

Measuring quality – analytically and by using sensors

Interview with Prof. Dr. Ulrich Fischer, Dienstleistungszentrum Ländlicher Raum (DLR) Rheinpfalz and Achim Rosch, Dienstleistungszentrum Ländlicher Raum (DLR) Mosel

What is quality? This question is almost like the question asked by Pontius Pilate, “What is truth?”. Trained sensory analysts and innovative analytics are on hand to determine the quality of wine. Digitisation has opened up new opportunities. We’re talking about this with Prof. Ulrich Fischer and Achim Rosch, who are going to present the session “Measuring quality – analytically and by using sensors”.

Why this session? Do we still need to clarify what “quality” is? Or are there new techniques for measuring quality, however you define it?

Fischer: We go further in measuring quality than before. As well as the product quality, i.e. the colour, smell and taste of a wine, “quality” is now understood to also mean the absence of contaminants, compliance with legal requirements, especially in a vineyard, or the quick availability of a wine. Digitisation provides us with a lot of opportunities thanks to its ability to continuously document the process internally, as well as in preparing the grapes and treating the wine. Of course, it also increases the range of instruments with which quality can be measured. Where previously photographs were taken of grapes to decide whether they were healthy



or rotten, now the near-infrared spectroscopy looks under the surface of the berries. This means that automatic grape sorting systems can select grapes according to the degree of ripeness of the grape seeds or the sugar content of the berries. Now, winemakers can manage the production of red wine better than before, including distinguishing between defined qualities for different types of wine.

The analysis machines are getting cleverer and cleverer, and probably also more expensive. Do we still need the eyes, nose and palate of the sensory analyst to check the quality of a wine?

Rosch: Definitely, and I’ll tell you why – because our customers enjoy wine with their eyes, nose and tongue. This means that only the sensory analysts can form the bridge between the ingredients of a wine and how enjoyable it is to drink. We can use human sensory analysts to train the new pieces of analytical equipment to automatically detect an off-odour such as the emergence of a sulphide smell due to a lack of nutrients in the yeast or oxidative marks due to a damaged barrique barrel. This sends a notification to the winemaker’s



smartphone, who knows that Barrique no. 17 is leaking and the acetic acid bacteria are in the draining holes and the yeast in Tank 61 could do with some ammonia and would respond by producing less sulphide.

How has digitisation changed the way we measure the quality of a wine?

Fischer: Replacing a purely visual assessment of the grapes with digital measurements acquired using a grapescan has made the process of assessing the batches of grapes delivered to cooperatives or wineries much more objective. In the premium segment, healthy and rotten berries can be separated thanks to digital technology as part of the automatic grape sorting. This makes it possible to produce two completely different types of wine, each one high quality, specially treated and further developed.

Do people talk about this in Germany the same way as they do in countries like Italy, Australia or Switzerland? Do people share their experiences across borders and is there cooperation going on?

Rosch: The less access the winegrowing industry has to available and affordable staff, the greater the need for automation and digitisation. So it's no wonder that these aspects have developed furthest in Australia, because the wineries are often far from the main population centres and the minimum wage in Australia is 1.5 times what it is in Germany. The larger scale the business, the more it is worth investing in new technology. But it's precisely the aim of the INTERVITIS and this session as part of the 63rd International DWV Congress to showcase offers for smaller business and

family-run vineyards that are easy to implement.

Is this an issue just for scientists or for wine producers as well?

Fischer: Not at all, that's like saying that medicine is only of interest to pharmacists but not to patients. It's important to use the possibilities provided by digitisation to relieve the burden on the employees at all stages in the production of wine and in the cellar, to enable decisions to be made using a larger data set that can be accessed more quickly, and ultimately to make staff more creative, so that they recognise the links between factors better and have more time to pursue innovative approaches.

They have already been announced as the presenters of the session entitled "Measuring quality – analytically and by using sensors". That makes them entitled to use this as an opportunity to bang the drum for their session! Who would you definitely recommend to take part in the session?

Rosch: I can speak for both of us here. This session isn't just meant for specialists, but also for people with a general interest who want to broaden their horizons. Which sensors and methods have what it takes to make my job easier and to protect me from any unpleasant surprises, and above all else to make my wines better. You can discuss all this with an international expert with experience in New Zealand, USA and Switzerland, but also with a wine grower from Austria as well as us and everybody else taking part in the session.