



## TEAGASC PHD WALSH FELLOWSHIP OPPORTUNITY

“Using a surface energy balance approach to characterise agro-environmental zones in Ireland in support of on-farm decision making”

Ref 2016076

### Background

Farming, particularly pastoral farming, involves the management of biological processes within a specific ecological and weather environment to generate income which in turn is also a function of the costs of inputs used on farm and prices for the outputs of the farm activity. Biological processes exhibit significant spatial and temporal variability which impact on income volatility and which can arise from variability both in these biological and in parallel market processes. The primary objective of this research is to develop a framework which utilises multi-source, near real time agricultural and meteorological data which would facilitate the development of farm management and decision support tools that can potentially increase, at a low cost, the uptake and use of agro-environmental information systems. Such tools, and their uptake, would ultimately lead to enhanced financial, business and technical decision making on farms.

The focus of this research is on land based, particularly animal, systems, where environmental conditions and short term management decisions are important. The research will utilise a surface energy balance approach to derive high spatial resolution agro-meteorological information; derived from integrating new and existing data streams derived from airborne platforms (e.g. satellite / radar / drone) and traditional sources (e.g. surface/subsurface meteorological observations). Complementary spatial environmental data (e.g. land use/cover; soil type) will subsequently be incorporated to develop a regional agro-environmental classification, which characterises the landscape on the basis of agro-meteorological and environmental conditions. The resultant classification scheme will be evaluated against recorded grass growth (e.g. PastureBase). The National Farm Survey (NFS) and LPIS (Land Parcel Information Scheme) data will be categorised and analysed according to the agro-environmental classes to develop region specific benchmarks of productivity. The benchmarks will be incorporated into a dissemination tool (e.g. web/phone) that will allow a farmer to assess their performance relative to regionally specific benchmarks.

This Walsh Fellow project will be part of the Teagasc AgData project.

### Requirements

Applicants should have a good primary degree (First or Second Class Honours) or M.A./M.Sc. in an appropriate discipline (Geography, Environmental Science, Climate Science etc.). The successful candidate should be highly self-motivated and be prepared for laboratory and/or field work with modern analytical equipment. Ideally, potential candidates would be able to demonstrate experience in remote sensing and/or application of the surface energy balance approach.

### Award

The PhD Fellowship is a joint research project between the Department of Agrofood, Business and Spatial Analysis, REDP, Teagasc (Ashtown), Maynooth University Department of Geography, Maynooth University, and the Department of Geography, University College Dublin. The student will be co-located between a relevant Teagasc centre and Maynooth University and will be registered at Maynooth University, working under the supervision of Rowan Fealy (MU) and Gerald Mills (UCD) in association with Teagasc supervisors (Reamonn Fealy and Gary Lanigan). Periods of field work will be undertaken at various locations around the country.

The successful candidate will be expected to participate in Walsh Fellowship events organised by Teagasc.

The fellowship provides a stipend of €22,000 which comprises of fees of up to a maximum of €6,000 per annum. University fees are paid by the student from the stipend which is tenable for 4 years.

**Further Information/Applications**

Rowan Fealy, Maynooth University Department of Geography, Maynooth University, Co. Kildare  
Phone +353 (0)1 7084562 email: rowan.fealy@nuim.ie

Gerald Mills, Department of Geography, University College Dublin, Dublin, Co. Dublin  
Phone +353 (0)1 7168229 email: gerald.mills@ucd.ie

**Application Procedure**

Submit an electronic copy of Curriculum Vitae and a letter of interest simultaneously to:  
Rowan Fealy email: rowan.fealy@nuim.ie and  
Gerald Mills email: gerald.mills@ucd.ie

**Closing date**

Friday, 28 April, 2017