

# Tackling the trade-off between agricultural production and groundwater protection targets



## Background

In arable farming areas along the Swiss Central Plateau, nitrate concentrations in groundwater monitoring stations are exceeding the quality target of 25 mg/l NO<sub>3</sub> at nearly 50% of all monitoring sites (BAFU). Diffuse pollution from agricultural land is considered a main driver of nitrate contamination to groundwater. Within the **Team “Water Protection”** at Agroscope we study how climate, soil and management drive crop productivity and nitrate leaching. We explore management possibilities to tackle the ultimate trade-off between agricultural production and water protection in the Swiss lowlands.

A large lysimeter facility provides the experimental basis for our studies besides on-farm measurements and experimental field trials. Our experimental work is complemented with modelling work across different scales to evaluate the possibilities to increase water- and nutrient-use-efficiencies in agroecosystems now and in the future.

Whether you aim for a literature review, an experimental study, modelling work or a combination thereof, we can find an interesting subject for you to explore.

## The following research questions could be in the centre of your master study with us:

1. How do nitrate reduction measures (e.g., optimised cover crop mixtures, optimized irrigation, optimised fertilisation regimes, use of biochar, nitrification inhibitors) affect yields and nitrate leaching, respectively?
2. How does nutrient-use efficiency align with water-use efficiency in Swiss agroecosystems?
3. How do nitrate leaching risks vary in time and space in Switzerland?
4. What are the impacts of recent and future climate change on nitrate leaching risks from agricultural land in Switzerland?

With us you will work in a diverse and vibrant working environment at the intersection between science, practice and policy making. You benefit from engaging with researchers from different disciplines and at different career levels within the team, group and at Agroscope as a whole.

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