

Sustainable soil management for fine wines



Course summary

In a context where sustainable vineyard management depends on a deep understanding of soils, it becomes necessary to master how soil properties influence vine growth and wine quality. This module will help you connect theory to practice, exploring concepts such as soil formation, texture, and structure, and how these soil properties influence water and nutrient availability in real vineyard situations. Through clear explanations and interactive content, you'll gain the tools to make informed viticultural decisions.

Goals of the training

- To understand what a soil is, how it forms, and how it evolves.
- To identify and characterize the different types of viticultural soils according to their texture, structure, color, and water content.
- To connect soil properties with vine physiology and nutrition.
- To analyze water and nutrient cycles in vineyards and their impact on vine performance and grape quality.
- To explain the role of organic matter and soil biodiversity in sustainable vineyard management.
- To apply different methods for soil analysis and interpretation.
- To implement field techniques for soil profile evaluation and management decision-making.
- To assess the effects of agricultural practices and cover crops on soil fertility and biodiversity



Target audience

Professionals looking to upgrade their technical skills (with a bachelor's), anyone with a background in biology who is interested in learning more about wine.

Teaching team

- > Gregory Gambetta
Professor in viticulture
- > Marc Greven
Associate professor in viticulture
- > Kees van Leeuwen
Professor in viticulture
- > Elisa Marguerit
Associate professor in viticulture
- > Brice Giffard
Associate professor in ecology

Target Skills

- To describe and characterize soils using field observations and analytical data.
- To interpret soil analyses and propose appropriate amendments or management strategies.
- To develop critical thinking toward analytical methods and agricultural practices.
- To understand and relate plant–soil–water interactions to vine growth, yield, and grape quality.
- To design sustainable soil management plans integrating cover crops and biodiversity.
- To conduct field observations and diagnostics to support vineyard management decisions.



- **Week 1: Pre-semester online meeting and introduction to the module structure**

- **Week 2 & 3- Independent online coursework of Chapter 1.0, Chapter 1.2 & Chapter 1.2**

- To understand what a soil is, how it forms, and how it evolves.
- To identify the different types of viticultural soils and explain their importance.
- To understand why some soils are more suitable for viticulture than others.
- To distinguish between soil texture and structure.
- To describe the physical structure of soils and its characteristics.
- To understand the different approaches to soil analysis and characterization in vineyards, and to conclude that combining several methods is necessary to fully assess viticultural soils.

- **Week 4 - Q&A with Marc GREVEN**

- Responses to pre-submitted questions (1h30)
- Live questions (30min)

- **Week 5 to 7: Independent online coursework of Chapter 2.1, Chapter 2.2, Chapter 2.3 & Chapter 2.4**

- To understand root physiology and their role in plant nutrition.
- To understand grapevine physiology and nutrient requirements.
- To comprehend the importance of optimizing mineral nutrition.
- To understand the importance of water for plants and the plant-soil-water relationship.
- To understand the role of soil organic matter and biodiversity.
- To analyze the effects of agricultural practices on soil biodiversity.

- **Week 8: Q&A with Brice Giffard**

- Debrief of the activity in chapter 2.4
- Q&A session

- **Week 9 to 12: Independent online coursework of Chapter 3.1, Chapter 3.2, Chapter 3.3, Chapter 3.4 & Chapter 3.5**

- To be able to calculate the amount of organic matter to add in your vineyard.
- To understand how to perform a water balance.
- To initiate learners in setting up field measurements.
- To enable learners to critically assess the choice of measurement locations.
- To understand the role of cover crops in viticulture.
- To identify species adapted for sustainable soil management.
- To analyze the effects of agricultural practices on biodiversity.
- To validate knowledge on biodiversity impacts.
- To characterize a soil: temperature, water-holding capacity, and nitrogen availability.
- To understand the basics of soil analysis.
- To apply techniques from the module to characterize soils and make informed vineyard management decisions.

- **Week 13: Q&A with Elisa MARGUERIT and Gregory GAMBETTA**

- Responses to pre-submitted questions (1h30)
- Live questions (30min)

- **Week 14: Live tasting session**

- To be able to describe different wines (6 wines total)
- To be able to link different soils to different aromas

- **Week 15&16: Final assessment**

- To understand and master the interactions between soil, nutrients, and vine physiology to optimize soil management, prevent nutrient deficiencies, and promote sustainable, high-quality viticulture.



Practical information

Duration

Total of 30 hours of course content

Price

2020€ including wine tasting

Training location

100% remote e-learning and 4 live sessions

Prerequisites

Foundations in viticulture and/or plant physiology

Placement and assessment methods

Assessment of the achievement of objectives (final activity and quiz), satisfaction questionnaire

Teaching methods

Theoretical approach based on latest scientific research, study cases, lab cases

Number of people per session

From 10 students to 35 max.

Dates

2 Sessions per year

Autumn Session :

October 18th to January 31st, 2027

> register before : October 1st, 2026

Spring Session :

April 2nd to July 2nd, 2027

> register before : March 22nd, 2027

Registration

Department for Continuing Education
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05 57 35 07 67

Registration form :
<https://urlr.me/rjKadq>



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