

The glove fits: A new tool for monitoring grape powdery mildew and fungicide

Authors: Sarah Lowder & Walt Mahaffee

Questions? Email Walt at walt.mahaffee@usda.gov

Grape production is threatened by the development of fungicide resistant grape powdery mildew with over 65% of the population found to be resistant to both strobilurin and DMI fungicides. Lowder and Mahaffee have, as part of the FRAME networks cooperative research project (framenetworks.wsu.edu), been developing improved methods for the monitoring of both grape powdery mildew in vineyards and the risk of fungicide resistance. Recently, they completed [4 years of research](#) that demonstrated worker gloves can be used as a spore collection device and that these spores can be easily recovered using a cotton swab (glove Swab) and processed for molecular detection of pathogen. Their results also showed that in commercial vineyards this method is more sensitive than visual disease scouting and comparable to the more expensive [spore traps](#) they developed previously. In addition, they collaborated with Tim Miles at Michigan State University to develop molecular assays that can assess the frequency of markers for strobilurin and DMI fungicide resistance from these same samples. Their research has shown that the glove swabs can be rapidly and easily deployed to any block and used to monitor for disease presence and strobilurin and DMI fungicide resistance. It has also been successfully transferred to several commercial venders so that growers can have ready access to it.



Figure 1. The glove swab procedure. A) manipulate the canopy during shoot thinning, leaf pulling, or positioning, or just by dragging hands through the canopy when walking down a row; B) open the swab and; C) extend it; D) rub it over both gloves; E) then reverse steps and label the swab.