



2019 PhD Scholarship - Innovative new methods for soil organic carbon assessment and monitoring

Status: **Open**

Applications open: 6/06/2019

Applications accepted at any time

About this scholarship

Description/Applicant information

An opportunity is available for an outstanding PhD scholar in the area of soil organic carbon monitoring with the School of Molecular and Life Sciences in the Faculty of Science and Engineering at Curtin University. Maintaining or increasing soil organic carbon (C) is critical to tackling climate change. It is also the most important element controlling soil health, which enables soils to be resilient. Soil organic carbon (C) exerts positive effects on soil physical and chemical properties and increases the soil's capacity to provide ecosystem services (e.g. the provision of food and the regulation of climate). The amount of soil organic C (per unit area of land) depends on the annual inputs of biomass, the type of land management, the soil type and the vulnerability of soil organic C to decomposition. This is why soil organic C is highly variable in space, across landscapes and down the soil profile. Current methods for measuring the variability in soil organic C and for monitoring its change over time are expensive and inefficient. There's an urgent need to develop cost-efficient methods to assess and monitor changes in soil organic C, for example, for on-farm C accounting. The new methods must be based on a solid understanding of soil C, its composition and the processes that lead to both its accumulation and loss. The aim of this project is to develop a robust, practical and cost-efficient methodology for measuring the organic C stocks (and C composition) in the soil, for quantifying its variation across landscapes and for monitoring its change over time. The successful candidate will gain experience in soil organic carbon sciences, statistical analyses, new soil sensing methods, empirical modelling, multivariate statistics, machine learning, and current methodologies for soil C accounting.

Student type

- Current Students
- Future Students

Faculty

- Faculty of Science & Engineering
 - Science courses

Course type

- Higher Degree by Research

Citizenship

- Australian Citizen
- Australian Permanent Resident
- New Zealand Citizen
- Permanent Humanitarian Visa
- International Student

Scholarship base

- Merit Based

Value

\$27,596 per annum for 3 years with possibility of 6 months extension. The scholarship stipends will be index yearly. For a successful international student, tuition fees offsets will apply.

Scholarship Details

Maximum number awarded

1



Eligibility criteria

1. Applicants must hold a First or Upper Second-Class Bachelor's degree (or its international equivalent), or a Master's degree in a related science field (soil, agriculture, precision agriculture, ecology, environment) with a Merit and a minimum average grade of 60% and substantial research component.
2. Applicants must be personable, work well under supervision and be willing to work in a collaborative environment.
3. Applicants must demonstrate:
 - excellent understanding of modern, quantitative methods in soil science (sampling designs, proximal and remote sensing, spatial-temporal analyses, modelling);
 - a good understanding of soil carbon cycle;
 - an understanding of modern methods, including multivariate statistics and machine learning;
 - a strong aptitude for statistical programming, for example using R, python;
 - excellent written and communication skills, and
 - a strong aptitude for scientific writing and publication.
4. Applicants must not be engaged in full-time employment, or be subject to an obligation with another party to provide that party with any intellectual property rights during the course of their research studies. Applicants must not be engaged in full-time employment, or be subject to an obligation with another party to provide that party with any intellectual property rights during the course of their research studies. Applicants must not be engaged in full-time employment, or be subject to an obligation with another party to provide that party with any intellectual property rights during the course of their research studies.

Enrolment requirements

The scholarship is a full-time enrollment for a period of 3.5 years. No part-time, casual or other allowed.

Changes to Enrolment

Progression is subject to passing annual progress reviews.

How to apply

Application process

The successful applicant will be awarded the Scholarship on the following basis:

- academic merit,
- understanding of the research field,
- curriculum vitae and publications,
- two academic references,
- a personal statement that demonstrates the required skills and experience as listed in the eligibility criteria.

Need more information?

Enquiries

Contact Prof. Raphael VISCARRA ROSSEL on +61 467 769 364 or r.viscarra-rossel@curtin.edu.

Further information

<http://curtin.edu/soil-landscape-sci>