



Rothamsted Research

Rothamsted Research is a world-leading, non-profit research centre that focuses on strategic agricultural science to the benefit of farmers and society worldwide. We view science as a continuum, from blue skies to green fields, and strategic research as the tool to confront complex problems. We combine both, supported by unique capabilities and interdisciplinary teams, strengthened by partnerships. Such a systems approach is the only way to achieve highly productive but environmentally-benign farming and food innovations. The broad occupational category of the fellows to work with us will be plant, agricultural and environmental education and research.

Eligibility

We wish to train fellows with a background in agricultural research, preferably from Pakistan. Fellows will have a background in soil science and agronomy, and more specifically interested in soil testing and related analytical methods. Potential fellows that are expected to benefit are those coming from research institutes (Universities, Research Organisations) or relevant industry/businesses that offer plant nutrition and soil analysis services such as those in the fertilizer industry.

Website

<https://www.rothamsted.ac.uk/our-science>

Proposed activity

The programme of work will mainly be based at Rothamsted Research (Hertfordshire, UK) with the lead scientist of the dry spectral lab for soil, plant and fertilizer analysis at Rothamsted Research. Dry spectral analyses require minimal infrastructure and maintenance, are very economic and high throughput. Equipment to be used includes Mid-infrared diffuse reflectance spectroscopy and X-ray fluorescence spectroscopy. These tools can replace traditional wet chemistry at least partially and make soil and plant analysis more accessible to farmers. The fellows will be trained to use these tools, but their training will also cover the whole process from sample reception to data analysis and interpretation.

We have developed specific activities for the fellows as follows:

Week 1: Arrival. Inductions will be facilitated at Rothamsted Research. We will discuss with the fellows the programme of activities, which will include: Background information on dry spectral techniques and introduction to systems of work that include health and safety and quality assurance.

Week 2: Training. Fellows will be trained in sample preparation of test soil samples, systems of work, control of contamination, proper logging of samples and quality checks, production of ground material appropriate for selected analytical techniques.

Week 3 and 4: Theory of dry spectral spectroscopy vs wet chemistry. The fellows will learn about a range of techniques from the basics of sample analysis, calibration functions, appropriate use of certified reference materials for Quality Assurance, detection limits, and safe practices. The fellows will use modern spectroscopy equipment (using test samples brought from their home country), data handling, storage and quality checks.

Week 5: Principles of data analysis. The fellows will be introduced to a range of statistical packages and data integration methods.

Week 6: Exploration of future possibilities. We invite collaboration and technical transfer of knowledge. We will provide training on how to set-up a spectrometry laboratory for soil advisory purposes, including sample archiving.

Week 7: External visits. The fellows will visit Nottingham University and the British Geological Survey. The fellows will discuss the interpretation of soil data and uptake of micronutrients into crops. Training in use of Geographic Information Systems for plotting and spatial interpretation of data. The fellows will write up a visit report for the CSC. We will discuss the planning for transfer of knowledge by the fellows to their colleagues upon their return. In addition, we will discuss future capacity building, requirements, phasing of development, and funding opportunities, and organisations who can facilitate technical assistance.

The fellows will be supervised and will receive mentoring from colleagues outside our working group. Start dates between 15 April 2019 and 17 June 2019 is suitable. Participation in agriculture relevant Symposia for analytical chemistry or broader soil discipline will be arranged if available.

CSC theme

Priority Theme 1 Science and technology for development

Further details

For more information on how to apply, please visit the CSC website:
<http://cscuk.dfid.gov.uk/commonwealth-professional-fellowships-information-for-candidates/>