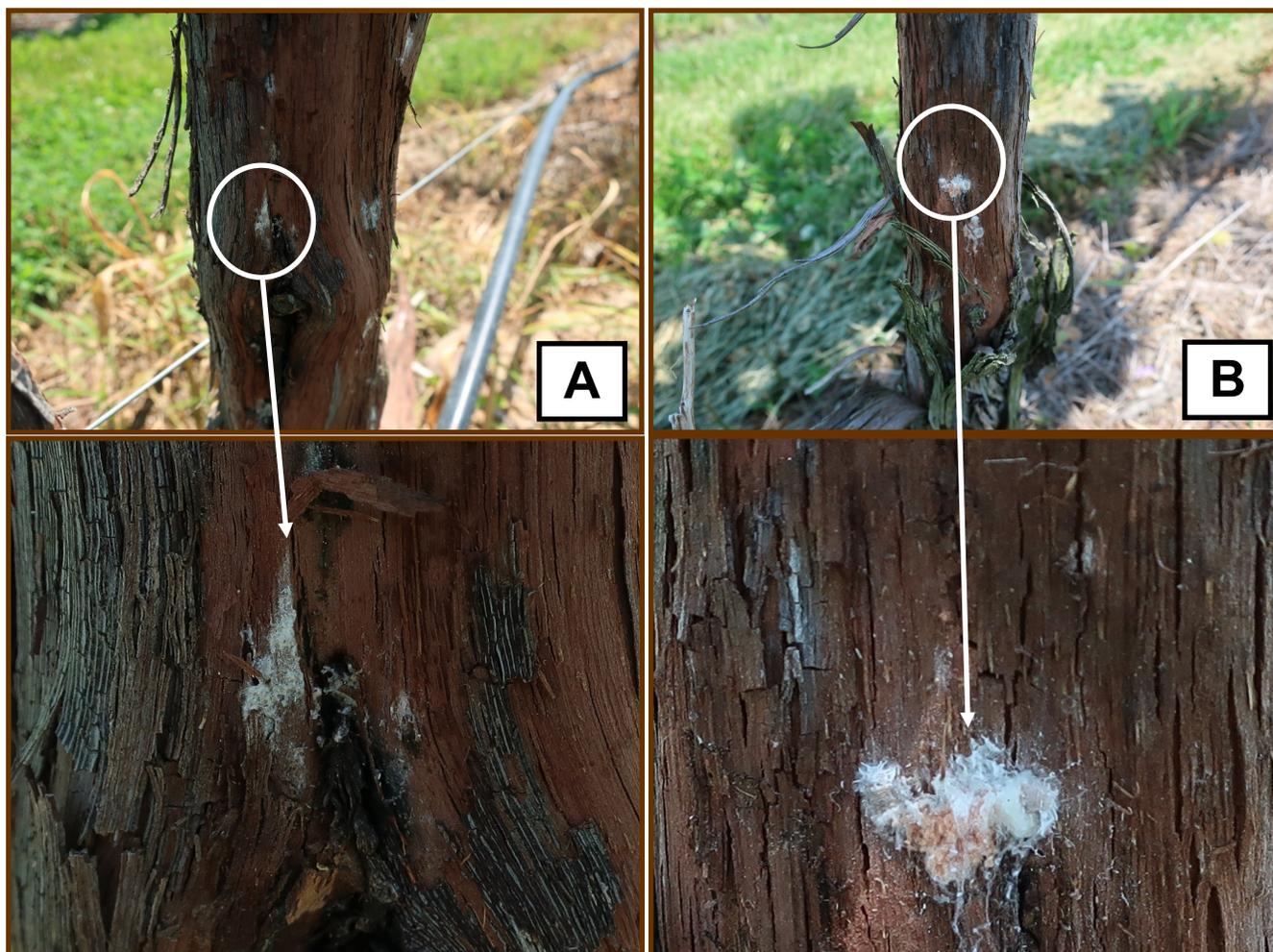


Figure 3. When scouting grapevines for mealybugs remove the lower trunk bark and if mealybugs are present you will often see white cottony masses that may or may not contain mealybug eggs. The white cottony masses are called ovisacs. White cottony masses (A) contain no eggs as the first generation has hatched. The white cottony masses with and small reddish orange eggs (B). Photo credit: D. Volenberg, Vidal blanc on June 25, 2020.

