### POSITION DESCRIPTION

<table>
<thead>
<tr>
<th>Position Title:</th>
<th>Postdoctoral Research Fellow in Soil Carbon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation Unit:</td>
<td>School of Agriculture and Food Sciences</td>
</tr>
<tr>
<td>Position Number:</td>
<td>TBA</td>
</tr>
<tr>
<td>Type of Employment:</td>
<td>Full time, fixed term for 3 years</td>
</tr>
<tr>
<td>Classification:</td>
<td>Academic Level A</td>
</tr>
</tbody>
</table>

### THE UNIVERSITY OF QUEENSLAND

The University of Queensland (UQ) contributes positively to society by engaging in the creation, preservation, transfer and application of knowledge. UQ helps shape the future by bringing together and developing leaders in their fields to inspire the next generation and to advance ideas that benefit the world. UQ strives for the personal and professional success of its students, staff and alumni. For more than a century, we have educated and worked with outstanding people to deliver knowledge leadership for a better world.

UQ ranks in the world’s top universities, as measured by several key independent ranking, including the CWTS Leiden Ranking (32), the Performance Ranking of Scientific Papers for World Universities (40), the US News Best Global Universities Rankings (42), QS World University Rankings (47), Academic Ranking of World Universities (54), and the Times Higher Education World University Rankings (66). Excluding the award component, UQ is now ranked 45th in the world in the ARWU, and is one of the only two Australian universities to be included in the global top 50.

UQ has an outstanding reputation for the quality of its teachers, its educational programs and employment outcomes for its students. Our students remain at the heart of what we do. The UQ experience – the UQ Advantage – is distinguished by a research enriched curriculum, international collaborations, industry engagement and opportunities that nurture and develop future leaders. UQ has a strong focus on teaching excellence, winning more national teaching excellence awards than any other in the country and attracting the majority of Queensland’s highest academic achievers, as well as top interstate and overseas students.

UQ is one of Australia’s Group of Eight, a charter member of edX and a founding member of Universitas 21, an international consortium of leading research-intensive universities.

Our 53,000-plus strong student community includes more than 16,400 postgraduate scholars and more than 17,000 international students from 135 countries, adding to its proud 260,000-plus alumni. The University has more than 6,600 academic and professional staff (full-time equivalent) and a $2.15 billion annual operating budget. Its major campuses are at St Lucia, Gatton and Herston, in addition to teaching and research sites around Queensland and Brisbane city. The University has six Faculties and four University-level Institutes. The Institutes, funded by government and industry grants, philanthropy and commercialisation activities, have built scale and focus in research areas in neuroscience, biomolecular and

---

V6.6 September 2019
biomedical sciences, sustainable minerals, bioengineering and nanotechnology, as well as social science research.

UQ has an outstanding track-record in commercialisation of our innovation with major technologies employed across the globe and integral to gross product sales of $11billion+.

UQ has a rapidly growing record of attracting philanthropic support for its activities and this will be a strategic focus going forward.

Organisational Environment

The School of Agriculture and Food Sciences is one of the largest schools of this type in Australia, comprising research and teaching experts in plant and soil science, animal science, agricultural business, environmental science, and food, nutrition and technology. With a diverse group of internationally regarded scientists, our experts deliver knowledge, skills and research that provide solutions to world issues in climate change, feeding the world, managing the environment, replacing fossil fuels with biofuels, maintaining biodiversity, and supporting economic and community development.

Located at St Lucia and Gatton, the School is a large and dynamic multidisciplinary hub focused on applied research and teaching within the Faculty of Science committed to finding innovative and technology focused solutions to global challenges. The School offers a range of undergraduate and postgraduate coursework and research degrees encompassing agriculture and related disciplines ranging from Bachelor Degree to Doctorate. Quality laboratories and facilities and strong partnerships with industry, community and government bodies, provide an environment that enables world class research and research training, in a collaborative and cooperative spirit for postgraduate students and researchers.

Soil Science, within the School of Agriculture and Food Sciences, is a highly productive research group with a strong track record of research funding spanning the agriculture / environment spectrum.

Information about the Faculty and the School may be accessed on the Faculty's web site at http://www.agriculture.uq.edu.au. Faculty of Science information covering 6 Schools and 19 Centres is available at http://www.uq.edu.au/science.

