



**Harper Adams  
University**

**PHD STUDENTSHIP:** A fully funded 4-year PhD is offered for a project entitled “The effect of tillage and traffic systems on soil conditions and crop performance”.

## **DESCRIPTION**

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

Growth in food production is not matching growth in global population – the world needs new ways of producing more food to meet this massive demand. More efficient and intensive production systems are needed, but so too is a decrease in the environmental impact of such systems. This challenge presents a huge opportunity for Ireland to position itself as a global leader in ‘data-driven’ agriculture, while also delivering a highly competitive and sustainable agri-food industry.

University College Dublin (UCD) together with Origin Enterprises Plc are establishing a new collaborative research programme, 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.

### **PhD Project Summary**

This project is part of a large programme (CONSUS) supervised by UCD, in cooperation with Harper Adams University, Newport, Shropshire, UK, where the successful scholar will be based. The fieldwork of the proposed study will be on an Agrii experimental farm in Cambridgeshire, UK. Agrii will establish this experimental site and the scholar will work closely with them in conducting the study. The work follows from on-going studies at Harper Adams University with similar experimental programs both in Zambia and Illinois.

The PhD Scholar will be expected to continue this work in line with the aim and objectives and outlined below.

## **Overall aim**

To determine the effect of tillage systems and field traffic on soil structure/compaction, crop growth and yield.

## **Specific objectives**

1. To determine the effect of traffic and tillage systems on crop establishment, early growth and final yield.
2. To assess the effect of: soil texture, tillage systems, tyre inflation pressure and their interaction on soil physical properties.
3. To investigate the relationship between rut depth and underlying soil conditions using X-ray Computed Tomography scanning (with 2 other PhD students).
4. To investigate the potential gas assessment techniques for assessing macro porosity.
5. Working with the research team to provide recommendations on the traffic and tillage systems leading to the optimum crop establishment, growth and final yield.

## **Profile**

Applications are sought from a highly motivated individual who has a first or upper second class degree in agricultural engineering, agricultural sciences, plant science, horticulture, crop science, biology, geography or closely related disciplines and a willingness to learn.

## **Requirements**

1. BSc (honours) in agricultural engineering, agricultural sciences, plant science, horticulture, crop science, biology, geography or closely related disciplines
2. Excellent scientific, organisational and project management skills
3. Commitment to research and excellent problem solving skills.
4. Ability to work independently and as part of a multi-disciplinary team focused on delivery of high-quality research.
5. Excellent interpersonal and communications skills.

**Stipend:** The PhD Scholarship will be €23,500 per annum for four years from which tuition fees of € 6,810 per annum (open to EU students only) will be deducted and the remainder will be paid as a tax-free stipend. The student will be registered at University College Dublin, School of Agriculture &

Food Science, Belfield (Ireland) but will be based at Harper Adams University, Shropshire (UK) in both the Crop and Environment Sciences and Engineering Departments.

**PhD Duration:** 4 years

To apply submit an electronic copy of Curriculum Vitae, a letter of interest and names and email addresses of two academic referees to Dr Kevin McDonnell electronically: [kevin.mcdonnell@ucd.ie](mailto:kevin.mcdonnell@ucd.ie)

For informal questions and queries please email Dr. Kevin McDonnell or Dr Paula Misiewicz [pmisiewicz@harper-adams.ac.uk](mailto:pmisiewicz@harper-adams.ac.uk)

Closing date:

**15<sup>th</sup> November 2017**