

# Master Thesis

## Soil health in Swiss agroforestry systems

**Starting date:** Feb-Mar 2024

**Duration:** 6-12 month

**Working Place:** Agroscope Reckenholz

**Language:** German, French or English

**Contact:** Camille Rubeaud

**Email:** [camille.rubeaud@agroscope.admin.ch](mailto:camille.rubeaud@agroscope.admin.ch)

### Description of the thesis:

Agroforestry systems (AFS), the integration of woody plants into agricultural practices, promises high potential for improving **soil health** and fostering ecosystem service. AFS is therefore regarded as a means of increasing **agricultural resilience**. Indeed, AFS showed soil enhanced carbon sequestration, nutrient availability, and soil life over conventional systems. In addition, AFS have also been shown to improve water infiltration and microclimate, which could further increase resilience to **climate change**.

As part of a PhD project, a survey of soil quality is being carried out on a broad network of AFS farms across Switzerland. The network is very diverse, ranging from young to established systems with different settings (alley-cropping or single rows of trees in arable fields, silvopasture or vitiforest) and different tree uses (fruit production, energy wood or value wood). The aim of the project is to adopt a holistic approach to determining soil health in AFS, by assessing biological, chemical, and physical soil quality indicators.

This master thesis shall focus on a distinct category of soil indicators, depending on the student's interest or skills and the time constraints of a master's thesis. The student will participate in the collection of samples in the field, the preparation of soil samples and their analysis.

The work is embedded in an existing interdisciplinary project at Agroscope. Further data, methods and knowledge collected or developed in recent years are available and can be used to determine other factors (e.g. plant diversity in tree rows, biodiversity or land use) that influence soil quality and related ecosystem services.



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