



Job advertisement Agroscope

Position

PhD position: **“Uncovering new leaf rust resistance sources in neglected Swiss wheat landraces”**

Introduction

The use of resistant varieties is a cheap, efficient and environmentally sound method to control wheat leaf rusts. Modern wheat varieties often (1) harbour major resistance genes, which confer full protection against specific races of wheat rusts, and (2) quantitative resistance that results from the joint action of several genes and confers partial but durable resistance to mostly all the races of the pathogen. Although major resistance is easy-to-use in breeding programs, it tends to be short-lived against new compatible wheat rust races. Arguably, quantitative resistance is more durable but also difficult to handle due to its complex genetic architecture. The combination of both types of resistance in the same cultivar has been proposed the best strategy to achieve stable, broad-spectrum and long-lasting resistance to wheat rusts while reducing the use of costly and environmentally problematic fungicides.

In this project, we aim to screen an extensive series of modern varieties and landraces from various origin in search of new qualitative and quantitative resistances against leaf rust effective under field conditions. By combining high-quality disease phenotyping tools and next-generation sequencing (NGS) platforms, we will tap resistance sources, develop markers in order to getting insight into rust resistance mechanisms, and identify resistance genes. This work will provide direct applications for practical breeding.

Tasks

You will :

- Compile scientific information to develop a doctoral thesis
- Generate, select and evaluate plant material, with a special emphasis on the storage and management of seeds.
- Set up and implement field and greenhouse experiments
- Conduct the phenotyping and the analysis of NGS data
- Write and present results at a national and international level

Requirements

- We are seeking an outstanding motivated scientist with a strong scientific background who has recently been awarded an MSc in Agronomy, Biology, Molecular biology or equivalent with a strong interest in breeding.
- Strong motivation to work in the field and in the laboratory
- Achievement-oriented and open-minded personality with a good team spirit
- Demonstrated skills in statistics and NGS data analysis
- Good organisation, communication and IT skills
- Working languages are English and French. Some knowledge of German is an asset.

Organisation

The PhD thesis will be hosted at Agroscope, a Swiss public research institute for agriculture and nutrition. The institute is part of the Federal Department of Economic Affairs, Education and Research (EAER). The group of Crop breeding and genetic resources develops new wheat and soybean varieties for the domestic and international markets. Our varieties combine high yielding with disease resistance and excellent quality properties making them an important tool for Integrated Pest Management (IPM) and organic agriculture.

This project will be realised in collaboration with the University of Zürich, supervised by Prof. Dr. Beat Keller and in very close collaboration with Delley Seeds and Plants Ltd (DSP SA, Delley FR).

We offer a stimulating work environment in a multidisciplinary research team as well as a close support throughout the project. Agroscope has excellent research facilities with well-equipped laboratories, greenhouses, climate chambers and sites for field experiments and field studies. You will profit from flexible working time and good employee benefits.

Place of Work

Agroscope Changins, 1260 Nyon (Switzerland)

Salary Category

According to the guidelines of the Swiss National Science Foundation

Employment Level

80% -100%



Application

If this challenge appeals to you and you meet our requirements profile, we look forward to receiving your application

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Start date: Mai 2021 (approx.), Duration: 3.5 years.