

## Master thesis project



### The impact of agricultural intensification on earthworms and their ecosystem services

Soils harbor about a quarter of the biodiversity on earth. Soil biological communities perform a diverse array of functions that lead to fundamental ecosystem services that our society depends on. Earthworms are an important group of soil animals that are considered ecosystem engineers. Through their feeding and burrowing activities, they play a crucial role for decomposition and, hence, soil quality.

In agriculture, high crop yields can be achieved through intensive agricultural management. However, there is increasing evidence that land-use intensification can exert negative effects on soils and the organisms living therein. Agricultural practices, such as tillage, fertilization or the application of pesticides can negatively affect soil organisms and their diversity. Whether such reductions in diversity are also related to a decline of ecosystem functions and services is still poorly understood.

Within the scope of a large Citizen Science project ([www.beweisstueck-unterhose.ch](http://www.beweisstueck-unterhose.ch)), conducted jointly by Agroscope and the University of Zürich and aiming at investigating soil health across Switzerland, we are looking for a Master student to work on the characterization of Earthworm communities along a land-use and/or elevation gradient in Swiss agricultural soils.

The student will be part of a team that investigates soil quality across Swiss soils and will be responsible for collecting, quantifying and identifying earthworms in the soils. The work will include field sampling of diverse locations across Switzerland, identification of earthworm species by microscopy and analyzing the results. The project will help to increase our understanding of how Earthworms are distributed and how land-use intensity affects their abundance and diversity.

You should be interested in doing field work and working in team. You should be willing to learn how to identify earthworms. Ideally you own a driver licence but it is not mandatory. Also, you should be familiar with R and processing large datasets. For application or additional information, please contact Dr. Franz Bender [franz.bender@agroscope.admin.ch](mailto:franz.bender@agroscope.admin.ch) (Agroscope / University of Zürich) or PD Dr. Eva Knop [eva.knop@ieu.uzh.ch](mailto:eva.knop@ieu.uzh.ch) (Agroscope Reckenholz / University of Zürich). Preferred starting date is as soon as possible in spring 2021.