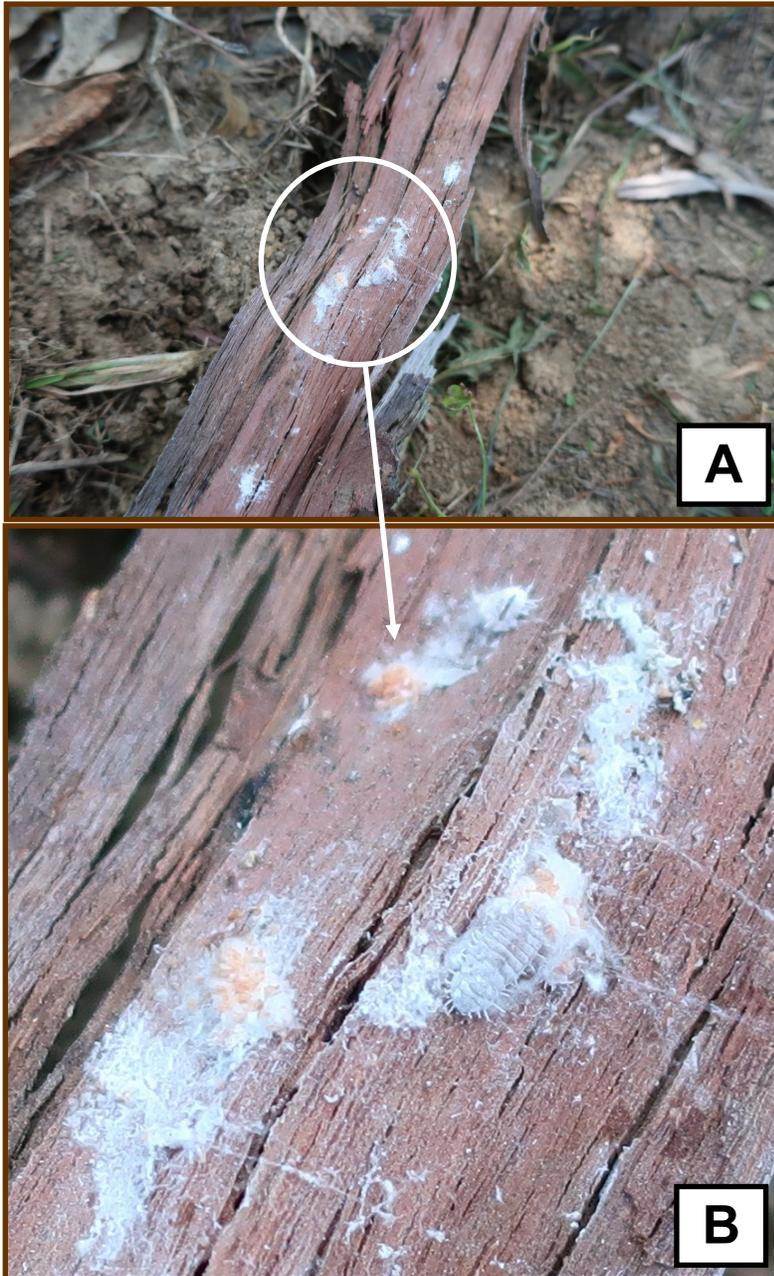


Figure 4. Mealybug white cottony masses or ovisacs will often be attached to stripped trunk bark (A). Looking closer the white cottony masses contain eggs and an adult female mealybug (B). The pinkish red coloration of the eggs suggest that this mealybug may be the grape mealybug *Pseudococcus maritimus*. The grape mealybug has two generations per year and overwinters under the grapevine bark as an egg or young crawler. When removing grapevines from a vineyard it is good practice to dispose of the grapevine material. Sanitation such as burning the grapevine material will help reduce incident mealybug populations. Photo credit: D. Volenberg, Vidal blanc on June 25, 2020.

