Two PhD Positions at the University of Zurich, Switzerland
Predicting and Understanding the Benefits of Wheat Variety Mixtures

We are inviting applications for two PhD positions in the *PrediMix* research consortium, focused on uncovering and leveraging the mechanisms behind the benefits of growing wheat in variety mixtures. Join us in exploring how biodiversity can enhance agricultural resilience and productivity !

Background

Modern agriculture must meet growing productivity demands while improving sustainability in the face of climate change and rising pest pressures. One promising strategy is growing *wheat variety mixtures,* which can improve yield stability, reduce disease incidence, and enhance resource use efficiency. However, a major hurdle remains: we currently lack the ability to predict which combinations of varieties will perform best. The *PrediMix* project unites five interdisciplinary research teams spanning plant breeding, genetics, ecology, phenotyping, and artificial intelligence to address this challenge.

PhD Projects

1. Predictive Modelling of Mixture Performance

This project will leverage existing datasets and new experimental data to predict mixture performance based on varietal traits. You will apply statistical modeling and machine learning techniques, requiring comfort with large datasets. Prior experience with data analysis is a plus, but training will be provided.

2. Soil Microbiome and Variety Interactions

This project explores how soil microbial communities mediate interactions among wheat varieties and affect mixture outcomes. It involves laboratory work and molecular techniques (e.g., DNA-based microbiome analyses). Experience with DNA-based molecular techniques and lab work is essential.

Requirements

- Master's degree (or equivalent) in biology, ecology, microbiology, or a related field
- Strong written and oral communication skills in English
- Experience with statistical analysis (R or similar software)
- Interest in interdisciplinary and collaborative research

Position Details

- Start date: between September 1 and November 1, 2025 (negotiable)
- Duration: 3.5 years, with potential for extension
- Location: Dept. of Evolutionary Biology and Environmental Studies, University of Zurich
- Supervision: Prof. Dr. Pascal Niklaus, and members of the *PrediMix* consortium
- Salary: ~50,000 CHF/year (Swiss National Science Foundation standard)
- Enrollment: PhD Program in Ecology, Life Science Zurich Graduate School

How to Apply

Please submit the following documents as a single PDF to pascal.niklaus@uzh.ch with the subject line: "PrediMix: Application": (1) letter of motivation, (2) curriculum vitae (CV), (3) transcripts of academic records, and (4) contact information for references. Kindly indicate which of the two PhD positions you are applying for (or both, if applicable). We will evaluate applications beginning July 1 until the position is filled.

Further Information

- Prof. Dr. Pascal Niklaus (https://www.ieu.uzh.ch/en/staff/member/niklaus_pascal.html) for inquiries: pascal.niklaus@uzh.ch with subject line "PrediMix"
- PhD Program in Ecology – UZH (https://www.ieu.uzh.ch/en/teaching/phd_ecology.html)
- PrediMix Project Partners (https://data.snf.ch/grants/grant/10002207)