A Pruning Technique for Improved Vine Health and Longevity

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PHOTOS BY JUDIT MONIS

This is a cross-section of a vine with large desiccated or dead areas. Note the instructor's finger, which is pointing to a large rotten area resulting from cutting a wide section of the vine.

IN FALL 2017, I attended a workshop on grapevine pruning organized by the **Napa Valley Viticulture Technical** group and co-sponsored by **Simonit & Sirch Master Pruners**. The two, half-day program included the theory of pruning as well as a field demonstration in a commercial vineyard. As a plant pathologist, I am interested in vine health and was curious to learn about a method that claims to respect the natural growth and functions of the vine. During my career, I have seen many pathology issues that are the consequence of poor manipulation at the nursery (grafting defects, large disbudding wounds, etc.) or at the vineyard (embedded ties and wires, as well as large pruning wounds).

Wounds are the entryway for many known fungal and bacterial pathogens that cause trunk diseases, such as vine decline, Eutypa dieback, Bot canker and crown gall. Could a pruning method that respects the natural functions of a vine be the solution? Have most viticulturists around the world been applying management and pruning techniques that were detrimental to vine health and longevity? I was eager to learn about how the Simonit & Sirch method can be applied in the vineyard to improve the health and productivity of grapevines. Below I share what I have learned so far about this new method.

Pruning Alters the Vine Balance and Affects Vine Health

Yearly pruning aims to create a balance between vegetative growth and fruit production. The grapevine plant is a vine and, as such, has a tendency to branch out and could grow uncontrolled unless it is pruned and trellised. The vertical shoot positioning vine training used throughout the world relies on cutting back the plant shoots periodically to control plant growth. When vines grow above the trellis wire, they need to be cut back to bring the plant to a manageable height. By doing so, the pruner creates large cuts that dry and desiccate the wood—the larger the cut, the larger the desiccated or dead zone. Cuts can be performed on either side of the vine and can alternate from side to side to create cross cuts along the vine. This can occur regardless of the training system (i.e., cane- or cordon-pruned vines) used in the vineyard.

However, in a cordon-trained vine, cuts are performed in every spur, multiplying the number of desiccated areas along the cordon. The desiccated areas near the pruning cuts are ideal sites for the entry of disease-causing pathogens that colonize and affect the vine's health. Infected wounds evolve into larger areas of dead wood that, with time, coalesce and cause the vine to decline and dieback. On the other hand, small cuts (cuts on one- or two-year

Cross-section of a vine with a balanced ratio of live and dead areas

old wood) create small desiccation zones and provide a better ratio of live versus dead tissue in the vine, allowing the vine to be less susceptible to stress and favoring healthier growth. According to Simonit and Sirch, most pruners perform indiscriminate cuts that do not respect natural grapevine growth habit. Consequently, there is a negative impact on the vascular system that is detrimental to the vascular sap flow (think about it as a highway traffic jam). As a result, there is a lack of vine balance responsible for weaker shoots, smaller grape clusters and a shorter vine lifespan.

The Solution: A Pruning Method That Respects the Vine's Natural Physiology

The Simonit & Sirch pruning method was developed to respect the normal growth of the vine. One of the company's co-founders, **Marco Simonit**, was curious as to why some vineyards were healthy and lived for many years while others would not last more than 20 years. He started making cross-sections of vine wood from long-lasting vineyards and compared those with the wood from vineyards that did not live as long. His observations suggested that vines that received large cuts (done on wood older than two years), alternating in different sides of the vine (called return or cross cuts), did not fare as well as the vines that were allowed to branch naturally and received smaller cuts on the same side of the vine.

The Simonit & Sirch method is now applied in many important grape-growing areas of the world. The company consists of a group of 20 consultants, who help vineyards and wineries adopt their pruning methods in Italy, France, Germany, Spain, Switzerland, Australia, South Africa and California. The consultants work alongside the pruning crew to help understand the plant needs and determine the best strategy to train and prune vineyards. The ultimate goal is to develop long-lived and healthy, productive vineyards.

