



## Disease Testing in the Vineyard: Spring Season Grapevine Health Check

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Above Photo: Syrah symptoms: severe decline, cracked trunk, necrotic pitting and streaking

As the spring season approaches, vineyard and nursery managers are preparing for the upcoming spring activities which include top working or grafting, production of rootstock rootings, and planting new nursery bench grafts. Assessment of the health status of vineyard field or certified scion selections and rootstock propagation material is a crucial step in ensuring a healthy vineyard and consequently a successful and bountiful vintage.

Various biotic agents and abiotic factors are major threats to obtaining healthy grapevine planting stock. Biotic agents are disease causing organisms such as fungi, bacteria, viruses, nematodes, and insects. Abiotic factors include adverse environmental conditions (frost, hail, heat etc.), chemical injury, nutrient toxicity or deficiency, improper cultural practices and sanitation. For example, frost damage can increase the susceptibility of grapevines to certain pathogens and pests. Some vineyards might be infected without showing symptoms

until adverse environmental conditions compromise the plant defense mechanisms and trigger disease progression. Many of these pathogens can spread or be propagated by grafting.

The most critical first-step in successfully establishing a newly planted vineyard is to confirm that the planting stock is disease-free. Therefore, proper planning and early disease detection can help vineyard growers avoid disease introduction and spread, and costly vineyard re-planting. It is important that the grower determine the health status of "healthy looking" grapevine stock using confirmatory laboratory testing prior to planting.

Most traditional grapevine rootstock and scion varieties are susceptible to various fungal pathogens. These organisms can affect leaves, shoots, roots, trunks, and fruit. Foliar diseases can drastically reduce photosynthesis due to chlorosis, necrosis, and, in extreme cases, total defoliation of vines. The complex fungal trunk

diseases can cause many symptoms, ranging from leaf reddening or scorching, wood discoloration, wilting, dieback, canker, dead arm, decline and severe wood rotting and petrification. Fungal diseases can render fruit unharvestable, resulting in severe economic loss. Many of these symptoms are caused by different pathogens (individually or in combination). Therefore, it is imperative to submit grapevine planting material to a lab to test for the presence of harmful pathogens. Proper sampling, sample preparation, and timing of sample submission are important steps to consider. Sampling of grapevine sections from above and below the graft union constitutes the best sample to test for fungal wood/trunk diseases. In addition, it is advisable to submit root samples to test for fungal root diseases. For details, please visit [www.stalabs.com/products-services-grapevine-samples.html](http://www.stalabs.com/products-services-grapevine-samples.html).

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## Disease Testing Guidelines Continued



Above Photo: Syrah - cross section and external symptoms cracked trunk, necrotic pitting and streaking.

Eurofins STA HealthCheck Fungal Panel was developed to specifically survey and identify many grapevine fungal pathogens using traditional microbiological diagnostic methods with the aid of a microscope. More recently, we have developed state-of-the-art molecular techniques for the rapid and accurate identification of pathogens by sequencing a portion of the pathogen's genome. The availability of different diagnostic approaches allows our lab to handle fungi (and other pathogens) that are difficult to identify due to their inability to produce typical spores, lack of specific morphological features, or genetic variation. Therefore our lab can identify the wide range of fungal pathogens found in grapevines.

Most frequently our lab isolates and identifies the following: Botryosphaeriaceae spp. (Bot-like canker), Diatrypeae spp. (*Eutypa dieback*), *Phaeoacremonium Phaeomoniella*, and *Pleurostomophora* (formerly *Phialophora*) spp. (young vine decline also known as Petri or Esca diseases), *Phomopsis* spp., and many others. In addition, many soil borne pathogens such as *Armillaria* spp., *Cylindrocarpon* spp. (Black

foot disease), *Cylindrocladium* spp., *Verticillium* spp., *Phytophthora* spp., and *Fusarium* spp. can be detected. Our expert team excels at handling special situations and strives to report the most accurate results.

Although our lab continues to test dormant cuttings or portions of lignified wood for viruses that cause leafroll (e.g., grapevine leafroll associated viruses) and rugose wood diseases (e.g., Grapevine virus A, B, and D; *Rupestris* stem pitting, etc.), the spring season is the most appropriate time to submit samples for HealthCheck™ Panel B testing. This Panel detects viruses that cause grapevine decline diseases. The most important decline causing viruses are Arabis mosaic virus (ArMV), Grapevine fanleaf virus (GFLV), Tobacco ringspot virus (TRSV), and Tomato ringspot virus (ToRSV). These viruses are transmitted by nematodes. Work in our lab has shown that although dormant wood from heavily infected vines may be used for virus detection, young tips and leaves collected in the spring have a higher concentration of viruses in these tissues. For HealthCheck details please visit [www.stalabs.com/products-services-grapevine-healthcheck.html](http://www.stalabs.com/products-services-grapevine-healthcheck.html).

At Eurofins STA Plant Health Division, we offer a spring field survey, which is a comprehensive inspection of your vineyard. We look specifically for vine decline symptoms associated with pathogen infection.

Please check our website for updates and call us to discuss your specific testing needs.

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