



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

PHD WALSH FELLOWSHIP OPPORTUNITY

“Quantification of Carbon fluxes from organic and organo-mineral soils”

Ref: 2021063

Background

Irish grasslands are a significant carbon (C) store, with grasslands under mineral and organic (histosol) soils containing approximately 1.5 billion tonnes of carbon. Histosols are large C sinks, typically containing between 1000-4000 tC ha⁻¹, with the amount of C sequestered governed by hydrological status, vegetation type and associated management. Currently over 300,000 ha of these soils are drained for permanent pasture in Ireland and, due to the high C stocks, they emit large quantities of carbon (6-32 tCO₂ ha⁻¹) upon drainage which is further accelerated by the imposition of agricultural management, resulting in CO₂ emissions of 3.5 million tonnes per annum. The objective of the PhD will be to measure field-scale fluxes of carbon dioxide (CO₂), methane (CH₄) and water (H₂O) and to generate land-use and land management emission factors for the following site typologies:

- Grasslands established on shallow and deep-drained nutrient poor and nutrient rich histosols and on drained organo-mineral soils.
- Previously drained systems which have naturally or actively been re-wetted across the full nutrient and drainage gradient.

This work will lead to a) more robust emission factors for key greenhouse gases, b) will elucidate the drivers of C losses and their relative impacts and c) quantify the extent to which re-wetting and changes in water table and management can reduce C losses.

Requirements

Applications are invited from graduates holding a first or 2.1 class honours degree or M.Sc. in Biochemistry, Soil Science, Environmental Science or related discipline. The successful candidate should be practically minded, highly self-motivated, prepared for extensive field and laboratory work and who enjoys data analysis, writing and communicating/disseminating their work. Prior experience in measuring carbon and greenhouse gas dynamics of terrestrial systems would be advantageous. A full, clean Irish/European driving licence and fluency in English are essential.

Award

The PhD Fellowship is part of a joint research project between Teagasc, TCD and UCD. The student will primarily be based with Teagasc and at TCD for periods of the studentship. The student will be registered at Trinity College Dublin. The Fellowship provides an annual student stipend of €18,000 and full EU fees and the position is tenable for 4 years.

Further Information/Applications

Dr Matthew Saunders, email: saundem@tcd.ie

Prof. Gary Lanigan, Teagasc, email: gary.lanigan@teagasc.ie

Application Procedure

Applicants should submit a CV and covering letter detailing their qualifications, experience and motivation for the above position to saundem@tcd.ie and gary.lanigan@teagasc.ie

Closing date

5pm, Friday, 28th January 2022