

Vine news Viticulture Information News, Week of 3 August 2015 Columbia, MO



Magnesium Deficiency

With the onset of veraison nutrient deficiencies often become more apparent. Veraison is a phenological stage that is a visual signal that grapes are starting the process of sugar accumulation. The grape berries at this stage put a large draw on the nutrient status of the vine. If certain nutrients are below required amounts or the nutrients are unavailable, the vines will begin to show deficiency symptoms. One of the most common nutrient deficiencies that occurs in acidic soils is magnesium deficiency.



Grape leaves with Magnesium deficiency may often appear during veraison.

Magnesium deficiency can occur for a number of different reasons. When soils become acidic ($\text{pH} \leq 5.5$) magnesium becomes less available to the grape roots. Acidic soil conditions are often the result of repeated use of acidifying nitrogen fertilizers – urea or ammonium sulfate. Soil pH can be increased by the addition of dolomitic limestone which will neutralize the acid and add magnesium and calcium to the soil. Furthermore, the cations calcium, potassium, and magnesium all interact with exchange sites within the soil that can result in preferential uptake of one nutrient over others. For example, high soil potassium levels can result in decreased uptake of magnesium resulting in magnesium deficiency. In addition, above normal rainfalls in May, June, and July have left many vineyard soils saturated, resulting in more potassium availability and increased magnesium leaching.

When should corrective action be taken for a magnesium deficiency? When 10 to 20% of the canopy is affected this will result in decreased carbohydrate production and corrective action should be applied. When taking corrective action take the time to not only treat the symptoms but the underlying cause of magnesium deficiency. A short term correction involves a foliar application magnesium sulfate (Epsom salts) at 5 to 10 lbs/acre in 100 gallons of water. A long term solution depends on identifying the underlying problem resulting in magnesium deficiency. Examine past soil test results to see if potassium levels are high or soil pH is acidic. Look at petiole sample reports to determine if potassium or calcium levels are high. Remember magnesium, calcium and potassium compete for uptake in the soil solution. A high level of one cation will be preferentially be taken up over the other two cations.

Magnesium uptake by grape vines begins at budbreak and continues just prior to leaf abscission. Similar to other nutrients, magnesium is absorbed and partitioned into permanent vine structures. Vine growth from budbreak to bloom receives 18% of the needed magnesium from mainly stored root reserves. Since magnesium uptake and accumulation occurs over a long duration, magnesium should be applied in the spring. If soil test results show magnesium levels are less than 100 ppm, Epsom salts can be applied to the soil during the springtime.

Phomopsis has Awoke

Phomopsis cane and leaf spot is considered to be an early season disease. Grape tissues from 1-inch shoots through fruit set are susceptible to phomopsis infections. The tissues are especially prone to infection during rainy periods. It is not unusual to see the typical symptoms of phomopsis in the vineyard. Commonly phomopsis lesions are found on the shoots, leaves, and rachises. On leaves, phomopsis lesions appear as light green dots with irregular yellow margins. Symptoms on the shoots often appear on the first 6 basal internodes as elongated, split or cracked lesions. Similarly these lesions can also be found on the rachises. However, what often goes undetected are phomopsis infections that take place during flowering.

Phomopsis infections that take place at flowering do not show symptoms until later in the season. In some respect phomopsis can be a sleeping giant. Infections that occur during flowering become latent (remain inactive and hidden or dormant). When veraison begins and sugar levels rise, phomopsis awakens within the berry and then phomopsis symptoms appear. The berries become soft, wrinkled, and shrink into mummy berries (Figure 1). Phomopsis infected berries often shatter onto the vineyard floor.

Control of phomopsis relies on both cultural practices and chemical management. During dormant pruning diseased canes should be removed to reduce the number of pycnidia. Canopy management practices that increase air-flow through the canopy will reduce prolonged wet periods thereby reducing the potential for phomopsis infections. Both Captan and Mancozeb are effective in protecting against phomopsis infections. Mancozeb often is used early in the growing season and through bloom as the 66 day PHI precludes use at or near berry set. Captan then is used after berry set.

