



## PH.D. OPPORTUNITY

### ***“The role of soil micronutrients in N cycling and N use efficiency in winter wheat”***

#### **CONSUS: Crop Optimisation through Sensing, Understanding & Visualisation**

University College Dublin (UCD) together with Origin Enterprises Plc have established a new collaborative Science Foundation Ireland (SFI) Strategic Partnership research programme, entitled **CONSUS**, focussed on the application of precision agriculture to crop production with a particular emphasis on optimisation of agri-food production systems leading to more efficient food production with lower environmental impacts. The outcomes from this research programme will deliver a step-change in crop agronomy tools and practices, leading to enhanced global competitiveness.

**Applications are invited from suitably qualified candidates for a 4-year PhD studentship with the CONSUS team researching crop nutrition and limits to yield potential.**

#### **Background**

Globally, major gains in crop yield and quality have been made through the application of the major plant nutrients (macronutrients) such as N, P and K in fertilizer. However, with the supply of adequate levels of these macronutrients, concentrations of micronutrients, such as Zn, Cu and Mn, in soil and plant can drop below optimum and become yield- and quality-limiting. This is particularly the case in more intensive cropping systems with higher yields and removal of micronutrients in exported plant materials. Fertilizer N is a major variable input cost to most conventional farming systems. In addition, poor use efficiency can increase the risk of loss to the wider environment, and associated impacts on water quality, air quality, and anthropogenic greenhouse gas emissions and climate change. This PhD will use laboratory and field experimental approaches to develop an improved mechanistic understanding of the role of micronutrients in N cycling and N use efficiency in winter wheat. This position will be in the UCD School of Agriculture and Food Science (<https://www.ucd.ie/agfood/>) and the UCD Earth Institute (<https://www.ucd.ie/earth/>), working with the nutrient cycling group of Dr Paul Murphy (<https://people.ucd.ie/paul.murphy>).

#### **Requirements**

Applicants should have a First or Second Class Honours degree or M.Sc. in an appropriate discipline (e.g. Agricultural Science, Plant Science, Soil Science, Environmental Science, Chemistry). The successful candidate should be highly self-motivated and be prepared for laboratory work and field work with modern analytical equipment. Field and laboratory experimental and analytical skills and experience are highly desirable. A good knowledge of European cereal production systems and nutrient management practices is desirable. The applicant should have a good working knowledge of English (spoken and written) and hold a full EU driving licence.

#### **Award**

The Studentship will provide a stipend of €18,000 and a fee contribution of €5,500 per year for 4 years maximum and the support of the CONSUS infrastructure, a Doctoral Studies Panel and the Post-Doctoral Researcher associated with this work package. The student will be based, in the first instance, at UCD but may also spend time, as required, at other sites in Ireland, or potentially overseas.

#### **Further Information/Application Procedure**

Submit an electronic copy of Curriculum Vitae and a letter of interest to: Dr. Paul Murphy: [paul.murphy@ucd.ie](mailto:paul.murphy@ucd.ie)

**Closing date: Fri 20 Dec 17:00, or when a suitable candidate is appointed.**