

# EO4cultivar

Delivering analysis-ready and value-added data to the South American agricultural supply chain and farmer advisory services **\*\*PhD study opportunities in the UK\*\***

Aberystwyth University and Environment Systems are looking for applicants to undertake **PhD research** as part of the **EO4cultivar** program; a **3 year project** that will enable growers and government organisations in the agricultural sector in **Peru** and **Colombia** to improve competitiveness and food security.



Satellite and remote sensing data analysis provides up to date information on crop status (e.g. health, growth stage or vigour) throughout the growing season. These data can help improve crop production, support sustainable farming practices and manage risk. Two PhD projects will help develop techniques and services to provide meaningful agricultural information for growers and farmer advisory services that will support management activities in the field.

We are seeking innovative early stage researchers with an excellent degree and relevant experience in image analysis, remote sensing or modelling. Some knowledge of agronomy would be an advantage. A formal PhD advert will be published shortly but you are strongly advised to register your interest with the relevant academic as soon as possible.

The ability to deliver your PhD research within the project timeframe and flexibility to travel between UK and project locations as part of the project team are essential. The PhD will start in September 2017 and must be completed by August 2020.

Candidates must be nationals from a Latin American country and will be based primarily in Aberystwyth, UK.

As part of the EO4Cultivar a third PhD using radar satellite imagery is available, for more information please contact [armando.marino@open.ac.uk](mailto:armando.marino@open.ac.uk)



## Who are we?

Environment Systems is a **UK based company** working on environmental and agricultural projects throughout the world. We are specialists in the use satellite data.

## Where will you be studying?

Aberystwyth University is a world-leading University in the west of Wales, in the UK. Within the University, one PhD will be based with the **Institute of Geography and Earth Sciences** and one with the National Phenomics Centre at the **Institute of Biological, Environmental and Rural Sciences (IBERS)**.

## What will the benefits be?

- Annual Stipend for 3 years tax free
- Fees fully paid
- Interdisciplinary training between University and Industry in a rapidly expanding area of applied research
- Travel expenses

## PhD opportunities available:

**Crop modelling for crop performance.** Contact [john.doonan@aber.ac.uk](mailto:john.doonan@aber.ac.uk)

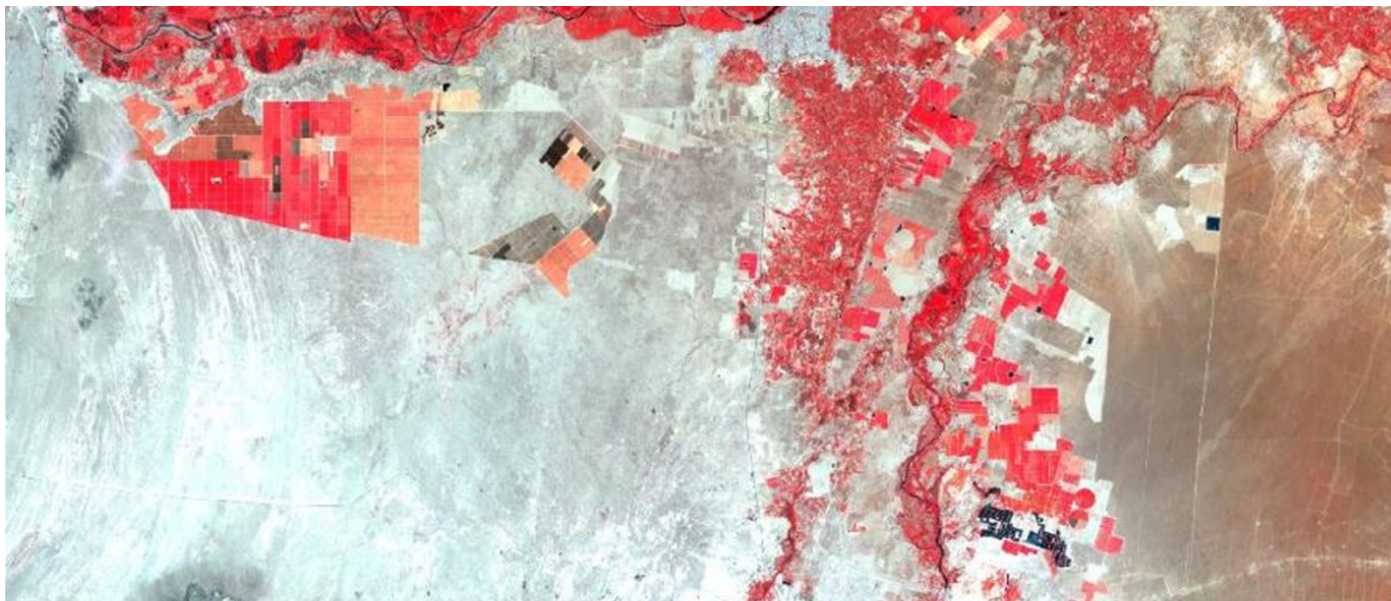
**Early warning of crop production problems.** Contact: [pfb@aber.ac.uk](mailto:pfb@aber.ac.uk)

For more information on these PhDs see page 2 of this flyer.



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## Crop modelling for crop performance PhD

The project will strengthen the link between remotely sensed data and prediction of crop performance. Satellite imagery will be sourced for important target crops in specific areas where agronomic and plant performance data are available. The data will then be explored using crop and canopy models to see where yield prediction would benefit from improved crop parameterization from UAV images, ground based or manual measurements. This improved parameterisation will be tested on accessible fields that will be monitored several times per season using the sensors identified. The student will construct ground truth datasets for relevant plant species which can be used to validate automatic methods, both in the UK and overseas. The approach will be trialled in the UK and propagated to the target countries during the research project.

For more information contact [john.doonan@aber.ac.uk](mailto:john.doonan@aber.ac.uk) by email. Professor John Doonan is the Director of the National Plant Phenomics Centre at IBERS .

## Early warning of crop production problems PhD

A new change detection method - previously applied successfully to forest monitoring will be used to assess the variation and homogeneity of the reflectance for the crop within single field units over time using **Sentinel-2 optical satellite imagery**. The student will develop methods for quantifying heterogeneity developing over time from parcel histograms. These metrics will be related to ground observations collected by project partners in Peru and Colombia to understand whether crop productivity problems or crop failure can be reliably flagged. To account for the natural variation in crop canopy over the growing season, changes in histogram shape will be compared against a model of regular growth patterns to identify atypical changes. The PhD research will result in algorithms that can be used to deliver early warning of crop production problems.

For more information contact: [pfb@aber.ac.uk](mailto:pfb@aber.ac.uk) by email. Dr. Pete Bunting is a reader and Director of the Earth Observation research group within the Institute of Geography and Earth Sciences.

