

PhD - Adding weight to the Irish Soil Information System: Understanding and modelling bulk density and other properties of soils in Ireland Academic Supervisor: Dr. Ron Corstanje, Dr Rachel Creamer (Teagasc) and Dr.

Mick Wheelan

Duration: 3 years

Supported by the Teagasc Walsh Fellowship, a studentship of up to £17,900 p.a. for 3 years including fees\* is available

Cranfield University has an exciting research opportunity for a highly motivated graduate to be involved in the development of the Irish Soil Information System (ISIS). The ISIS project aims to complete a soil map for Ireland on a 1:250,000 scale using, in addition to traditional soil survey techniques, predictive modelling of soil properties from landscape characteristics. The PhD studentship will contribute to and benefit from the work conducted in the wider ISIS project.

Historical soil survey activities in Ireland have created a large legacy of semi-quantitative or qualitative soil information in addition to quantitative data sets. There is also considerable expert knowledge currently in place associated to the Irish Soil Information System. The objective of this PhD project is to build a logical framework in which this expert knowledge and understanding of how the soil is formed in relation to the Irish landscape can be integrated with existing qualitative information and quantitative and semi-quantitative data. The modelling framework will be used to help create better maps of soil properties.

The project will initially focus in soil bulk density, a fundamental soil property which affects soil hydrological response and structural strength.

It is also an important parameter controlling carbon and nutrient storage and is therefore critical for understanding the importance of soil in environmental or agricultural processes.

In addition to advancing the science underpinning digital soil mapping, the result from this PhD project will help to inform the policy decision making and will provide added value to other projects including the Irish soil Information System and National Soil Database for England and Wales by providing an indicative bulk density value for soil type/land use combinations. The framework which will be developed will also provide a platform for the prediction of other soil parameters which provide useful information, but which are often discarded in large scale projects due to the cost and labour required for the measurement.

These studentships are funded by Teagasc, the Irish Agriculture and Food Development Authority, Johnstown Castle, Co. Wexford, Ireland as part of a broader collaborative agreement with the Natural Resources Department, Cranfield University, U.K. Students will be registered for a PhD programme at Cranfield and will be supervised by staff from both organisations. Work will be carried out at both institutions with the split between Johnstown castle and Cranfield based on the needs of the project.

Closing Date: 31st July 2009

Start date: 1st October 2009

Entry requirements

Applicants should have a first or upper second class UK honours degree or equivalent or MSc in a related subject. A background in environmental science and mathematics or statistics would be advantageous.

Funding

\*Support by the Teagasc Walsh Fellowship, this studentship will cover the tuition fees at the UK/EU rate only. Applicants are also eligible for a bursary of up to £17,900p.a. for three years dependent upon qualifications and experience.

#### How to apply

In addition to your CV, please complete the application form at:

[www.cranfield.ac.uk/prospectus/app/pgappform.pdf](http://www.cranfield.ac.uk/prospectus/app/pgappform.pdf)

Alternatively, for more information and an application form please contact:

School of Applied Sciences

T: 44 (0)1234 754086

E: [appliedsciences@cranfield.ac.uk](mailto:appliedsciences@cranfield.ac.uk)

W: [www.cranfield.ac.uk/sas/studentships?id=nsfap](http://www.cranfield.ac.uk/sas/studentships?id=nsfap)