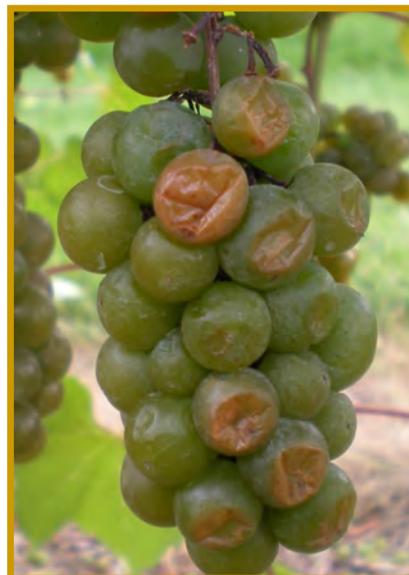
The early (shoots at about 3-inches) applications of fungicide are most important for controlling phomopsis. Wayne Wilcox has shown that fungicide applications applied just after the inflorescence has emerged provide the best control of phomopsis disease of the rachises. These early sprays also control berry infections since rachis infections extend into the berry stem and then the berry itself. Do not wait to control phomopsis at the immediate pre-bloom period as by then it is too late.



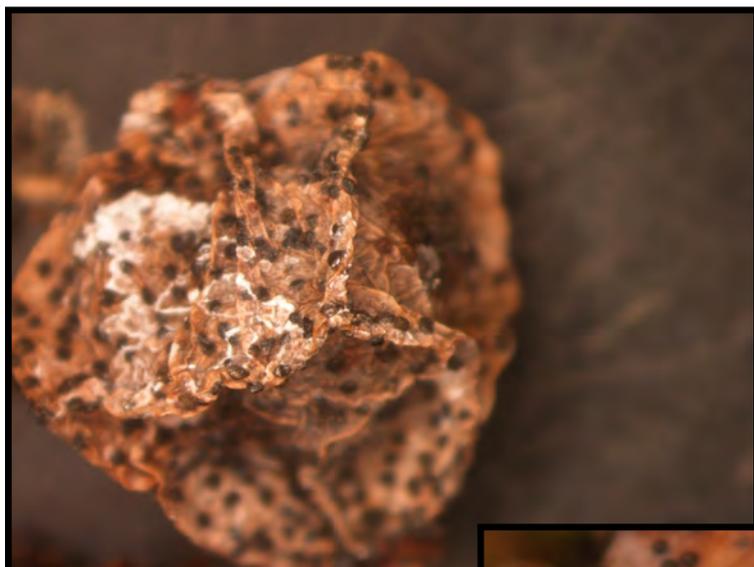
Norton berries shriveling is from phomopsis infections that took place earlier in the growing season.

Bitter Rot

There has been some bitter rot appearing which is not all that surprising with the warm rains that have been abundant from May through July. Symptoms often appear after veraison with the bitter rot fungus moving from the berry stem into the berry. Red and white grape cultivars show different symptoms. White berries usually turn brown and red berries turn a dull purple. Once the berry has shriveled (rotted) the outside of the berry becomes covered with black pustules which are the fruiting bodies of the fungus. Bitter rot can be controlled with strobilurin fungicides and Captan. Mancozeb also will control Bitter rot but the 66 day PHI eliminates its utility this late in the growing season.



White grape cultivars infected with Bitter rot display light brown, shrunken shriveled berries.



Norton berries infected with Bitter rot (above and right) are displaying the fruiting bodies of the fungus. These fruiting bodies become readily visible after the berry has rotted and mummified. Photo credits: Patti Hosack, Mizzou Plant Diagnostic Clinic.



Phenology from Gasconade County



Chambourcin on August 3, 2015. Gasconade County



Vignoles on August 3, 2015. Gasconade County

Cumulative Growing Degree Days for the Seven Grape Growing Regions of Missouri from April 1 to August 3, 2015.

Region	Location by County	Growing Degree Days ¹		
		2015	2014	30 Year Average
Augusta	St. Charles	2367	2223	2270
Hermann	Gasconade	2269	2090	2165
Ozark Highland	Phelps	2480	2334	2345
Ozark Mountain	Lawrence	2533	2325	2357
Southeast	Ste. Genevieve	2549	2278	2294
Central	Boone	2263	2079	2220
Western	Ray	2200	2137	2165

¹Growing degree days at base 50 from April 1 to August 3, 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](#).

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