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Vineyard Development: Disease Testing Guidelines

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As the spring season progresses, vineyard managers and growers are planning new vineyard development functions The most common activities include planting nursery produced bench grafts, rootstock rootings (for later field budding), and top working. This article describes a simple process to allow the best return on investment of disease testing.

There are important steps for ensuring a healthy vineyard with consistent grape quality and yield potential. An integral part of this process involves the health status assessment of field selections, nursery rootstock, and scion material prior to planting. Our laboratory specializes in testing grapevines for the presence of disease causing agents (i.e., pathogens). We have developed reliable procedures for the detection of the most important pathogens that cause disease in grapevines. It is critical that samples are collected at the right time of the year and at the appropriate vine location for accurate disease assessment. The results from disease testing will provide the information needed for sound vineyard development decision making.

Top working or grafting is an activity that allows the grower to change the scion variety of an established vine by budding or grafting. This activity allows sampling the most mature sections (cordon and trunk) of the vine since the top of the vine will be replaced. The portions above and below the graft union constitute the best type of sample for testing for the presence of fungal pathogens (vine decline and Esca) and viruses included in HealthCheck™ Panel A (leafroll and rugose wood diseases). However, if the goal is to determine the presence of soil-borne pathogens, root samples will be required.

The ideal sample number to test prior to making top grafting decisions will depend on the diversity of vines present in the vineyard. If the vineyard is planted with vines from the same origin (i.e., same rootstock/scion combination from a common source) testing at least ten vines is recommended. If there are many rootstock/scion combinations, the vines are from unknown origin, there is suspicion of infection, or the vineyard is adjacent to an infected vineyard, a more exhaustive sampling regime will be required. Furthermore, the number of vines to sample will increase if mealybugs, nematodes, or other disease transmitting vectors are present in the target vineyard or neighboring vineyards. If no

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Vineyard Development Continued

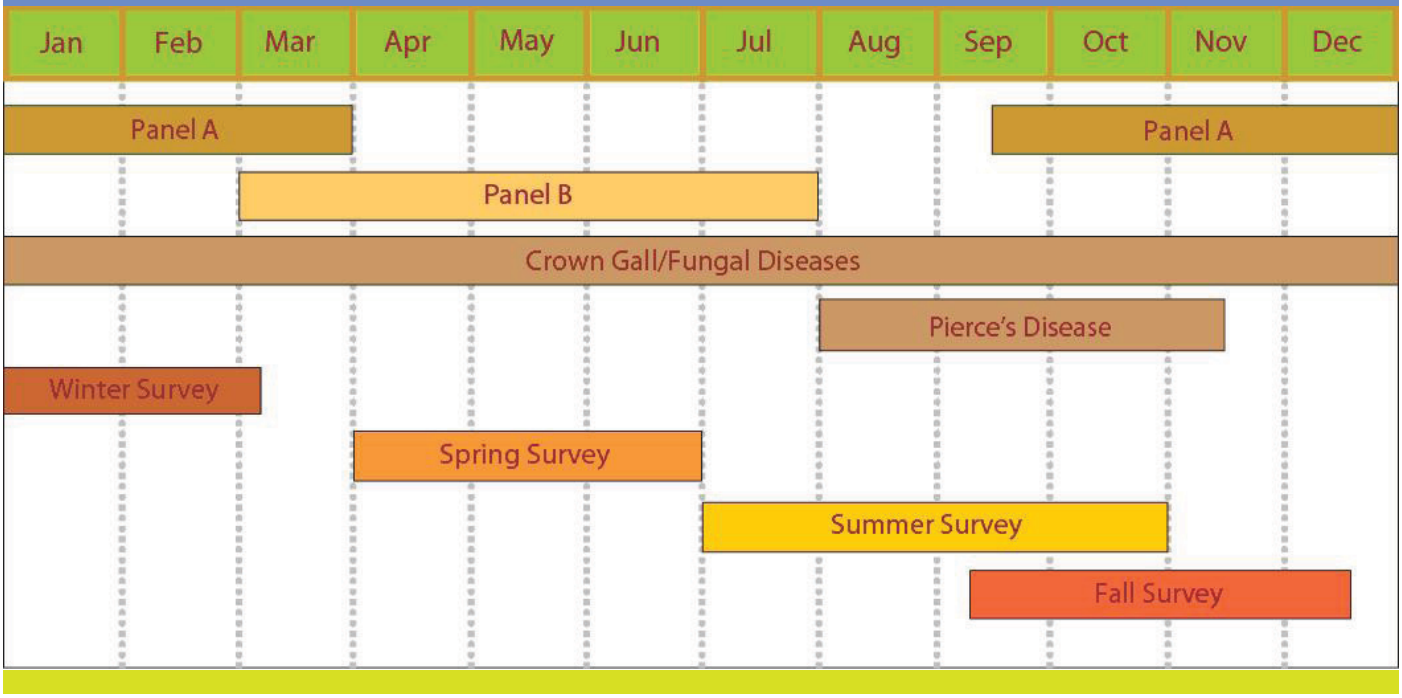

Figure 1: Schedule for Grapevine Testing and Vineyard Services

apparent symptoms are present, random and representative sampling is recommended. If disease symptoms are present in the vineyard, testing samples from both symptomatic and asymptomatic vines will aid the diagnosis.

The time to submit samples of bench graft and rooting material for testing should coincide with the time the grower decides which rootstock-scion combination will be planted. In most cases, nurseries are able to trace their mother vines and organize cuttings in specific bins. A representative sample should be collected from each bin of rootstock and scion material that will be used for grafting.

The correct sample number will depend on mother block history and budget. For non-destructive testing, samples will need to be submitted at different times of the year to cover the whole spectrum of grapevine disease causing agents. For example, the Pierce's Disease bacterium is best detected later in the summer season (petioles from mature leaves), while the viruses associated with decline are best detected in the spring season (young foliar shoots). Please see Figure 1 for more details.

Because of the potential of virus spread and fungal infections in vineyards it is important to test samples after field finishing or cold storage (especially for the detection of fungal pathogens). The testing is needed even if the vines are from a reputable certification program. Visual inspections are important but most likely cannot determine if a pathogen is present.

This spring season is the most appropriate for submission of samples for HealthCheck™ Panel B testing. HealthCheck™ Panel B includes the decline and degeneration disease causing viruses: 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, young tips and leaves collected in the spring better enables the detection of the viruses included in HealthCheck™ Panel B.

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

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