



SONOMA COUNTY VITICULTURE NEWSLETTER



January 2005

Rhonda Smith, Viticulture Farm Advisor

Save the date -

Sonoma County Grape Day – Wednesday, February 23, 2005

Sonoma County Grape Day is presented annually by UC Cooperative Extension and sponsored by the Sonoma County Grape Growers Association. Speakers will present research updates involving berry shrivel, syrah disorder, critical values for vine nitrogen and potassium, and vine mealybug. It will be held at the Luther Burbank Center in Santa Rosa.

Pre-registration is required. If you do not receive registration materials by February 9th, contact my office at 565-2621. The program will take place from 9am until 1pm, followed by lunch.

Courses in Viticulture and Enology offered by University Extension, Davis

For information regarding these courses and others, go online at <http://universityextension.ucdavis.edu> or phone (800) 752-0881.

Scheduled classes:

Health and Safety for Winery Operations: An Overview
Varietal Winegrape Production Short Course

February 4
February 8, 9, & 10

Two New Cost Studies Available

Two UC Cooperative Extension costs studies developed with input from Sonoma County growers are now available at <http://coststudies.ucdavis.edu/>. They can also be picked up in my office. *Sample Costs To Establish A Vineyard And Produce Wine Grapes – Chardonnay; North Coast Region – Sonoma County (2004)* includes costs associated with vineyard development and production. The second study, *Sample Costs To Establish A Vineyard And Produce Organic Wine Grapes - Chardonnay; North Coast Region – Sonoma County (2004)*, focuses on production only. Both discuss a hypothetical 30 acre planting in the Russian River Valley AVA.

Research Update: Esca and Young Esca

Dr. Doug Gubler, Extension Plant Pathologist at UC Davis and students, have recently completed the disease cycle for the fungi that cause Black measles and young vine decline. The same fungi cause both diseases. Although vines of all ages are usually infected with these fungi, disease will only occur if certain conditions are met. When that happens in very young plants, the vines can die. In older vines, foliar and fruit symptoms will occur and disease severity depends on site conditions and management factors.

The fungi that cause vine decline and measles evolved with grapevines and are endophytes as well as epiphytes i.e. they grow in the vascular system of the vine and their spores can be found on the vine surface. They also can be found in vineyard soil. Some of these fungi are found in vineyards of all ages; however their presence only becomes noticeable when the vines are under some sort of stress. Chemical changes in the xylem of vines under stress allow these fungi to become more invasive and to produce toxins. The toxins have been shown to reduce shoot growth, produce necrotic areas on leaves and also a range of fruit symptoms – from dark spots to shriveled berries.

The fungi that are most commonly associated with these diseases are *Phaeomoniella chlamydospora* (**Pc**) and *Phaeoacremonium aleophilum* (**Pa**) (*Togninia minima*).

Pc

The asexual spores of Pc are produced in pycnidia; flask shaped fruiting bodies that reside in 3-5 year-old pruning wounds on grapevines. Spores are released from pycnidia during rain events, over head frost protection and irrigation and possibly with heavy low-lying fog. When the pycnidia are wet, spores ooze out of the hole or ostiole at the top – similar to toothpaste extruding from a tube. The next drop of water that lands in that area will splash the spores a few centimeters away or further depending on air movement.

Vines are re-infected when the spores land on current year pruning wounds or any other place that provides them access to vascular tissue. This fungus has been isolated from the wounds made during shoot thinning and suckering. A nearby vineyard can provide the source of spores that will infect a young vineyard. Not long after planting, a vineyard becomes its own source of Pc spores that continue to re-infect unprotected wounds.

The asexual spores of Pc are almost always present in vineyard soil. Vine roots can become infected when growing through soil that contains this fungus. AXR#1 rootstock is far less susceptible to infection than many of the current popular rootstocks. In AXR#1, the fungus will only move about 1 cm through the xylem then appears to stop whereas in some low vigor rootstocks in use today, it can travel 4 times further inside the vine in one year.

The symptoms of vine decline in young plants (less than about 10 years old), include necrotic spots and tiger-striped patterns in leaf blades, shoot tip die-back and stunted shoots. These are most commonly seen in the same year that the vascular tissue became infected through a wound on the cordon or spur. Pc is commonly isolated in the vascular tissue of wood that in cross section has a

distinct black ring or partial ring surrounding the pith. The disease associated with Pc is known as “Petri disease” and is also appropriately named “young Esca”.

Pa and *Togninia* species

Spores of Pa are produced in fruiting bodies called perithecia and are spread with rain and wind just as Pc. Spore sacs move out of the perithecia with rainfall, and then they eject ascospores to a height of approximately 10.5 cm. Wind may play a large role in moving spores to other vines and other vineyards. Pruning wounds lose susceptibility over time; however they can be infected with Pa spores for up to 4 months. Pa can infect vines during the growing season without a rain event. Insects and mites can carry these spores and may be involved in summer infections.

Symptoms of Esca can be reproduced in vines infected with Pa or *Togninia minima*, the sexual stage of Pa. The spores of *T. minima* are produced in perithecia which are also flask shaped but with much longer “necks”. These reside deep in the vascular wood of old wounds and are not easily seen with a hand lens.

Other *Togninia* species are related to other species of *Phaeoacremonium*. The Gubler lab was the first to document that *T. fraxinopennsylvanica* can cause disease in grapevines. It had previously only been found on ash trees back east. Thus far, it has been found to reside on ash and bay laurel trees as well as in grapevines in California.

The disease symptoms produced by infections of Pa (*Togninia* spp) in grapevines are the same as those of young Esca. The scientific community has chosen to call the disease associated with Pa simply “Esca”.

Control

These fungi are ubiquitous in vineyards and in most sites they do not cause significant disease. Research is focusing on ways to protect pruning wounds from becoming infected. The materials currently used by growers to protect pruning wounds from *Eutypa* infections are also effective against these fungi. Long term (several months) wound protection methods do not exist commercially and are under development. A dormant lime sulfur application at 15 gpa kills both Pc spores in pycnidia and ascospores of *Togninia minima* in perithecia; however new spores may be produced after some months have passed. As a result, yearly applications would have to be made. Lime sulfur is less effective against the other fungi such as *Eutypa*, *Botryosphaeria*, *Diatrype*, *Diatrypella*, *Cryptovalsa* etc. Its use may be warranted when a vineyard has severe symptoms of either Esca or young Esca.

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Sonoma County Grape Day is February 23, 2005!

New Sonoma County Vineyard Cost Studies

Young Esca



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