



## UNIVERSITY OF ALBERTA - GRADUATE STUDENT POSITION

**Project Title:** Nitrous Oxide Sources and Fluxes from Soils.

**Sought degree:** PhD

**Supervisor:** Dr. Guillermo, Hernandez Ramirez (Associate Professor), Department of Renewable Resources

**Timeline for this position:** available until filled.

### **Project Description:**

To quantify and reduce N<sub>2</sub>O emissions from soils recurrently receiving nitrogen additions are critical challenges for scientists, farm managers and the broader society. To achieve these goals, it is essential to develop new understanding of the underlying soil processes, controlling factors, and their spatio-temporal variations in both natural and intensively-managed ecosystems. On-going research efforts target the beneficial coordination of land management practices to mitigate N<sub>2</sub>O emissions in unison with a multi-functionality system approach. There is also a need to verify if nutrient use-efficiency and productivity by plants are maintained, reduced or increased as a function of management choices. Collectively, putative enhancements in ecosystem performance will underpin sustainability of these land-use systems. This research will address these inquiries via multi-year field experiments, controlled assays, and modelling to advance knowledge and identify balanced solutions.

I am seeking for a responsible student interested in the project.

### Initial requirements:

Knowledge of soils, plants and nitrogen cycling,

Proactive, flexible, dedicated, well-centered, responsible

Open to undertake scientific approaches and to engage intense numerical analyses, data interpretation and writing up of findings, and publications.

### Other assets:

A teamwork aptitude — ability to work independently and with others,

A desire to deliver, share and present results in public,

Computer skills,

A 3.5 GPA or better, and

A valid driver license and clean driving record/abstract.

The research entails field activities. Work will involve sophisticated instrumentation to quantify fluxes, soil, and plant responses. Laboratory work (including incubation and greenhouse procedures) will involve novel approaches to discern soil processes and properties associated with

fluxes. In addition to frequent interactions with UAlberta staff, collaborative work can be also conducted with personnel from provincial and federal research agencies.

Please e-mail transcripts (scanned unofficial copy), CV, a letter describing any research experience and interests (1-page), and a list of three references.

**Keywords:** Soil, Nitrous oxide, Greenhouse gases, Flux, Sources, Nitrogen, Carbon, Water, Climate Change, Food Security

**Annual stipend:** CAD 30,000

**Contact Information:** ghernand@ualberta.ca

### **Additional Information**

University of Alberta is consistently rated as one of the top 5 universities in Canada, and one of the top 100 universities worldwide. Located in Alberta's capital city, Edmonton (population of one million people), University of Alberta provides a dynamic mixture of a large research intensive university, urban culture and recreation. More than 39,000 students from across Canada and 144 other countries participate in nearly 400 programs and 18 faculties. Within the University, the Department of Renewable Resources consists of 30 faculty members, over 200 graduate students, numerous postdoctoral fellows and support staff, and offers significant research support through sophisticated laboratories and multiple field facilities.

### **Website**

<https://www.ualberta.ca/agriculture-life-environment-sciences/about-us/contact-us/facultylecturer-directory/guillermo-hernandez-ramirez>  
<https://landecosystems.ualberta.ca/>  
<https://www.ualberta.ca/agriculture-life-environment-sciences/programs/graduate-programs/prospective-students/renewable-resources>