How to Assess Winegrape Maturity and Make Harvest Decisions

There is a very common axiom in viticulture and enology that states, "the wine is made in the vineyard," and therefore "to make a great wine you need to start with great grapes." Most wineries have a quality standard as well as a particular wine making "style" which they try to maintain. However, in most locations in the East it is a challenge to come up with great grapes every year to maintain that style due to the annual variability in weather and its effect on ripening.

Variables such as weather (precipitation, day/night temperatures, and sunlight), pests (insect, disease, weed, deer, and bird), vegetative (canopy) development, crop load, and timing of harvest will produce a specific set of fruit quality parameters which will ultimately influence the wine quality. Grape pH, total acidity (TA), sugar content, organic acid profile, and especially varietal character vary considerably depending on conditions during the growing season. Therefore it is critical to properly monitor and assess the fruit quality and maturity to make the appropriate management, harvesting, and wine-making decisions to produce the best quality grapes and wine possible.

The first step to access ripeness and quality is to take a proper sample that best represents the actual ripeness stage of the variety in that vineyard. The best way to achieve this is to collect a sample that is random, unbiased, and representative. Here are some practical pointers in collecting a good sample: Avoid edge rows and the first 2 vines in the row; collect samples from both sides of the vine; for each row, estimate the proportion of shaded clusters and sample accordingly; collect berries from top, middle, and bottom of cluster; collect berries from all sides of clusters; maximum sample area should be < 2A. Remember, about 90% of the variation in berry sampling is believed to come from variation in the position of the cluster and degree of fruit exposure. The greater the number of berries in the sample, the more representative the sample will be. For instance, to be within +/- 1.0o Brix, you need 2 samples of 100 berries; to achieve +/- 0.5o Brix, 5 samples of 100 berries are required. If you are cluster sampling, 10 clusters are needed to be within +/- 1.0 oBrix of actual.

Once you have a good sample, the next thing is to set the priorities that will optimize fruit quality and give you the opportunity to make the best possible wine. The critical principals here are that high quality wine is the confluence of fruit derived flavor and aroma components and the reduction of immature tannins; AND that these do not necessarily correspond to "desired" sugar and acid ranges. Therefore the highest priority needs to be the quality and quantity of varietal aroma/flavor in the fruit. Depending on the degree of ripeness, these can range from green and herbaceous to fruity and "jammy" and
must be assessed properly to attain the desired flavor profile in the ultimate wine. Simply stated, to obtain a desired characteristic aroma or flavor in the wine, it must be present in the grapes at the time of harvest! Therefore the individual sampling must be diligent to monitor for that aroma and/or flavor in the sample.

The next highest priority, especially for red wines, is the texture of the grape tannins in the skin of the fruit and the seed ripeness. These quality and quantity of the tannins determine the structure, body, astringency, bitterness, dryness, and color intensity of the wine. The degree of ripeness and polymerization of the tannins will determine the astringency and mouth feel of your wine. This can range from the undesirable, hard and course tannins of immature grapes, through to the desirable, “supple and silky” profile of mature grapes. Mature tannins are critical to the production of quality red wines.

Of course, other factors must still be considered, such as the total acidity, pH, disease, berry softness, the ability to ripen further, and the coming hurricane! Once you find the characteristics you desire in your sample, the next step is to harvest, keep the fruit cool, and process as quickly as possible. Then it is the job of the winemaker to bring the fruit as gently through the winemaking process as possible to extract the attributes contained in the grapes. Finally, the winemaker has many tools at his fingers to fine tune the product, such as cold soaking, various yeast and malo-lactic strains, carbonic-maceration, sur-lie, barrel fermentation/aging, and blending.

References