Information for Prospective Staff

Information about life at UQ including staff benefits, relocation and UQ campuses is available online.

The University of Queensland Enterprise Agreement outlines the position classification standards for Levels A to E.

DUTY STATEMENT

Primary Purpose of Position

The present position will focus upon understanding changes in organic carbon in Australian grain-producing soils, such as from the application of biosolids, green manures, and biochars. This position will link with existing research projects with the Grains Research and Development Corporation (GRDC) from around Australia to access a range of soils, including from long-term trials investigating changes in organic carbon in soil as part of various agricultural management practices (such as green manuring, for example).
Specifically, this position will focus on (i) examining how the bulk forms (species) of carbon change in soils, (ii) examining how the distribution of the different carbon species differs spatially within intact soil aggregates by using in situ approaches, and (iii) relating these observations regarding soil organic carbon to overall soil behaviour (for example, soil stability) and productivity.

A variety of approaches will be used to examine the behaviour of organic carbon in these soils, with synchrotron-based approaches being of central importance, including synchrotron-based IRM. Other approaches are also valuable in this regard and will likely form part of the research program, including synchrotron-based NEXAFS and NanoSIMS.

This position is one of several that are being funded as part of a collaboration between GRDC, The University of Queensland, the University of South Australia, Murdoch University, and the Australian Synchrotron (ANSTO). Overall, this large research program aims to develop synchrotron-based techniques as an approach for improving our understanding of plant-soil interactions in Australian grain-producing systems. The Australian Synchrotron is one of Australia’s most significant pieces of scientific infrastructure. Developments in recent years at the Australian Synchrotron have enabled new approaches that can investigate issues that impact upon Australian grain production. This present position will also collaborate closely with the other postdoctoral positions being funded through this GRDC project. These other positions include one that is seeking to develop X-ray tomography for analyses of root distribution in large soil cores as well as a position that is seeking to develop synchrotron-based approaches for imaging nutrient distribution in soils.

This research is conducted as part of a collaboration between the School of Agriculture and Food Science at The University of Queensland and the Grains Research and Development Corporation (GRDC).

Duties

Duties and responsibilities include, but are not limited to:

Research

- Undertake innovative research in a variety of soil types and systems using a variety of approaches, including (but not limited to) synchrotron-based infrared microspectroscopy (IRM), in order to understand how organic carbon interacts with soils and the factors influencing the accumulation or loss of organic carbon.
- Maintain clear and accurate records of work performed.
- Assist in the preparation of reports to the University and the funding body (GRDC)
- Prepare high quality, peer-reviewed publications for international journals

Service and Engagement

- Perform a range of administrative functions in the School
- Contribute to the processes that enable the academic team to manage the work of the School, including participate in School decision-making and serve on School committees
- Foster the School’s relations with industry, government departments, professional bodies and the wider community.
- Any other duties as reasonably directed by your supervisor

Other

- Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including but not exclusive to:
  - the University’s Code of Conduct
Organisational Relationships

The position reports to Associate Professor Peter Kopittke.

SELECTION CRITERIA

- PhD in the area of Soil Science, Agricultural Science, or Environmental Science.
- Demonstrated expert knowledge in the area of Soil Science, with a focus on the analysis of soil organic carbon. Experience in the use of synchrotron-based approaches for soils (including relevant sample preparation techniques) would be highly advantageous.
- Excellent written and verbal communication skills.
- A willingness to be involved in research in remote locations, and to travel regularly (both domestically and internationally) to conduct specific analyses.
- Organisational and problem solving skills.
- Experience in the production of scientific reports, journal publications, and standard operating procedures.
- Well-developed interpersonal skills, including the ability to work and communicate well in a multidisciplinary team.
- Commitment to upholding the University’s values, and with the outstanding personal qualities of openness, respectfulness and integrity.

Seminar

Applicants invited for interview may be expected to present a seminar in conjunction with the selection interview process.

Qualification Verification

An appointment to this position is subject to the verification of the highest academic qualification from the conferring institution.

The University of Queensland values diversity and inclusion and actively encourages applications from those who bring diversity to the University. Please refer to the University’s Diversity and Inclusion webpage for further information and points of contact if you require additional support.

Accessibility requirements and/or adjustments can be directed to recruitment@uq.edu.au.