Simonit & Sirch also offers training classes in Italy (**Italian School of Vine Pruning**) and have written detailed manuals describing their method in Italian and French (an English translation is in the works). Recently, the group has teamed with the **University of Bordeaux** to offer a master's degree in pruning techniques. The program in Bordeaux includes lectures related to vine physiology and pathology, as well as "hands-on" field-pruning practice.

The pruning technique is based on four principles: favor the natural branching of the vine, respect the vascular sap flow, avoid large cuts and, when pruning, leave a section of wood with a length equal to the diameter of the section that was cut during pruning.

The first principle recommends allowing the vines to branch. The vine needs to grow into its space and follow a chronological sequence. The younger wood grows out of a year older wood, and this one from a year older wood and so forth (i.e., one-year-old wood grows out of two-year-old wood, two-year-old wood grows out of three-year-old wood, etc.). The plant is allowed to grow larger and branch but in a controlled way.

Note the number of large pruning wounds in the cordon-trained vine

The second principle advocates to respect the sap flow. To achieve this goal, all pruning wounds must be located on the same side and follow the chronological sequence of the vine. If all cuts are done on the top of the vine, the underside remains untouched and allows the proper flow of the vascular sap.

The third principle states to only produce small cuts in the vine. Basically, avoid cutting any wood that is older than two years to avoid large desiccation areas. In addition, the basal buds between two- and one-year-old wood should not be removed.

The fourth principle proposes not to produce flush cuts but leave some spear wood (they call it *legno di rispetto*, in English: wood of respect). This means that the pruner must leave a length equal to the diameter of the wood that is being cut (i.e., if the wood cut is a half-inch in diameter, the spear wood should be a half-inch long). This last principle is most important if large cuts are required during pruning.

During the field section, we observed a newly planted vineyard, and the instructors explained how it will be trained in the near future to adopt their pruning method from the start. We also observed a couple of older cordon-trained blocks, and the pruning strategy that will be used was demonstrated. The master pruners started working on this vineyard five years ago, and through their intervention, they hope to improve the health and longevity of older blocks. Cross-sections of a couple of older cordon-trained vines were showcased to observe the different ratios of dead and live tissue (**PHOTOS 1 AND 2**).

The reader is encouraged to visit the website to see an illustrated description of the Simonit & Sirch method. Information on classes and pruning manuals can also be found: *http://simonitesirch.com/simonitesirch-pruning-method*

Conclusions

Once a vineyard is established, vine-pruning is one of the most important activities performed in the vineyard on a yearly basis. After learning about the method, I agree that a pruning technique that does not disrupt the vascular sap flow and creates smaller wounds could improve vine health and longevity. We know that disease symptoms are modulated by stress factors, so a method that is kinder to the vine promises to allow the plant to tolerate a certain level of pathogen infection. Still, in my opinion, to be successful, the Simonit & Sirch pruning methodology should be adopted as early as possible after planting and be complemented with other trunk disease prevention methods. The pruners should avoid pruning in the rain or after long periods of rain, prune as late as possible (or perform double pruning in large vineyards), use wound protectants, such as **Safecoat** VitiSeal™, and remove the pruning residues from the vineyard. Studies performed by Dr. **Kendra Baumgartner** (**USDA/UC Davis**) indicate that these preventative disease management procedures should be adopted as early as possible to be cost-effective. However, it is of utmost importance to start with healthy planting material (tested to be free of pathogens and lacking graft union defects, galls, etc.). I was once asked if vines that had a completely rotten vascular system (these were infected with *Ilionectria* and *Phaeomoniella* species) would improve after being planted in the vineyard. My answer was and continues to be no. Not only would these vines not get better, they would be a source of infection to neighboring vines. I cannot stress how important it is to plant a healthy vineyard. **WBM**