



OREGON WINE



SYMPOSIUM

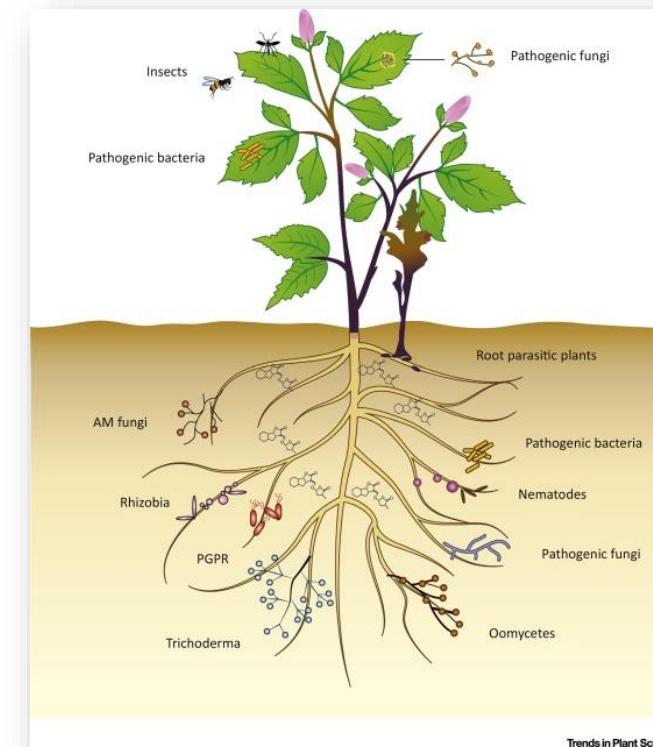
The Microbiome as a Component of Terroir: Emerging Research Worldwide

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Microbiome

- All plants, in all environments, depend on microbes
- Therefore, potentially all crops, no matter where they are grown, could benefit from optimization of their microbial partners



No microbes. No wine, period.

- A diverse, complex, and poorly characterized community of microorganisms lies at the heart of the wine
- These microorganisms play key roles at all stages of the wine production process
 - Helping the plants access nutrients from the soil;
 - Supporting plant health through protection against pathogens;
 - Mitigating the effect of environmental stresses;
 - Facilitating the fermentation process transforming must into wine with its complex array of aromas and flavors.
- There is increasing interest from winegrowers, technical institutes, and the scientific community for a better knowledge of the possible ecosystem services

Research Developments

- Many countries, wine regions, and grower/producer associations have initiated microbiome research
 - The OIV has seen microbiome approaches in numerous areas of V&E research, considering adding it as a “Priority Theme” in both areas
 - Wine Australia has increasingly funded microbiome research, and plans to invest more in the future
 - AWRI conducting extensive bacteria and yeast studies
 - INRA facilitating numerous regional studies to better understand the microbiomes role in terroir
 - MicroWine is a collaboration between industry and academic partners, examining the role of the microbial community in wine production

Research Developments

- Many countries, wine regions, and grower/producer associations have initiated microbiome research
 - The Institute of Vine and Wine Sciences in Spain has developed a research group whose focus is a better understanding the microflora's role in the functional biodiversity of vineyards
 - Viticulture and Enology Research Center in Italy has elevated microbiome research and seeks to expand its program
 - The Catena Institute in Argentina has funded microbiome projects, plans to continue to develop the program and partner with other regional groups
 - The New Zealand Winegrowers and Plant and Food Research have funded significant microbiome research with plans to continue

Research Developments

- Microbiome research has become an important component within numerous terroir-based studies
- Large wine companies (e.g., Sogrape, Torres) have RD programs that aim to use microbiome information to better manage soil health and biodiversity, promote plant resilience to stresses
- International journals in viticulture and enology consider microbiome research as a ‘hot’ topical area in submissions and publications
- The journal Frontiers in Microbiology also considers viticulture and enology a ‘hot’ topical area for manuscripts
- Major international conferences have developed sessions specifically to showcase microbiome research (Terroir Congress, GiESCO, etc.)

The Future

- Microbiome research is still in its infancy, however is growing rapidly within the grape and wine sector, technical institutes, and the scientific community
- Better and more sophisticated methods are producing very interesting and promising results
- In terroir-based research, the key appears to be developing a further understanding of the functional meaning of the microbiome in terroir expression
- The goal should be to develop a better understanding of the microbiome such that it allows us to grow better grapes, make better wine, be better stewards of our environment and ultimately be more sustainable



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