

Formal and Informal Wine Sensory Evaluation

GRAPES 101

Grapes 101 is a series of brief articles highlighting the fundamentals of cool climate grape and wine production.

By Anna Katharine Mansfield



Swirl, sniff, sip, and swallow: most wine drinkers know the routine for wine evaluation. But what about sensory evaluation in the lab, wine cellar, tasting room, and wine competitions? Here we review some of the possibilities—and limitations—of sensory science in wine.

In contrast to other food industries where customers prefer and producers enforce little batch-to-batch variation, the wine marketplace anticipates differences from many sources, including vintages, varietals, regions, blends, and producers. Sensory science provides tools to measure these differences, by analyzing and interpreting reactions to products as perceived by sight, smell, taste, touch and hearing.

Wine sensory science.

The trick to getting a valid product sensory assessment is to perform it in a way that limits bias. This includes serving each wine "blind"—without revealing the type or producer or vintage. But it also involves finicky details such as serving each wine in identical glassware, pouring exactly the same amount of wine into each glass to create identical headspace to collect wine volatiles, and varying the order that panelists receive wine in a standardized manner, so that the same wine isn't always

tasted first or last. This standardization prevents errors generated by the evaluation process itself. The most rigorous application of sensory assessment takes place in research labs, where it can be used to answer questions about differences in terroir, fundamental characteristics, and consumer preferences. Common tests include the following:

Hedonic testing is used to test consumer liking for a specific product. For example, it can be used to identify trends in the preferences of a particular consumer group (e.g., Millennials).

Difference testing is used to determine whether two wines are significantly different. This is useful for evaluating the effects of grape growing or winemaking treatments, aging trials, or vintage years.

Preference testing can be employed after a difference test to see if a significant portion of consumers prefer one wine over another.

Descriptive analysis is used to characterize wine flavors and aromas. Trained panelists first develop a list of sensory descriptors—like cherry, leather or cinnamon, for example—to describe a set of wine samples. Subsequently, each sample is rated qualitatively for which descriptors are present and quantitatively for the intensity of each descriptor. It is a useful method to understand what is distinctive about a particular wine. The descriptors can be used to evaluate vineyard and winery processes as well as market new varietals, wine types, or wine regions.

Sensory in the cellar.

Does sensory evaluation have a place in the wine cellar? From the purist's point of view, not really. The winemaker and cellar staff likely taste their wines weekly from harvest through bottling to determine quality, production strategies, and wine style. As such, they function as a very specialized and trained panel, geared towards very specific goals. Winemakers who are too acclimated to their own product are often said to have 'cellar palate,' which may blind them to flaws in their own wines or divert them from consumer preferences. If feasible, it can be useful for wineries to use small groups of friends or colleagues to serve as a tasting panel, but as this group is also biased, their feedback should also be taken under advisement.

Swirling in the tasting room.

The tasting room environment sensory experience is about hedonics and preference for the consumer. However, these are very affected by myriad aspects of the environment—some under the control of the tasting room manager. It's an established fact that label design and knowledge of price affect perceived quality

and liking. Likewise, a positive tasting room experience has a strong influence on how customers perceive products: wines "taste" better in a clean, attractive tasting room with a friendly, knowledgeable staff. The tasting room is a great way for consumers to sample wines before making purchasing decisions, and a strategic tasting room environment can enhance the sensory experience.

Wine competitions.

The place where biased opinion most often masquerades as sensory evaluation is during wine competitions. Several recent studies have provided strong evidence that wine competition judging panels are often not reproducible. That means that when they are given the same wine more than once, judges seldom give the same score. Statistician Robert Hodgson calculated that if a certain wine is entered in enough competitions, it has a 9% chance of winning a gold medal—regardless of quality. However, the primary goal of most competitions is product marketing, and competition judges are often influential wine writers, shop owners and restaurateurs. To the industry, the value of a wine competition lies in attracting attention to a region, producer, or variety rather than reproducible sensory evaluation.

Wine sensory evaluation is a science, but one that has some limitations. As a research tool, descriptive sensory analysis can help researchers determine whether experimental variables in the vineyard or winery have made any difference in the final product. In the wine cellar, sensory evaluations by outsiders can help winemakers make stylistic decisions on winemaking practice and help them avoid unnoticed flaws resulting from their own 'cellar palate.' In the tasting room, customers use sensory evaluation to make purchasing decisions—but the wine itself is only part of the picture. And medals from wine competitions may enhance that tasting room sensory experience, but competition evaluations usually fall short of sensory science.

Suggested reading:

[Hodgson, R.T. 2008. An Examination of Judge Reliability at a Major US Wine Competition. J Wine Econ. 3\(2\): 105-113](#)

Anna Katharine Mansfield is an assistant professor of enology with the Enology Extension Lab and the department of food science at Cornell University.