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Italian Study Finds Vineyard Signatures Often Fade Before Consumers Taste Wine

Researchers followed seven Sauvignon Blancs from soil to bottle, concluding that chemical traces rarely became reliable sensory cues or sales language.

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An Italian case study released Tuesday by Unione Italiana Vini's Il Corriere Vinicolo examines a basic question in wine science and marketing: how much of the difference between wines made from similar grapes in the same area can still be measured, tasted, and communicated by the time the bottle reaches the consumer.

The work, presented by Carlo G. Ferretti of Geo Identity Research, focused on seven Sauvignon Blanc wines from seven vineyards in the same territory and the same vintage. Each wine was vinified separately. According to the report, the analysis drew on more than 3,000 determinations and followed the wines from the rocks and minerals in the soil through the grapes, musts, and finished wines, then into a blind tasting and commercial descriptions used in the market.

The central finding was that measurable differences do not move through the system in a simple way. Some of the chemical signature linked to the soil remained detectable in the bottled wine, the report said. But that did not automatically translate into a distinct taste that tasters could reliably identify, or into a clear message in the way the wines were described for sale.

The tasting phase involved 12 trained tasters. Each person was served 10 glasses, with three duplicate samples hidden in the lineup. Across 36 total duplicate comparisons, only two were placed in the same group, according to the report. Ferretti said that result should be read carefully, because the task was difficult and shaped by the conditions of the tasting session. The point, he argued, is not that the wines were identical, but that recognizable differences can weaken as wine moves from vineyard and cellar to sensory perception.

The report described a similar loss of distinction in sales language. In one example, two retailers used the exact same paragraph to describe two different wines. That detail was presented as a sign that differences documented by measurement do not always survive in the commercial story built around a bottle.

The study frames wine as an "ecosystem" in which environment, production, perception, and market behavior affect one another. In that model, soil, vineyard management, cellar decisions, chemistry, tasting, and retail communication are all part of the same chain. Data science, machine learning, and what the report calls analytical

artificial intelligence are used to connect those layers of information and to separate meaningful patterns from coincidence, alongside field observation and laboratory testing.

The findings come at a time when many producers are trying to sharpen the value of origin, vineyard identity, and style in a tougher market. In that context, the study suggests that proving a difference analytically is not the same as making that difference useful in sensory terms or persuasive in commercial terms. For wineries and the broader beverage sector, that distinction could matter when companies decide how much to invest in site-specific production, how to describe products to buyers, and where claims of uniqueness are most likely to hold up.

The report also points to the role of cellar decisions in reducing or reshaping differences that begin in the vineyard. Some characteristics appear to converge through winemaking choices, it said, while part of the soil-related chemical trace remains in the finished wine. That trace, however, should not be confused with flavor. The article makes a clear distinction between an analytical marker and what a drinker can actually perceive in the glass.

That gap between measurement and perception has practical implications for a sector that often sells products through ideas such as terroir, provenance, craftsmanship, and differentiation. If a measurable vineyard signature does not necessarily become a recognizable taste, producers may need to think more carefully about which differences can be defended scientifically, which can be experienced by consumers, and which are mostly marketing language. The same question can extend beyond wine to other premium beverages that rely on origin stories and sensory claims to support price and positioning.

Ferretti’s article was published as part of a broader series in Il Corriere Vinicolo that opens with the line, “Is wine in crisis? Before the cure, analysis.” The series is expected to continue with work on climate, human adaptation, and predictive models. It is scheduled to conclude on Nov. 18 at Simei with a roundtable on artificial intelligence, big data, scientific applications, and forecasting models.

The case study does not argue that terroir disappears or that vineyard differences are meaningless. Instead, it describes a more limited and more technical reality: parts of a vineyard’s identity can still be found in the bottled wine, but they do not automatically become a stable sensory signal or a clear commercial message. In a market where producers are under pressure to justify distinction and value, that may affect how wines are made, how they are described, and how evidence is used to support claims of identity.