Was your vineyard damaged by frost freeze events in April and May 2020.

If so take this survey to help inform the Missouri Wine and Grape Board.

[Survey Link](#)

Dear Missouri Winery owner:

A number of vineyards in Missouri were negatively impacted by frost/freeze events that occurred in April and May, 2020. As the Viticulture Extension Specialist for the University of Missouri Grape and Wine Institute, I am surveying wineries to quantify the impact of the frost/freeze events on sourcing grapes in 2020. Results of the survey will help the Missouri Wine and Grape Board determine if a declaration should be moved forward within state government allowing Missouri wineries the opportunity to source grapes or juice from outside of Missouri. The survey is completely confidential and your responses will not identify you. The survey will only take a couple of minutes to complete. Thanks for your time and support of the Missouri grape and wine industry.

Update for week of June 22, 2020

Pheromone trap captures of Japanese beetles were over 5,000 for southeast and southwest Missouri this week. In vineyards in central Missouri and East-central Missouri this week I observed very few Japanese beetles and very little to no damage from Japanese beetles. Be alert as Japanese beetles are emerging.



Update for week of June 15, 2020

This week I observed no Japanese beetles in 6 different vineyard blocks I scouted in the New Haven and Hermann area on Thursday, June 18. Today, June 19th, I observed Japanese beetles in Mexico, MO. With rain predicted the next few days, adults will have an easier time emerging from the soil. Scout every day if possible. Research has shown that Japanese beetles are not attracted to other Japanese beetles. In other words Japanese beetles do not have congregation pheromones. In grapes it has been shown that Japanese beetles are attracted to grapevines that have been fed on by Japanese beetles. The injured grapevines put out signals that attract more Japanese beetles. The initial influx of beetles is typically always on border rows and so scout border rows first, especially border rows along wooded areas and grassy strips.

First Report of Japanese Beetles for the 2020 Season

June 5, 2020 Japanese beetles were reported in Central Northeast Missouri, specifically Boone County. The Japanese beetles were reported on the [University of Missouri Integrated Pest Management website](#). The trapping network has eleven sites around Missouri trapping for Japanese beetles. The Japanese beetles were caught in a pheromone trap. On the IPM website you can sign up to receive pest alerts. The trapping network is conducted by MU regional agronomy and horticulture Extension professionals.

With wet soil conditions throughout most of Missouri there will be an opportunity for the adults to easily emerge in the coming days and weeks. A natural enemy of Japanese beetles has been established in Missouri. A small wasp — *Tiphia vernalis* (Hymenoptera Tiphidae) that parasitizes the Japanese Beetle larva. Hopefully biocontrol agents will help reduce Japanese beetle populations.

Cumulative Growing Degree Days (base 50) for the Seven Grape Growing Regions of Missouri from April 1 to June 20, 2020.

Region	Location by County	Growing Degree Days ¹		
		2020	2019	30 Year Average
Augusta	St. Charles	1088	1192	1196
Hermann	Gasconade	1027	1170	1153
Ozark Highland	Phelps	1122	1261	1252
Ozark Mountain	Lawrence	1121	1230	1230
Southeast	Ste. Genevieve	1106	1238	1263
Central	Boone	1123	1189	1172
Western	Ray	1072	1075	1136

¹Growing degree days at base 50 from April 1 to June 20, 2020. Data compiled from Useful and Useable at <https://mrcc.illinois.edu/U2U/gdd/>. 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. [Use this tool.](#)

Weather Outlook for Weekend

- Scattered thunderstorms

Week of June 29

- Temperatures upper 80's to mid 90's which is above average historically
- Precipitation below normal forecast

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 573-473-0374 (mobile) or volenbergd@missouri.edu