

# Mosel vineyards are preparing for climate change by sharing their soil with aromatic plants

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Pictures from te case study in Germany. Credit: Diverfarming

The landscape of sloping vineyards on the banks of the Mosel River in Germany is a characteristic symbol of a region which cannot be understood without its wine: the Mosel wine region. Tourists from all over the world, especially from the neighboring countries of Belgium, Luxembourg, and The Netherlands visit the area in search of mountains and wine. However, the lack of new generations and the increase in temperatures and short heavy summer rainfall events caused by climate change endanger the production of wine.

In this sense, the European H2020 Diverfarming Project began in 2018 the diversification of a steep-slope, very stony (up to 70%) ecological vineyard. In the majority of the vineyards, the introduction of

herbaceous species for plant cover has become widespread, with herbaceous plants in the alleys between the grapevines, but beneath them, it is combated with herbicides or mechanically. With the aim of reducing [soil erosion](#), increasing [soil fertility](#), and mitigating the effects of greenhouse-gas emissions, a team of researchers from Trier University (Germany) coordinated by Professor Manuel Seeger and Professor Sören Thiele-Bruhn put into practice the introduction of aromatic plants (thyme and oregano) beneath the grapevines of the Weingut Dr. Frey wine-making company.

After three years of diversification the team of researchers Felix Dittrich, Thomas Iserloh, Roman Hüppi, Sophie Ogan, Sören Thiele-Bruhn, Manuel Seeger, and the winemaking entrepreneur Cord Treseler have published the first results of the diversification on the productivity of the grapevines and the quality of the wine. These results show the potential possibilities that these practices have since they have not generated [negative effects](#) in the wine production.

Although a certain amount of competition was observed between the aromatic cover and the grapevines for water and nutrients, these effects far from being negative, give rise to thinking that they may have a positive effect on the quality of the wine, as the researcher Manuel Seeger comments. This is related to the reduction of certain nutrients: while the availability of nitrate had no change in the crop diversification, the ammonium, phosphorus, and potassium levels did decrease in the uppermost area of the soil (the first 10 cm). However, it is known that there is a certain relationship between available potassium and wine quality. The results of this study point out that a change in the availability of the mineral acidity of the soil would seem to generate an increase in the quality of these wines. Moreover, the principle of yield compensation was observed: although the yield of the grapevine is slightly lower, this is compensated by an increase in quality.

The study highlights the extreme events at climate level that have taken place over the three years of the diversification. In 2018, storms produced one month's volume of rainfall in the zone in just one hour; whilst in 2019 and 2020 there were record high temperatures and drought. In this way, it is clear that the availability of water and the climate conditions are the most determining factor for the productivity of the vineyard. Despite that being the case, if we take the extreme conditions into account, the diversification has had no negative effects on the yield of the crop or on the quality of the wine. In standardized situations and with the long-term stabilization of the diversification this opens the door to an increase in profits thanks to the [diversification](#).

The conservation of the characteristic landscape of the zone, the reduction in contaminant emissions, and the increase in biodiversity both in the soil as well as in other organisms such as insects will contribute added value to this sector, which is currently open to changes that enable it to face this lack of a generational substitution and the scenarios which the effects of [climate change](#) are expected to bring. All of this is to save the future of the Mosel [wine](#).

**More information:** Felix Dittrich et al, Crop Diversification in Viticulture with Aromatic Plants: Effects of Intercropping on Grapevine Productivity in a Steep-Slope Vineyard in the Mosel Area, Germany, *Agriculture* (2021). [DOI: 10.3390/agriculture11020095](https://doi.org/10.3390/agriculture11020095)

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