



## **Resilience of Cropping Systems and Soil Health in Western Canada Graduate Student Position**

This position is available as a fully funded PhD or MSc graduate student. Highly qualified candidates are encouraged to apply.

Timeline for applications: until filled

Desirable timelines for beginning the program: January 2024 or May 2024 (these are preferred start dates, but they are flexible)

Working directly with Dr. Henry Chau, Soil Scientist, based in Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada, and with co-supervision by Dr. Guillermo Hernandez, Professor.

The student will be registered as a graduate student at University of Alberta, Department of Renewable Resources. This is a funded graduate student position, including stipend.

This research project is evaluating contrasting cropping systems across major Canadian Prairie ecosites to determine impacts on agroecosystem resiliency and soil health. The objective of the study encompasses the determination of the best (more productive, sustainable, resilient) cropping systems for soil health in each of the ecozones within the Canadian Prairie using a wide array of contemporary and novel crop rotation sequences. Project activities include field sampling, laboratory procedures (e.g., tensiometry, aggregation, infiltration, compaction, organic matter fractionation, crop residues), data analyses of soil quality attributes and manuscript writing. Support and guidance in developing an impactful research project will be provided. Knowledge and interest in soils, soil nutrients, sustainability and resilience of agroecosystems are valuable assets.

The successful candidate will spend most of the research program tenure working at the Lethbridge Research and Development Centre, AAFC, and will complete coursework requirements at UAlberta in Edmonton as part of the degree program. During the program, the student will work in the Edmonton campus of UAlberta for about two consecutive academic semesters. The successful candidate will have the great opportunity to work with a diverse group of researchers across scientific disciplines at these two prestigious research institutions.

This large collaborative research project entails multiple experimental sites established across the Canadian Prairies. The student will be coordinating goals and conducting work in outdoors in agricultural settings as well as laboratory spaces, mostly centered in Lethbridge. Further activities and coursework will take place at UAlberta campus in Edmonton to complete degree requirements for about two semesters.

## **Entry requirements:**

Knowledge of soils, plants as well as water, nitrogen and carbon cyclings, Proactive, flexible, dedicated, well-centered, responsible Open to undertake scientific approaches and to engage intense numerical analyses, data interpretation and writing up of thesis findings, and publications.

## **Other key assets:**

A teamwork aptitude — ability to work independently and with others, A desire to deliver, share and present results in public, A consistent willingness and availability to work outdoors in agricultural settings, Computer skills, A 3.3 GPA or better, and A valid driver license and clean driving record/abstract.

**Keywords:** Soil, Tillage and no-tillage systems, Crop sequences, Cover crops, Green manures, Nitrogen fixation, Annual crops, Drought resilience, Biotic and abiotic stress, Agroecosystem resiliency, Soil Health, System Sustainability.

## **Application documents, and contact Information:**

Please e-mail transcripts (scanned unofficial copy), CV, a letter describing any research experience and interests (1-page), and a list of three references with their corresponding contacts to: Henry Chau, henry.chau@agr.gc.ca or

Guillermo Hernandez, ghernand@ualberta.ca