

Sour Rot in Grapes

As the growing season progresses and as harvest approaches, it is worthwhile to give consideration to some of the challenges that may lay ahead. One of these is managing sour rot.

Sour rot is somewhat of a mystery. In the past, it was often mistakenly identified as Botrytis bunch rot. In other cases, sour rot was not really considered to be a disease. While we know a good bit more about sour rot as a result of recent studies, there is still a good bit to be learned.

Dr. Wayne Wilcox, Dept. of Plant Pathology, Cornell University, wrote an article titled, "Grape Disease Control, 2015 – Sour Rot. It may be found online at https://doublevineyards.com/Images/2015SourRot_Wilcox.pdf. This article describes sour rot, events leading up to its development and some options regarding control.

On white varieties, sour rot shows up as berries turning tan to light brown. For red varieties, berries will turn purplish red. Sour rot appears to be more prevalent in vineyards trained to a high wire system as opposed to VSP, in varieties having tight clusters and with berries having a thin skin. It is possibly worse on very vigorous varieties as opposed to more modestly growing ones.

Sour rot is frequently described as having a vinegar smell, caused by certain acetic acid-forming bacteria in conjunction with wounds on berries due to bird damage, rain cracking, grape berry moth, compression in tight clusters, powdery mildew damage, etc. Although it doesn't happen often, the bacterial infections may be accompanied or followed by infections due to several "bad" yeasts, which can produce ethyl acetate, creating a smell like nail polish remover or varnish. Cracked berries will also attract flies, yellow jackets and several other insects.

As with many diseases, control involves a series of things beginning with good pruning, followed up by early leaf removal. Practices that promote looser clusters will also be beneficial.

In a study done by Dr. Meghan Hall, a graduate student working with Dr. Wilcox, using Pinot Noir and Riesling, two important things were discovered. First, berries do not become highly susceptible to infection until they reach about 15° Brix (minor levels developed at 13° Brix and nothing developed below 10° Brix). Second, sour rot develops rapidly and severely at temperatures between 68 and 77° F, moderately at 59 to 68° F, and barely develops at temperatures in the 50's.

In the area where the study was conducted, sour rot did not start to develop in vineyards until rain occurred after berries had reached 15° Brix and temperatures were at least in the 60's. Rain moves the bacteria into open wounds on berries and could help to cause the injuries necessary for infection in the first place.

Fruit flies, (*Drosophila* spp.) appear to play a major role in the cause and spread of sour rot. In addition to being attracted to the smell of both acetic acid and ethanol, they may play a direct role in the initiation and/or spread of the disease. In the above referenced article, Dr. Wilcox

suggested that fruit fly control might be the first consideration in a preventive spray program. Inclusion of an antimicrobial material once berries reached approximately 15° Brix would be a good idea if weather conditions (temperature and rain) favored infection and if sour rot was an issue in previous years.

What should be done to minimize sour rot issues in Tennessee vineyards? First, based on the results of the study by Dr. Hall, we should certainly anticipate temperatures favorable for severe sour rot development once berries reach the 15° Brix stage. We are well past the time for early leaf removal so this practice should be filed away for consideration in next year's crop. Points that may still have an impact include:

1. Minimizing damage from birds, grape berry moth, powdery mildew and other factors that may puncture berries.
2. Minimizing the pathogen population by the use of anti-microbial sprays. Oxidate, Oxidate 2 and Serenade are such compounds. These compounds may be expensive, but they are legal and do not pose potential fermentation issues. The preharvest interval for Oxidate, Oxidate 2 and Serenade is 0 days.
 - a. NOTE: In her study, Dr. Hall used potassium metabisulfite as an antimicrobial treatment. Even though this product is used in the winery, it is not labeled for use in vineyards, therefore its use in the field is illegal.
3. Controlling fruit flies. Insecticides suggested for use include Mustang Maxx (PHI 1 day), Delegate (PHI 7 days) and malathion (PHI 3 days).

With all pesticides, be sure to read and follow label directions regarding their use.

As with other disease issues, control should be based on prevention as opposed to eradication. Sour rot has the potential to cause severe losses in vineyards. Pay close attention to crop development and conditions existing within the vineyard. Look at impending weather developments and do not put off initiating control practices when warranted. Sour rot may not be a severe problem every year or with every grape variety.

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