 

**PhD Fellowship Opportunity**

“Advancing on-farm management and treatment options for dairy soiled water”

**Background**

Water quality and quantity are under rising pressure from agricultural activities that may cause overexploitation of natural waters and pollutants runoff. These stresses are also compounded by climate change effects. To address the complex challenges of agri-water management, this EU-funded project, entitled UNIVERSWATER, will adopt a ‘system of systems’ approach by developing and improving technologies designed to optimise water resources uses in a fully integrated way. A dedicated interdisciplinary and intersectoral consortium of 15 partners from six European countries will: a) develop innovative portable and in-situ sensors for a number of parameters and pollutants (salinity, nutrients, CEC, microbiological indicators), b) couple them with earth observation imaging and advanced explainable and robust artificial intelligence techniques, c) develop cost-effective, sustainable methods based on nature-based and technology-based solutions for water remediation at the point of need, and d) promote the adoption of the developed methods through pricing incentive provision. These technologies will be integrated into decision support systems (DSSs) that will be tested at three case studies, including one in Ireland which aims to tackle on-farm treatment of dairy soiled water, while others investigate the mitigation of soil salination through water reuse and the optimisation of fertiliser/pesticide application for freshwater preservation. Going beyond, UNIVERSWATER will upscale these local DSSs into a common platform where a suite of DSS tools can be adapted to different situations after being tailored to the local factors, thereby developing a modular, extensible and holistic universal DSS.

Working in collaboration with the UNIVERSWATER project partners, the successful PhD candidate will be tasked with designing, operating and evaluating a suite of water treatment technologies (which may include: solid separation techniques, nutrient attenuation phases, hybrid constructed wetlands, advanced oxidation processes, filtration systems, UV disinfection). Thereafter, they, along with colleagues, will be tasked with monitoring the performance of treatment systems for a range of water quality parameters (including nitrogen, phosphorus, organics and antibiotics), conducting experiments evaluating the reuse potential of the residual sludge from the system as fertiliser, and developing a DSS to guide recommendations on the operation of an optimised the hybrid constructed wetland and advanced oxidation processes.

**Requirements**

Applications are invited from graduates holding a first or upper second-class primary degree or equivalent or M.Sc. in a relevant discipline (Environmental Science, Environmental Engineering, Water Resource Management, Agricultural Science, etc.). The successful candidate should be practically minded and self-motivated.

**Award**

The PhD Fellowship is a joint research project between the Teagasc Animal & Grassland Research and Innovation Centre, Moorepark, and the School of Biological and Chemical Sciences and Civil Engineering at University of Galway. The student will be based at Teagasc Moorepark and will be registered at University of Galway, working under the direct supervision of Dr Pat Tuohy and Prof Owen Fenton (Teagasc) and Dr Alma Siggins and Prof Mark Healy (University of Galway). The Fellowship provides an annual stipend of €22,000 (excluding fees) tenable for 3 years.

**Application Procedure**

Applicants should submit a CV and covering letter detailing their qualifications and experience to Dr Pat Tuohy (patrick.tuohy@teagasc.ie) and Dr Alma Siggins (alma.siggins@universityofgalway.ie)

**Closing Date**

Friday November 15th, 2024.